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PSYCHOLOGICAL AND THEOLOGICAL PREDICTORS OF ENVIRONMENTAL ATTITUDES AMONG A SAMPLE OF UK CHURCHGOERS

Andrew Village

York St John University, York, UK

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Author note

Correspondence should be addressed to Andrew Village, York St John University, Lord Mayor's Walk, York YO31 7EX, UK. E-mail: A.Village@yorksj.ac.uk

Abstract

This paper builds on previous studies of UK churchgoers by examining the factors that predict concern for the environment and willingness to make sacrifices to preserve it. A sample of 825 churchgoers from a range of denominations completed a questionnaire that contained items used to assess psychological preferences, biblical literalism, and a range of theological stances toward creation. Psychological variables show both direct and indirect effects on environmentalism that were in line with previous work by environmental psychologists. Indirect effects were related to the way that some psychological type preferences either shape biblical interpretation or are associated with religious conservatism. Religious affiliation had no direct effects on environmentalism, but did have indirect effects through literalism and religious conservatism. Beliefs about dominion and eschatology directly reduced concern, but dominion was also positively associated with stewardship, which emerged as the main promoter of both concern and sacrifice.

Keywords: dominion; environmentalism; eschatology; literalism; personality; religion; stewardship

INTRODUCTION

The need for humans to respond to the growing threats from climate change and the loss of biodiversity is becoming increasingly imperative. The last few years have seen the rise of radical political movements such as Extinction Rebellion (2019) that recognise the importance of changing public opinion in order to generate political action. Capturing the hearts and minds of the general public is a key prerequisite for action because for many people action will involve making some sort of sacrifice. This may range from the inconvenience of having to reduce the number of times they use air travel for holidays to major shifts in diet, lifestyle, and behaviour. Organisations and movements that shape attitudes and beliefs are thus key to predicting how and whether public opinion will change in the decades ahead, which may explain the continuing interest in the relationship of religion to environmentalism. This relationship is complex, not least because individual differences in age, sex, and personality have been shown to related to both religiosity and attitudes towards the environment.

This paper examines the ways in which individual differences, religious affiliation, and specific religious beliefs shape concern for the environment among a sample of churchgoers from the UK. It builds on an earlier study which examined the direct and indirect links between the interpretation of creation accounts in Genesis, theological beliefs about creation, concern for the environment, and willingness to make sacrifices to preserve the environment (Village 2015a). In the earlier study scales were developed to measure various theological stances toward creation, including ‘dominion’, ‘stewardship’, and ‘sacramentalism’ that were assumed to mediate the effects of biblical interpretation on environmental concern. This new study, based on a different sample, extends this work by looking at possible precursors to biblical interpretation and theological stance toward creation such as church tradition, general theological conservatism, and individual differences. The aim is to build an

extended path model that illuminates some of the complex relationships between various predictors of environmental attitudes that have been shown in previous quantitative work to be complex and multi-faceted.

Predictors of Environmentalism

Religious affiliation

The effect of religion on environmental attitudes has been studied for at least the last half century, and the results indicate a complex set of interactions. Some religions have been blamed for creating damaging worldviews that set humans over and above the rest of creation, leading to a sense that the earth is primarily a resource to be used for the benefit of the human race. White's well-known attack on those aspects of the Judaeo-Christian movement that promoted an attitude of 'dominion' over creation (White 1967) fuelled debate among historians and theologians, and produced a number of studies that looked for differences either between Christian affiliates and others, or between Christians of different traditions (for reviews see Hitzhusen 2007; LeVasseur and Peterson 2016; Pudlo 2019; Taylor 2016; Taylor, Van Wieren, and Zaleha 2016; Whitney 2015). Over the last few decades a number of studies from the USA have shown less positive environmentalism among some Christian groups, particularly those thought likely to promote human mastery over nature (Arbuckle and Konisky 2015; Clements, McCright, and Xiao 2014; Eckberg and Blocker 1989; Hand and Liere 1984; Shaiko 1987). Similar disparities based on religious affiliation have been noted elsewhere, usually between Christians belonging to different traditions rather than between religious and non-religious groups (Hagevi 2014; Hayes and Marangudakis 2001a, 2001b). A number of studies from the USA have noted that denominational affiliation may be a predictor primarily because it betokens particular religious beliefs such as biblical literalism (Smith, Hempel, and MacIlroy 2018) or political

stance such as conservatism (Guth et al. 1993; Sherkat and Ellison 2007). Religious affiliations have been shown to have some explanatory power for environmentalism even after controlling for other beliefs or political stance in some religious groups but not in others (Guth et al. 1995; Pepper and Leonard 2016; Wolkomir et al. 1997a). The issue here is how far affiliation is simply a proxy for particular religious or political beliefs, and how far it may indicate an effect that is more to do with group identity than specific beliefs.

Religious beliefs about creation

The rather mixed results of studies relating religious affiliation to environmentalism may arise because there is considerable variation within traditions in how far members adhere to a 'dominion' theology of creation. Apologists have argued that the same traditions that accept the mastery of humans over creation also embrace ideas such as 'stewardship', which foster a sense that humans are responsible for the well-being and maintenance of creation (Ball et al. 1992; Berry 2006). Some theologians have derided stewardship as a more palatable form of dominion that nonetheless maintains the anthropocentric nature of the place of humans in the created order and promotes the notion of God as the 'absentee landlord' (Fox 1983, 1990; Palmer 1992). Alternative theologies have multiplied, offering a range of ideas that take a more 'sacramental' view of creation (Gustafson 2011; Hart 2006; Haught 1993). A common theme is the notion that God is present in creation, which is therefore a primary mode of revelation. Such belief is thought to generate a sense of nature being sacred and the equality and unity of humans with all created things.

