

Article

Climate Change, Politics and Religion: Australian Churchgoers' Beliefs about Climate Change

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Abstract: A growing literature has sought to understand the relationships between religion, politics and views about climate change and climate change policy in the United States. However, little comparative research has been conducted in other countries. This study draws on data from the 2011 Australian National Church Life Survey to examine the beliefs of Australian churchgoers from some 20 denominations about climate change—whether or not it is real and whether it is caused by humans—and political factors that explain variation in these beliefs. Pentecostals, Baptist and Churches of Christ churchgoers, and people from the smallest Protestant denominations were less likely than other churchgoers to believe in anthropogenic climate change, and voting and hierarchical and individualistic views about society predicted beliefs. There was some evidence that these views function differently in relation to climate change beliefs depending on churchgoers' degree of opposition to gay rights. These findings are of interest not only for the sake of international comparisons, but also in a context where Australia plays a role in international climate change politics that is disproportionate to its small population.

Keywords: climate change beliefs; politics; cultural worldviews; religion; Christianity; churchgoing; Australia

1. Introduction

Given the increasing importance of climate change in American political debate, and the influence of religion in politics in that country, an emerging body of survey research has sought to understand the relationships between religion, politics and views about climate change and climate change policy responses among the American public. However, little comparative research has been conducted in other countries. This study draws on a 2011 survey of Australian churchgoers from some 20 denominations, to examine beliefs about climate change and political factors that explain variation in these beliefs.

Australia has a relatively small population, which is comparatively less religious on a range of measures than the population of the USA [1]. For example, 61% of the population identified as Christian and 22% with no religion in the 2011 Australian National Census of Population and Housing [2], and the proportion who claimed to attend religious services weekly declined to some 12% in 2013 [3]. Nevertheless, research on climate change, religion and politics in this nation is important not only in a domestic context but also internationally, for two main reasons: Australia's role in international climate change geopolitics, and the potential for religious institutions and their adherents to play a role in the development or otherwise of policy responses to climate change.

At 24 million, Australia's population is small on the global stage, however per capita greenhouse gas emissions are among the highest in the world [4]. Australia contributes further to climate change

by exporting coal to other countries and is currently the world's second largest coal exporter [5], with coal production increasing year on year. Australia is therefore an important player in the international politics of climate change. Moreover, the low religiosity of the Australian electorate does not translate into the absence of religion from the political sphere. Indeed, political scientists have documented its rising presence over the last few decades, particularly during and since the turn to conservative politics during the Prime Ministership of John Howard (e.g., [6–8]). The increasing prominence of religion in political life is relevant not only to the question of the engagement of religious elites with issues of public policy, but also to the potential mobilization of the religiously affiliated with regards to particular causes.

First, we summarize the body of survey research conducted internationally on Christianity and views about climate change. Next, we provide some context for the study of climate change beliefs and the churches in an Australian context, and we discuss values and beliefs about society using the cultural worldviews framework. Using a sample of some 1300 Australian churchgoers, we move on to describe patterns among different Christian traditions in beliefs about climate change—whether climate change is happening and what is causing it—and examine the extent to which political factors explain the variation in these beliefs. We finish by discussing our results in a national and international frame.

1.1. International Survey Research on Views about Climate Change

The emerging social scientific research on climate change and Christianity has mirrored the longer-standing research on Christianity and environmentalism more generally, that conservative Christians tend to take less pro-environmental stances than other Christians. Mostly conducted in the USA, this research has found that Christian “conservatism” or “fundamentalism”—whether measured as membership of conservative Protestant denominations, biblical literalism, or self-ascribed theological conservatism—is negatively associated with environmentalism across a range of measures (e.g., [9–13]). These patterns have also been found for belief in human-caused climate change and degree of concern about climate change [14,15] and support for international and domestic policy action [16]. The link between American evangelicalism and affiliation or alignment with the Republican Party is well established and persistent (see Pelz and Smith for an intergenerational analysis [17]), and political conservatism accounts for some of the distinction between evangelicals and other Americans in their views on climate change [14–16]. Other factors include evangelicals' beliefs about the end times [18], weaker biospheric/altruistic values [14], and theologically- and politically-fueled distrust of international institutions and international cooperation [16]. However, there is also a diversity of positions on climate change among US evangelicals, with fault lines between evangelical elites who support action on climate change and the Christian Right who oppose it or at least don't want to be distracted by it [19,20]. Moreover, young evangelicals appear to be more concerned about climate change and other environmental issues than their older counterparts [21].