The evidence for links between Christian beliefs about creation and environmental attitudes is mixed (for reviews see Hitzhusen 2007; Pepper and Leonard 2016; Taylor, Van Wieren, and Zaleha 2016). The use of single-item and/or proxy measures of beliefs and attitudes has allowed some researchers to include dominion or stewardship belief in large social surveys of the general population, especially in the USA. For example, the 1993

General Social Survey included a range of measures, and has been widely used and re-used to examine this topic (Boyd 1999; Eckberg and Blocker 1996; Sherkat and Ellison 2007; Uyeki and Holland 2000).

Where studies have included a measure of dominion belief, they have often shown it to be a negative predictor of environmentalism, over and above denominational affiliation. (Pepper and Leonard 2016; Wolkomir et al. 1997b). Similarly, stewardship belief has been shown to have a positive relationship to environmentalism in the 1993 GSS after controlling for conservative Protestant identity (Sherkat and Ellison 2007). Where sacramental beliefs about creation have been included in surveys they have also been shown to be positively correlated with environmentalism (Dietz, Stern, and Guagnano 1998; Farrell 2011; Pepper and Leonard 2016; Tarakeshwar et al. 2001).

Eschatological beliefs may be important in shaping views about the environment. Biblical passages that speak of the return of Christ, a final judgment, and a 'new heaven and earth' (Revelation 21:1) are thought to engender a belief in some that damage to the environment caused by human activity will ultimately be restored, thereby lowering concern for the environment (Phan 1996; Pudlo 2019). Qualitative work from various church groups has suggested that beliefs about the Parousia and the final fate of the earth might be linked to environmentalism. For example, a study of 40 leaders and lay people from two Evangelical churches in the American Southwest found that what the researchers termed 'environmental apathy' could be linked to the idea that the ultimate fate of the earth is in God's hands (Peifer, Ecklund, and Fullerton 2014). Some participants believed God would not allow damage, or any damage that did occur was within divine control. This suggests a construct related to eschatology could usefully measure the extent to which individuals view the future of the earth as under divine rather than human control. The prediction would be that high levels of

divine control would be associated with lower concern for the environment and less willingness to make sacrifices for it.

Biblical literalism

Biblical literalism has had an important role in studies relating Christianity to environmentalism. This is because White's hypothesis was that it was literal interpretation of Genesis that was partly responsible for creating the attitude of dominion over nature, and because biblical literalism has for a long time be operationalised in social surveys in the USA, notably the 'bible' question in the GSS (GSS 2014). Biblical literalists have been shown to have lower pro-environmental attitudes in some surveys in the USA but not others (Hitzhusen 2007). Some researchers have argued that literalism is a simply a proxy measure of other more salient beliefs, notably dominion, and literalism tends to drop out as a predictor when measures of dominion are included in multivariate analyses of survey data (Wolkomir et al. 1997b). Nonetheless, there are studies that have shown direct effects on some aspects of environmentalism, even when other beliefs or affiliations are allowed for (Kilburn 2014; Smith, Hempel, and MacIlroy 2018; Village 2015a). Biblical literalism might itself be a product of denominational affiliations or individual differences such as personality (Village 2012, 2014).

Individual differences

Environmental psychologists have shown that individual differences in values or personality may partly explain differing attitudes towards the environment (Dietz, Amy Fitzgerald, and Shwom 2005; Dietz, Stern, and Guagnano 1998; Hirsh and Dolderman 2007). Traits such as openness to experience and agreeableness are positively associated with pro-environmental behaviour (Hirsh 2010; Hirsh and Dolderman 2007; Milfont and Sibley 2012). Personality has been posited as a more fundamental explanation of the widely reported gender difference in environmentalism. Women tend to demonstrate more pro-environmental behaviours

(Milfont and Schultz 2018; Zelezny, Poh-Pheng, and Aldrich 2000), but this may be explained by women also scoring higher on such traits as conscientiousness, agreeableness, and neuroticism (Desrochers et al. 2019). While these traits may directly shape attitudes and behaviours related to the environment, they may also have indirect effects through shaping other beliefs and affiliations. For example, a recent study showed that the well-established link between openness and pro-environmental behaviour could be broken in some circumstances because openness also predicts left-wing or liberal political orientation, which are more direct predictors of environmentalism (Klein et al. 2019).

Personality is also generally understood to be related to a wide range of religious orientations and behaviours (Emmons 1998; Saroglou 2002). It seems likely, then, that among religious people there may be links between personality preferences, religiousness, and environmentalism. One of the aims of this research was to test if certain personality preferences could be linked to levels of environmental concern, and whether such links were direct or mediated through religious affiliation or beliefs.

The research tradition associated with the work of Leslie Francis in the UK has amassed a considerable body of evidence to support the utility of using psychological type models in the study of religion (Francis 2005). The model of psychological type, first proposed by Carl Jung (Jung 1971) and later developed by others (Myers 1993; Myers et al. 1998; Myers and Myers 1980), is based on the dimensions of orientation (extraversion versus introversion), perceiving (sensing versus intuition), judging (thinking versus feeling), and attitude toward the outer world (judging versus perceiving). Although this model has not been widely used in studies of environmentalism, its dimensions do have strong links to those in more widely used personality models such as the Five Factor Model (Costa and McCrae 1985). In particular, preference for intuition over sensing is correlated with a higher

score on openness to experience, and preference for feeling over thinking is correlated with higher scores on agreeableness and conscientiousness (McCrae and Costa 1989).

Individual preferences for different psychological functions have been shown to relate to a wide range of faith expressions, including affiliation with particular types of churches (Francis 2002a; Francis et al. 2007; Francis, Clymo, and Robbins 2014; Francis et al. 2005; Francis and Robbins 2012; Francis, Robbins, and Craig 2011; Village 2013, 2015b) and particular theological stances or beliefs (Francis 2002b; Francis and Village 2017; Village and Francis 2005). Two dimensions of the type model are particularly relevant for this study: perceiving (sensing versus intuition) and judging (feeling versus thinking).

The two perceiving functions are concerned with the ways in which people gather and process information: either through the sensing function which attends to specific details, or through the intuitive function which employs the imagination to draw attention to wider relationships and future possibilities. Sensing types are concerned mainly with practical issues and are typically down to earth and matter of fact. Intuitive types are concerned mainly with abstract theories and are typically imaginative and innovative. Several studies have shown that a tendency towards literal interpretation or biblical conservatism is associated with a preference for sensing over intuition (Village 2012, 2014, 2016).

The two judging functions are concerned with the ways in which people make decisions and judgments: either the thinking function which promotes objectivity using logic and principles, or the feeling function which promotes subjectivity using personal values and relationships. Thinking types value integrity and justice, and they are typically truthful and fair, even at the expense of harmony. Feeling types value compassion and mercy, and they are typically tactful and empathetic, even at the expense of fairness and consistency. Those who prefer thinking over feeling tend to be more likely to attend churches of a more conservative or evangelical tradition (Village 2013), and theological conservatism is

associated with preference for thinking over feeling among evangelical clergy in the Church of England (Village 2019).

Taking these various studies into account suggests some possible relationships between environmentalism and psychological type preferences. Sensing may be negatively correlated with environmental concern because it is associated with greater biblical literalism, which is directly negatively correlated with concern and indirectly through dominion (Village 2015a). Sensing may also have direct negative effects on pro-environmentalism because it is the opposite of intuition, a measure of openness to experience that other studies have shown predicts pro-environmental behaviours. Thinking may be negatively linked to environmentalism either directly because it is the opposite of feeling, a measure of agreeableness, which predicts pro-environmentalism (Hirsh 2010; Hirsh and Dolderman 2007), or because thinking tends to predict religious conservatism.

One measure that is not present in psychological type models is neuroticism, which has been shown to predict greater concern over environmental issues (Hirsh 2010). Neuroticism is associated with raised levels of anxiety and guilt, which may heighten concerns over potential environmental problems. A measure of neuroticism (termed here 'emotionality') was included in the study to test its relationship to environmental concern.

Modelling predictors of environmental concern

It seems, then, that predicting attitudes toward the environment among churchgoers involves a range of factors such as individual differences, denominational affiliation, theological conservatism, biblical interpretation, and specific beliefs about creation including dominion, stewardship, sacramentalism, and eschatology. These factors are often closely intertwined, and it is difficult to determine which are primary and which are mediators of any effects. Environmentalism is a broad construct that consists of different aspects such as concern for the environment, willingness to make sacrifices to improve the environment, and taking

active steps to promote the well-being of the environment. People who have pro-environment attitudes may not have the capability or opportunity to be environmental activists, so assessing attitudes may be a more sensitive way of assessing environmentalism. Willingness to sacrifice is often linked to concern for the environment, and it seems reasonable to assume that former is driven by the latter, such that concern may be a mediator between theological beliefs and willingness to sacrifice.

The research on which this study is built demonstrated that specific theological beliefs about creation partially mediated the effects of biblical interpretation on environmental concern. Stewardship was the main belief promoting concern, and it was in turn correlated with literalism, dominion and sacramentalism. The main predictors of concern were thus literalism and dominion (negative direct and indirect effects) and stewardship (positive effect). The current study repeats this model, but also includes eschatology as a variable, to see if this is a stronger predictor than dominion. Based on previous studies in the literature, biblical literalism and theological stances on creation could themselves be mediators of other factors such as religious affiliation, general theological conservatism, and individual differences. Political ideologies are not as closely linked to religious affiliation in the UK as they have been in the USA, so these where not assessed in this study.

Based on the wider literature, and the previous study of UK churchgoers, a potential model for linking personality, church tradition, theological conservatism, literalism, theological stance to creation, and environmentalism is shown in Figure 1. Extending the earlier model, interpretation may be driven by both sensing and more general conservative theological commitments and affiliations, which might also directly promote dominion and eschatology. Thinking preference may be associated with theological conservatism and/or affiliation to Evangelical / Pentecostal churches.

[Figure 1 about here]

Method

Sample

Following a 2009 survey about evolution and creationism among churchgoers in England (Village 2015a), a revised questionnaire, focusing more on creation and the environment, was distributed to a different set of churchgoers between 2015 and 2017. In all there were 904 returns, of which 825 had complete data for all instruments used in this analysis. Of these, 56.3% were completed by women, 28.8% were aged under 50, 48.6% aged between 50 and 69, and 22.5% aged 70 or older. Respondents were from different churches, mostly from northern England. This was a convenience sample of committed churchgoers mostly from mainline and conservative Protestant denominations.