Findings about the relationships between Christian conservatism and views about climate change have been replicated in Australian data. Australian Christians are less concerned about climate change than non-Christians [22] but when it comes to comparisons between churchgoing Christians and the broader Australian population, there is little difference in beliefs and level of concern regarding climate change [23,24]. Churchgoers from evangelical and Pentecostal churches have tended to be somewhat less concerned than churchgoers from other traditions [23,25], which can be explained by stronger “dominion” views among evangelicals and Pentecostals about humanity's right to rule over nature [25]. The contribution of political factors to churchgoers' views on climate change, and the ways in which these factors interact with religious factors, has not to our knowledge previously been examined in an Australian context.

1.2. Climate Change Politics and the Australian Churches

Political commentary on climate change has been strongly polarized in Australia, and climate change politics have played at least some role in the demise and/or rise of most prime ministers

and incumbent federal governments in recent years. From the defeat of the conservative Coalition government in 2007 and the election of a progressive Labor government with a mandate to ratify the Kyoto Protocol, to the subsequent deposition of Labor Prime Minister Kevin Rudd by his deputy Julia Gillard due in part to Rudd's prosecution of proposed climate change and resource extraction policies, followed by a change of government back to the Coalition and subsequent repeal of a newly implemented carbon tax, climate change has loomed large in Australian political machinations for more than a decade (see [26] for a thorough explanation of this territory).

Unsurprisingly, given this political context, Australians' views about climate change are strongly related to political preferences and voting behaviors [27–31], similar to partisan divides in the United States [32] and the United Kingdom [33], and longitudinal research suggests that the direction of influence is that voting behavior influences climate change beliefs [34]. Over the last decade, the ever-strengthening scientific evidence of human impacts on the global climate and the increasing urgency to act has not been paralleled by public perceptions. The vast majority of Australians believe the climate is changing, but only half believe that the change is mainly attributable to human activity and a further quarter agree that the change is partially attributable to human activity. Belief in human-induced climate change reduced from 2008 to 2011 but has stabilized since then [27,28], and has been at similar levels to the United Kingdom and the USA [35].

The churches have by no means been absent in political debates about the climate. In keeping with international trends, among the Catholic and mainstream Protestant church denominations in Australia there is evidence of increasing concern about the environment and the relationships between environmental degradation and human flourishing (see Douglas for an overview [36]), but there has not been comparable engagement in the other Protestant churches [23]. Starting in the early 2000s, the Catholic, Anglican and Uniting Church denominations and the National Council of Churches each produced statements concerning climate change, which call upon their adherents, the public at large and governments at various levels to care for the Earth and to respond with generosity to human communities most affected by climate change. Action on climate change has arguably been the strongest in the Uniting Church, which is a union of Methodist, Congregational and Presbyterian churches, and climate change advocacy has been a key feature of political engagement from national- and state-level Uniting Church structures since the new millennium. This activity has included submissions to proposed legislation, meetings with parliamentarians, the preparation of election resources for church members, endorsement of civil society efforts, and encouragement of church members to participate in letter writing campaigns and rallies [37]. Given the implications of climate change for the global poor, and at the urging of international church partners, many Australian Christian international aid and development organizations, which are either a part of the institutional churches or work closely with them (e.g., Act for Peace, World Vision, Caritas, Baptist World Aid, TEAR Australia, UnitingWorld), are also actively engaged in raising awareness about climate change and/or in public policy-related advocacy.

Among the institutional religions and parachurch organizations that are politically active in Australia there is little evidence of direct opposition to policies or proposed policies that proactively respond to climate change. However in the brief overview presented here, some comment on the so-called "Christian Right" in Australia is needed. The rise of this movement over the last few decades—which is linked to the growth of Pentecostalism, has connections with the Christian Right in the United States and is typified by parachurch organizations such as the Australian Christian Lobby—has elicited considerable comment among Australian political scientists, although the extent of its influence in electoral and non-electoral politics is debated [6,8,38–40]. The Christian Right has tended to engage on a narrow platform of issues concerning same-sex marriage, abortion, and the rights of religious organizations to discriminate in their employment practices [38,40,41]; engagement on environmental matters appears to have been very limited. However, it is worth noting that there are connections between the Christian Right and mining interests and think tanks [38,40], the likes of which have themselves pushed against action to address climate change [42]. Likewise, the alignment

of the Christian Right with conservative political parties is relevant to climate change in a context where progressive and conservative parties inhabit such polarized policy positions on climate change.