Instruments

Psychological type. Psychological type has been operationalized using a range of different instruments including the Myers-Briggs Type Inventory, MBTI (Myers et al. 1998), the Keirsey Temperament Sorter (Keirsey and Bates 1978), and the Francis Psychological Type Scales, FPTS, (Francis 2005). The latter were used in this study because they are suitable for large-scale survey work and because a recent edition included a scale for measuring emotionality (neuroticism). Although type theory uses scores to identify dichotomous preferences, for research purposes it is often better use scores themselves as variables, in this case sensing score (the inverse of intuitive score) and thinking score (the inverse of feeling score). The FPTS used here included an additional 10-item paired-response scale measuring ‘emotionality’, which included items such as ‘Do you tend to (a) stay stable or (b) have mood swings?’. Reliabilities for the scales were adequate (Cronbach's alpha: sensing = .72; thinking = .69; emotionality = .78).

Interpretation of Genesis. The two six-item Likert scales used here to assess preference for literal and symbolic interpretation of the Genesis creation accounts were

slightly modified versions of those used elsewhere (Village 2014, 2015a), and are shown in Table 1. Neither scale contained items related to human relationships with the created order. Both scales had a high internal consistency reliability in this sample.

[Table 1 about here]

Church tradition and theological conservatism. Respondents were asked for their current church denomination and this was used to identify those belonging to Evangelical/Pentecostal (EP) churches (Independent Evangelical 32%, Baptist 10%, Pentecostal 6%, others 6%) versus others (Anglican 36%, Roman Catholic 3%, Methodist 2%, United Reformed Church, 1%, others 4%). This dichotomous variable (1 = EP churches, 0 = Others, mainly Anglican and Methodist) was used a measure of church tradition. General theological stance was measured using a single-item 7-point semantic scale measure of liberal versus conservative theological stance, the 'LIBCON' scale. This scale has been tested among Anglicans and other UK churchgoers and shown to be a good predictor of a range of different theological beliefs and attitudes (Village 2018). Conservatism in this context tends to refer to traditional or orthodox doctrinal beliefs and traditional moral values related to areas such as sexuality and marriage. Although EP church members tended on average to be more conservative, there was still considerable variation in individual conservatism, particularly in mainstream churches. For this reason, both affiliation and general theological stance were included as predictors of environmental concern.

Theological stances towards creation. The 2009 study identified and assessed three different stances toward creation: dominion, sacramentalism and stewardship (Village 2015a). This new study has used the same three stances, but improved the operationalisation of these constructs by slightly modifying some of the items in each scale (Table 2a-c). An additional scale, 'eschatology' measured the extent of divine (versus human) control over the fate of creation (Table 2d). The modified and new scales all had high reliabilities.

[Table 2 about here]

Concern for the environment. The six items in this scale (Table 3a) were introduced with the question 'How concerned are you about the following environmental issues?' The five-item response scale ranged from 'totally unconcerned' (= 1) to 'very concerned' (=5) and there was a high internal reliability.

Willingness to sacrifice for the environment. The six items in the scale used in this study (Table 3b) were derived from other surveys used in the UK and elsewhere, updated to include items on wind farms and fracking as these were strongly contested political issues at the time. The items were introduced by the question 'If it helped to protect the environment, how willing would you be to…? ' The five-item response scale ranged from 'totally unwilling' (= 1) to 'very willing' (=5) and there was a high internal reliability.

[Table 3 about here]

Control variables. Sex (male = 0, female =1) and age (to nearest decade coded 1 = teenager, 2 = 20s, etc.) were included as controls.

Analysis

Analysis was in three stages. First, bivariate correlations were calculated for outcome and predictor variables to examine the total effects of predictors on concern for the environment and willingness to sacrifice to preserve it. Second, hierarchical regression was used to identify which variables remained significant predictors when others were in the model. Third, path analysis using Amos 25 (Arbuckle 2017) examined direct and indirect effects of those significant predictors of concern identified from the regression analyses. The full model was based on the *a priori* conceptualisation in Figure 1 and included all direct effects of predictors of environmental variables. The final path model was specified by removing non-significant paths and the model fit to the data was tested using a range of indices (Byrne 2010).

Results

Levels of concern for the environment were fairly high in this sample, with 74%, on average, expressing some concern for the six areas mentioned in the scale (Table 3a). Concern was highest for pollution (88%) and loss of habitats (88%), and lowest for over-population (61%). The percentage of those unconcerned about global warming (22%) was slightly lower than the equivalent figure in a 2016 UK survey that reported 29% were 'not at all or not very worried' about climate change (Barasi, Harding, and Dunatchik 2017). Willingness to sacrifice was slightly less often endorsed, with 55%, on average, expressing willingness in relation to matters such as paying more for fuel, travelling less or having a wind farm built nearby. Willingness to support a ban on fracking, at 26%, was the least supported idea, a figure that is roughly in line with the figures of approximately 30% of the general population that opposed fracking in the years this survey was undertaken (BEIS 2019).

Most items in the dominion scale were frequently endorsed: 82% agreed that God wants humans to have dominion over other creatures, 82% agreed that humans are the most important species on earth, and 74% disagreed with the idea that earth was not created to be ruled by human beings (Table 2a). Sacramental notions of creation were also well supported (Table 2b), which is perhaps surprising in a sample of mainly conservative Evangelicals and Pentecostals. Nearly all (93%) agreed that nature reveals God's glory, and 70% that God is revealed as much in creation as in the Bible. The presence of God in creation was agreed by 74%, though slightly fewer (56%) agreed that all of creation is sacred. Stewardship was also strongly supported, mainly in terms of respecting the God's creation, or humans being either guardians of nature, created to look after the earth, or in charge of the earth, which were all endorsed by over 80% of respondents (Table 2c). All of these figures were similar to those from the 2009 study (Village 2015a). There was less consensus for the items in the eschatology scale (not used in the earlier study), though support was mainly for items that

favoured divine rather than human, control of the future. Thus 74% agreed that ‘God will renew the earth one day’, whereas only 8% agreed that ‘Natural forces will decide the fate of plant earth’.

[Table 4 about here]

Comparing scale scores between Evangel/Pentecostal church members and the rest showed, as expected, higher scores for thinking, literal interpretation, theological conservatism, dominion, and eschatology, and lower scores for symbolic interpretation, sacramentalism, and the two measures of environmentalism (Table 4). Stewardship was slightly higher among the EP affiliated, though the differences was much smaller compared with most other scales. These findings confirm the idea that environmentalism is at least partly predicted by church tradition. Bivariate correlations (Table 5) showed that both concern and sacrifice were also negatively correlated with sensing, thinking, literalism, conservatism, dominion, and eschatology, and positively correlated with emotionality symbolic interpretation, sacramentalism, and stewardship. All of these correlations are in line with previous studies and theoretical expectations, and show that in this sample there is evidence that psychological and theological preferences may influence environmentalism. The next question was to see which had direct effects and which may have mediated effects.

[Table 5 about here]

Hierarchical regression and path analysis

Sex and age were both significant predictors of environmental concern (Table 6, Model 1), with women and older people demonstrating more concern. Adding psychological variables (Model 2) removed the effect of sex, primarily because women tended to score lower on thinking and higher on emotionality. These trends are in line with widely reported sex differences in neuroticism (Lynn and Martin 1997) and greater preference among women for feeling over thinking in the psychological type judging process (Kendall 1998; Myers et al.

1998). The addition of church tradition and theological conservatism (Model 3) suggested both had independent effects on concern, which reduced the effect of thinking, as expect from previous research showing links between thinking and conservatism. These two factors were no longer significant predictors when literal and symbolic interpretation scores were added to the model (Model 4). When theological stances of creation were added (Model 5) sacramentalism was not significant, but the other three were, and in the expected directions.

In the light of this analysis the path model used omitted the symbolic interpretation and sacramentalism routes, but retained the variables shown in Figure 2. Willingness to sacrifice was added as an additional outcome variable. The final path model was a good fit to the data (CMIN/DF = 2.99; Adjusted Goodness of Fit Index = .96; Parsimony Normed Fit Index = .63; Root Mean Square Error of Approximation = .049, 90% CL = .039 - .060, PCLOSE = .535). The addition of direct negative effects of sensing on the environmental variables improved the overall fit, but reduced the PNFI to below the recommended value of 0.6, so these paths were omitted in the final model.

[Figure 2 about here]

As with the previous study, stewardship was the main positive effect on concern, though in this sample there was an additional direct effect on sacrifice. Dominion and eschatology had independent direct negative effects on concern, though the additional eschatology effect was small if dominion was accounted for. Dominion and eschatology were positively correlated with theological conservatism and literalism, but not with church tradition, which seemed to mediate its effect through the other two variables.

Of the psychological variables, emotionality had a direct effect on concern, but no indirect effects. This is in line with theory and studies that suggest neuroticism may heighten concern for environmental issues. Sensing had direct negative effects on both environmental variables, (not shown in the final model), in line with the idea that openness to experience

(equivalent to intuition, the opposite function of sensing) promotes environmentalism. The indirect effect of sensing was via literalism as predicted from theory and previous studies. The effect of thinking was weak, and largely mediated through conservatism and church tradition. This is in line with studies that have shown thinking types score higher on measures of religious conservatism, and tend to be more frequent in conservative churches.

Concern for the environment was thus driven in this sample by the direct effects of emotionality, sensing, literalism, dominion, stewardship and eschatology, and the indirect effects of thinking, sensing, conservatism, literalism and dominion (Table 7). Willingness to sacrifice was driven by the direct effects of concern, sensing and stewardship, and by the indirect effects of all variables apart from dominion.

Discussion

This study has added significantly to the literature on the relationship of religion to environmentalism by, for the first time, examining psychological and religious factors simultaneously. The effects of psychological variables are in line with studies that have used the Five Factor Model insofar as psychological type function can be seen to be map onto the traits of openness and agreeableness, and the emotionality scale is equivalent to neuroticism in other models. Heightened emotional lability may increase affective responses to environmental problems and therefore concern for the environment. This does not necessarily entail any interaction with religiosity. Preference for sensing seems to operate in two ways. First it has a direct negative effect on concern and sacrifice, probably because the opposite preference for intuition implies an openness to change and future possibilities, which are very much at the forefront of environmental responses today. Sensing types tend to prefer the familiar and routine, and may be less convinced by arguments that rely on damage that made not be immediately evident in their context. Sensing also reduced concern in this sample because it was correlated with literal interpretation of Genesis, which directly and indirectly

reduced concern for the environment. Preference for thinking mainly predicted low environmentalism because of its association with religious conservatism. Reasons for this are discussed elsewhere (Village 2016, 2019), and may be to do with the propensity of thinking types in religious contexts to resist liberalism, even when this reduces harmony. This makes this particular psychological preference only distantly related to environmentalism.