This question of political alignment, and the reasons for and implications of it when it comes to climate change, is also relevant to religious organizations beyond the Christian Right. The Australian churchgoing population at large tends to vote for conservative parties, and although the highest Labor vote is among Catholics [43], this vote has declined from its traditionally strong base and even reversed in recent years, even while the majority of Catholics continue to identify as Labor [1]. Multivariate analysis of Australian Election Study data has demonstrated that net of other demographic and background factors (including political party identification), there has been a consistent positive association between religious service attendance and voting for the Coalition since 2007, which appears to be associated with the prominence of issues such as same-sex marriage in public debate and the mobilization of churchgoers in relation to these issues [1]. Moreover, churchgoers tend to rate such issues as among those matters of public policy on which their church denominations should be most active, in contrast to environmental issues, which rank much lower [44]. This increasingly conservative political alignment of churchgoers, for reasons to do with sexuality and the family, may have implications for churchgoers' climate change views, if they take their climate change cues from politicians who they trust for other reasons.

1.3. Values and Beliefs about Society and Stances on Climate Change

The activity of church and parachurch organizations on climate change, and alignments between these institutions and political parties on various issues, is one entry point to the examination of the political factors that influence views about climate change among religious constituencies. Another entry point is the lens of generalized values and beliefs about society using the cultural worldview framework of Douglas and Wildavsky [45], which concerns the basic sets of values that underlie people's orientation towards the social world. Cultural worldviews have been widely used in empirical social scientific studies as a framework to understand people's beliefs and perceptions of a variety of contemporary issues such as vaccination [46], ozone depletion [47], genetically modified organisms [48], nuclear energy [49] and climate change (e.g., [14,50,51]). Examining generalized values and beliefs about society in a study of politics and climate change is particularly germane in a religious context, given that religions are understood to be a rich source of values and to shape the basic views of their adherents via socialization (e.g., [52–54]).

The cultural worldview framework distinguishes people on two dimensions: as hierarchical *versus* egalitarian (the "grid" dimension) and as individualist *versus* communitarian (the "group" dimension). Hierarchical people believe strongly in the wisdom and necessity of social stratification, whereas egalitarians cherish equal opportunities. Individualists believe that individual people and families must fend for themselves, whereas communitarians believe that citizens in a healthy society maintain strong bonds of trust and commitment. These viewpoints help people to align themselves with like-minded peers, authorities, and organizations whose positions they will use to shape their own stances on sociopolitical issues [55].

For climate change, Kahan and colleagues found evidence to support their prediction that people who hold a "hierarchical, individualistic" worldview tend to be skeptical of environmental risks because such risks would encourage restrictions on commerce and industry, forms of behavior that hierarchical individualists value [50]. In contrast, persons who hold an "egalitarian, communitarian" worldview tend to be suspicious of commerce and industry, to which they attribute social inequity, and find it easier to believe those forms of behavior are dangerous and worthy of restriction. Similarly, using a simple four-item representation of the worldviews categories on a large national Australian sample, Leviston and colleagues found egalitarian communitarians to be more concerned than hierarchical individualists about climate change risks [28].

Research using the cultural worldviews framework to address generalized values and beliefs about society has found that dimensions of the worldviews better predict climate change risk

perceptions than political orientation measures [28,50]. Indeed, cultural worldviews better predict political opinions than do conventional conservative-liberal self-identification for a range of policy issues [56]. However, cultural worldviews and political orientation are not independent, indeed sometimes the scales used to measure individualism look very much like measures of political conservatism as expressed in the U.S. Similarly, measures of egalitarianism look like measures for political progressives [57]. Empirical research, however, does not always find the expected relationships between worldviews, political orientation and views on a given issue. The problem is that people with low levels of political knowledge do not necessarily have opinions on particular issues that align with their general political orientation [56]. The connection between a policy issue and both cultural worldviews and political orientation only seems to be made by those with strong political knowledge [57] or when the issue has been politicized [58]. In the present research we are able to bring into the analysis measures of hierarchical and individualistic views about society together with voting patterns and religious orientation to examine their combined effect on climate change beliefs.