The results here help to explain the long-argued debate over whether it is religious affiliation, biblical literalism, or specific beliefs that shape environmentalism. In this sample at least, the effects of affiliation and general religious conservatism were mediated through literalism, dominion and eschatology. It is these beliefs that more directly shaped concern for the environment, and hence reduced willingness to sacrifice for it. As with the earlier study (Village 2015a), stewardship emerged as a key theological idea that promotes pro-environmentalism. It is not the opposite of dominion, but positively linked to it, suggesting that for many conservatives who interpret Genesis literally human mastery over nature carries with it the implicit assumption that this places a responsibility on humans to care for creation. Eschatology, particularly the belief that the future of the earth is in divine not human control, has some independent effect in reducing concern, but this was small compared with the role of dominion. Promoting environmentalism among religious conservatives in the UK need not necessarily mean undermining their literal interpretation of Scripture or their worldview that places humans in a central position. It may be more effective to show how these things make greater demands on Christians to demonstrate faith by acting as good stewards.

Table 1: Details of the biblical interpretation scales

	Percentage response to items			
a) **Literal** α = .88	Disagree	NC	Agree	CIT
The Genesis account shows exactly how the world came to be	28	10	62	.89
Genesis tells us exactly how humans were created	25	10	65	.89
I interpret the biblical account of creation literally	32	9	59	.88
The whole human race is descended from Adam and Eve	17	14	69	.87
Human sinfulness exits because of Adam and Eve's disobedience	16	9	75	.82
Adam and Eve did not exist as historical people*	70	16	13	.80
b) **Symbolic** α = .81	Disagree	NC	Agree	CIT
The Genesis account contains truths expressed in the form of stories	35	11	54	.65
Genesis uses symbolic language to say why humans were created	47	15	38	.73
Genesis uses analogies to teach us about God and human nature	36	17	47	.69
There is symbolic truth in the biblical account of creation	23	16	61	.55
Eating the forbidden fruit is a metaphor of human disobedience	34	10	55	.63
Adam and Eve stand for the human race	15	14	71	.22

Note. * This item was reverse coded when the scale was created. Categories at either end of each response have been combined, N = 825. α = Cronbach's alpha; NC = Not certain; CIT = Corrected item-total scale correlation.

Table 2: Details of the theological stance toward creation scales

	Percentage response to items			
a) **Dominion** α = .80	Disagree	NC	Agree	CIT
The earth was not created to be ruled by human beings*	74	12	14	.57
Animals should have the same moral rights as humans*	77	11	12	.53
God wants humans to have dominion over other creatures	10	8	82	.71
The earth was created by God to supply human needs	26	19	55	.37
Every living thing has an equal right to exist*	43	16	41	.39
Human beings are the most important species on earth	11	7	82	.69
The growth of the human population is not what God intended	9	21	70	.60
b) **Sacramental** α = .75	Disagree	NC	Agree	CIT
God is revealed in Creation as much as in the Bible	19	11	70	.49
Humans are deeply connected to all living things	20	24	57	.42
All of Creation is sacred	23	21	56	.60
God is present in all Creation	13	13	74	.60
All of creation reveals the glory of God	3	4	93	.25
To harm the earth is harm God	38	26	37	.55
God speaks to us through the natural world	3	9	88	.30
c) **Stewardship** α = .81	Disagree	NC	Agree	CIT
Humans should preserve the earth because it belongs to God	3	4	93	.63
Humans are the guardians of creation	5	9	86	.63
God has put human beings in charge of the earth	10	11	79	.51
Preserving Creation is one the most important human duties	14	15	72	.39
Humans will have to account to God for their care of the earth	8	17	75	.53
We are stewards of creation	2	4	93	.62
God wants human beings to take care of the earth	2	4	94	.67
d) **Eschatology** α = .82	Disagree	NC	Agree	CIT
God will renew the earth one day	8	18	74	.55
God will not allow humans to destroy the earth	27	31	41	.46
Humans could damage the earth beyond repair*	33	18	49	.58
The future of the planet is in human hands*	54	16	30	.70
Natural forces will decide the fate of planet earth*	72	19	8	.61
God will decide the fate of the earth	6	13	81	.67

Note. For explanations, see Table 1.

Table 3: Details of the environmental scales

	Percentage response to items			
a) **Concern** α = .81	Unconcerned	Neither	Concerned	CIT
Global warming	22	14	64	.58
Over population	19	20	61	.56
Industrial pollution	4	9	88	.63
Intensification of farming	11	25	64	.57
Extinction of species	7	14	78	.57
Loss of natural habitats	3	9	88	.63
b) **Willingness to sacrifice** α = .80	Unwilling	Neither	Willing	CIT
Pay much higher taxes	25	26	49	.61
Pay more for food or fuel	15	17	68	.60
Accept cuts in your standard of living	15	22	62	.61
Reduce the amount you travel	17	24	58	.54
Allow more wind farms in the countryside	20	12	69	.40
Support restrictions on economic development	19	29	53	.52
Support a ban on fracking for shale gas	42	32	26	.47

Note. For explanations, see Table 1.

Table 4: Mean (*SD*) scores of variables for main church-tradition groups

	All	AM	EP	*t*
	825	344	390	
Psychological type				
Sensing	7.20 (2.37)	7.07 (2.44)	7.28 (2.32)	1.30
Thinking	6.10 (2.49)	5.87 (2.61)	6.26 (2.39)	2.20*
Emotionality	3.55 (2.56)	3.55 (2.47)	3.55 (2.61)	0.00
Biblical interpretation				
Literal	23.03 (7.65)	17.31 (7.48)	26.96 (4.73)	22.70***
Symbolic	19.40 (5.92)	22.35 (4.69)	17.38 (5.82)	13.00***
Theological stance				
Conservatism	4.91 (1.98)	4.10 (2.12)	5.47 (1.66)	10.50***
Dominion	26.95 (5.40)	24.15 (5.95)	28.87 (3.99)	13.60***
Sacramental	26.34 (4.67)	26.94 (4.57)	25.93 (4.69)	3.10**
Stewardship	29.47 (4.24)	28.85 (4.56)	29.89 (3.95)	3.50**
Eschatology	29.47 (4.96)	18.94 (4.81)	24.09 (3.85)	17.00***
Environmentalism				
Concern	22.99 (3.98)	24.14 (3.80)	22.20 (3.91)	7.10***
Sacrifice	24.16 (4.81)	24.75 (4.72)	23.74 (4.83)	3.00**

Note. AM = Anglican and Methodist churches; EP = Evangelical and Pentecostal churches. *t* = Student's *t* for difference in means. * $p < .05$; ** $p < .01$; *** $p < .001$.

Table 5: Correlation matrix

		12	11	10	9	8	7	6	5	4	3	2
1	Sensing	-.15***	-.13***	.06	-.03	.00	.02	.10**	-.12***	.12***	-.03	.06
2	Thinking	-.09**	-.10**	.10**	.02	-.20***	.12***	.16***	-.14***	.07	-.07*	
3	Emotionality	.12***	.19***	-.09**	.02	.12***	-.10**	-.12***	.06	-.02		
4	Literal	-.22***	-.37***	.73***	.27***	-.08*	.65***	.57***	-.58***			
5	Symbolic	.18***	.29***	-.45***	.04	.34***	-.35***	-.45***				
6	Conservatism	-.19***	-.30***	.55***	.20***	-.26***	.52***					
7	Dominion	-.17***	-.34***	.64***	.42***	-.15***						
8	Sacramental	.16***	.24***	-.13***	.34***							
9	Stewardship	.15***	.09*	.29***								
10	Eschatology	-.20***	-.35***									
11	Concern	.53***										
12	Sacrifice											

Note. $N = 825$. * $p < .05$; ** $p < .01$; *** $p < .001$.

Table 6 Hierarchical linear regression of concern for the environment

	Model				
	1	2	3	4	5
Female	.08*	.05	.03	.04	.01
Age	.10**	.15***	.11***	.09**	.08*
Sensing		-.15***	-.12***	-.10**	-.10**
Thinking		-.07	-.03	-.04	-.03
Emotionality		.19***	.16***	.17***	.14***
EP Church			-.14***	.00	.04
Conservatism			-.21***	-.08*	-.03
Literal				-.25***	-.19***
Symbolic				.08*	.00
Dominion					-.21***
Sacramental					.06
Stewardship					.23***
Eschatology					-.12*

Note. $N = 825$. * $p < .05$; ** $p < .01$; *** $p < .001$.

Table 7: Direct and indirect effects of predictor variables on environmental variables

	Concern for the environment						Willingness to sacrifice to protect the environment					
	Total		Direct		Indirect		Total		Direct		Indirect	
	b	β	*b*	β	*b*	β	*b*	β	*b*	β	*b*	β
Concern							0.574	.469***	0.569	.469**		
Thinking	-0.128	-.081*	-0.062	-.039	-0.066	-.042**	-0.142	-.076*	-0.063	-.033	-0.083	-.043*
Emotionality	0.222	.144**	0.222	.144**			0.151	.084*	0.030	.016	0.126	.067**
Sensing	-0.172	-.103**	-0.137	-.082**	-0.035	-.021*	-0.248	-.121**	-0.143	-.071*	-0.102	-.051**
Conservatism	-0.520	-.261**	-0.078	-.039	-0.441	-.222**	-0.374	-.155**	-0.056	-.023	-0.318	-.132**
Literal	-0.158	-.306**	-0.094	-.182**	-0.064	-.124**	-0.109	-.173**	-0.028	-.045	-0.081	-.129**
Dominion	-0.103	-.142**	-0.165	-.226**	0.061	.084**	-0.023	-.026	-0.011	-.013	-0.012	-.013
Stewardship	0.247	.265**	0.247	.265**			0.293	.260**	0.152	.135**	0.140	.124**
Eschatology	-0.085	-.107*	-0.085	-.107*			-0.060	-.062	-0.012	-.012	-0.048	-.050*

Note. *b* = unstandardised coefficient; β = standardised coefficient; * $p < .05$; ** $p < .01$; *** $p < .001$.