1.4. Hypotheses

In this study, we concentrate specifically on beliefs about whether or not climate change is happening and whether or not it is human-caused. We examine how these beliefs vary across different Christian traditions and how they are influenced by political factors and hierarchical and individualistic views about society. In line with previous survey findings and with the patterns of engagement on climate change by the institutional churches in Australia, we hypothesized that churchgoers with a mainstream religious affiliation (Catholic, Anglican, Uniting) would be more likely than those from evangelical and Pentecostal traditions to believe that climate change is real and human-caused (Hypothesis H1). We also expected that churchgoers with conservative political (voting) preferences and those with more individualistic (less communitarian) and more hierarchical (less egalitarian) views would be less convinced of human-caused climate change (Hypothesis H2). Voting preferences and views about society would explain some of the differences between Christian traditions (Hypothesis H3).

The study also provided an opportunity to examine more complex interactions between religion and politics in influencing climate change beliefs. As explicated above, same-sex marriage and issues of the family are prominent both in churchgoers' preferences concerning the political domains in which their churches should engage and in political engagement by some organized religious groups. It is possible that the influence of voting preferences and hierarchical and individualistic views on climate change beliefs may differ between churchgoers who are strongly opposed to progressive policies on marriage/family and churchgoers who support or at least feel less strongly about these policies. A churchgoer who votes conservative because they oppose same-sex marriage would not necessarily be expected to align with conservative party positions on climate change. In this case, an interaction between voting behavior and views about marriage/family would be in evidence; voting would be a weaker predictor of climate change beliefs among churchgoers who are opposed to progressive marriage/family policies. If, however, as McCrea and colleagues found [34], voters take their cues about climate change from the political parties with which they align, whatever the reason for that alignment, no interaction between voting and opposition to same-sex marriage would be expected. This dynamic would instead be manifest in the interaction between opposition to same-sex marriage and hierarchical and individualistic views about society. If churchgoers who oppose same-sex marriage take their cues on climate change from conservative political commentators, it might be expected that their hierarchical and individualistic views would more weakly influence their opinions on climate change.

2. Materials and Methods

2.1. Data Collection and Sample

The sample is from the National Church Life Survey (NCLS), a local church-based survey which surveys Christian churchgoers across Australia in approximately 20 denominations every five years. Churchgoers complete a hard copy form at their church, after or during a worship service. The 2011 NCLS Attender Survey consisted of a main survey which was completed by most participants and a series of smaller surveys, each of which was a random sample of the total participants. Small Sample Attender Survey O covered the majority of the questions from the Main Attender Survey, together with a suite of questions on views about politics and social issues.¹

Catholic NCLS data are random samples, however in Protestant denominations there are self-selection biases in church participation related to church size, locality and theological tradition, with larger urban churches with an evangelical flavor over-represented in the datasets. Nevertheless, the datasets have good national coverage and denominational diversity, and churches from a wide diversity of traditions do participate. The relatively low level of religiosity of the Australian population means that it is rarely possible to use national population studies to address research questions that concern diversity among people who are religiosity active—subsample sizes are too small. The NCLS fills a particular niche in this regard. In the present case, we are in a good position to examine any differences in climate change beliefs among the institutional churches. For a more detailed explanation of the NCLS methodology, participation rates for 2011 and the strengths and limitations of the NCLS datasets, see Pepper and colleagues [59,60].

The Survey O dataset [61] comprised churchgoers ($N = 1874$) aged 15 years and over who were a random subsample of the total 2011 NCLS data supplemented with respondents from extra Australian Christian Churches (ACC, previously known as Assemblies of God) who conducted Church Life Surveys in late 2013/early 2014 (total N of approximately 270,000 people from 3200 congregations and 23 denominations). The final sample size was $N = 1325$, following list-wise deletion of cases with missing values for the variables of interest in the current analyses. Missing cases were inflated compared with other attender sample surveys in the 2011 NCLS, due to a split layout on the back of the survey form, which appears to have resulted in some respondents neglecting to complete the final questions. Compared with the missing respondents, the sample was more educated (36% of respondents had school as their highest level of education and 16% held a postgraduate degree, compared with 50% of missing respondents whose highest qualification was school), younger (the mean age was 53 years ($SD = 19$), compared with a mean age of 62 ($SD = 19$) for missing respondents) and more likely to be Australian-born (18% of respondents were born in a non-English-speaking country, compared with 25% of missing respondents). Nevertheless, the final sample still exhibited considerable demographic diversity. Table 1 compares the demographics of the sample with the demographic profile for the estimated churchgoing population as a whole.