Figure 1: Conceptualisation of the relationships of various predictors of environmentalism

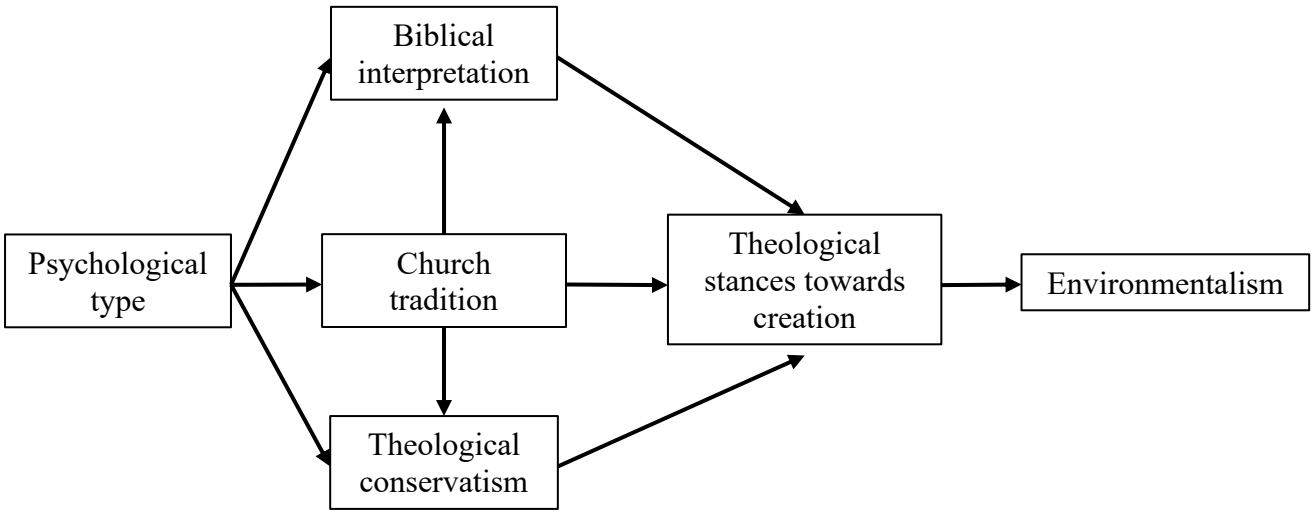
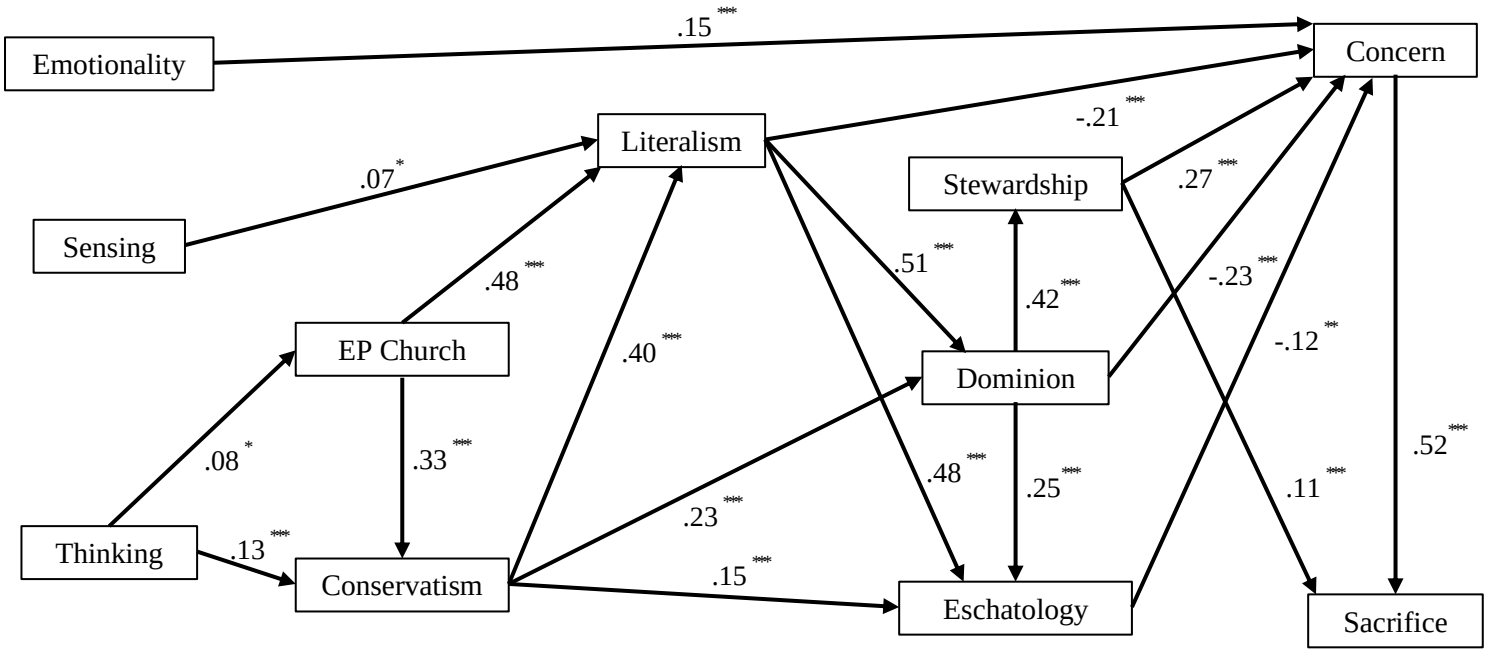


Figure 2: Path diagram with standardised regression coefficients.



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