¹ Most NCLS datasets are not open source. Requests for access may be sought by contacting info@ncls.org.au.

Table 1. Demographics of sample and estimated churchgoing population.

Variable	Attender O Final Sample	Estimated Churchgoing Population ¹
Age %		
15–29	14	14
30–49	27	25
50–69	38	36
70+	21	25
Gender %		
Female	59	60
Male	41	40
Country of birth %		
Australia	72	67
Other English-speaking	11	10
Non-English-speaking	18	22
Educational attainment %		
School	36	42
Trade certificate/diploma	25	25
University degree	39	33
Denomination %		
Anglican	19	12
Baptist/Churches of Christ	13	10
Catholic	41	47
Pentecostal	7	13
Uniting	9	8
Other Protestant	11	10

¹ Source: [60].

2.2. Measures

Climate change beliefs: Belief about climate change was the dependent variable used in the analysis. Responses on climate change belief measures have been shown to be highly susceptible to the wording of the question [62]. For the 2011 NCLS, for the sake of national comparisons, a measure was sourced from Leviston and Walker [63] which has now been used by the Commonwealth Scientific and Industrial Research Organisation (CSIRO) in an annual survey of the Australian population every year since 2010. Respondents were asked whether or not they thought climate change is happening and whether it is happening due to “natural fluctuations in Earth’s temperatures” or “humans are largely causing it”.

Political preferences: Respondents were asked to indicate their voting patterns in federal elections in the lower house over the last 10 years. Labor and Democrats/Greens were combined into a “progressive” political grouping, and Liberal/National (the Coalition) and Christian Democratic Party/Family First into a “conservative” grouping. These labels are broadly indicative of the policy positions of the groupings; the extent to which the political parties, the politicians that comprise them, and the people who vote for them vary on progressivism/conservatism is more complex than simple labels. The remaining responses were classified as “other”.

Hierarchical and individualistic views: Items from a short form of Kahan’s cultural worldviews instrument [64] developed by John Gastil for Australian samples were used to measure individualism and hierarchy dimensions [65]. Scale scores were calculated computing mean scores on the constituent items. The scales were correlated at $r = 0.507$ ($p < 0.001$).

Opposition to gay rights: To test whether the influence of voting preferences and hierarchical and individualistic views on climate change varied depending on the degree of opposition to progressive

policies on marriage/family, a two-item index of opposition to gay rights was used. The mean of degree of opposition to same-sex marriage and opposition to adoption by same-sex couples was computed.

The item wordings and descriptive statistics for climate change beliefs, voting pattern, hierarchical and individualistic views and opposition to gay rights are given in Table 2.

Table 2. Item wordings and descriptive statistics for climate change beliefs, voting pattern, hierarchical and individualistic views and opposition to gay rights.

Climate Change Beliefs:
Which of the following statements best describes your thoughts about climate change?
I don't think that climate change is happening (7.8%)
I have no idea whether climate change is happening or not (7.7%)
I think that climate change is happening, but it's just a natural fluctuation in Earth's temperatures (35.7%)
I think that climate change is happening, and I think that humans are largely causing it (48.8%)
Voting Pattern:
What have been your voting patterns over the last 10 years in lower house Federal elections?
Generally Labor (22.6%)
Generally Liberal/National Party (42.2%)
Generally Democrats or Greens (1.6%)
Generally Christian Democratic Party or Family First (6.6%)
Generally One Nation (0.3%)
Generally some other party or independents (1.5%)
I have frequently voted differently (13.4%)
I didn't vote (11.8%)
Individualistic View of Society:
3 items (M = 3.12, SD = 0.84, range 1–5, Cronbach's alpha = 0.737) comprising:
Please indicate how much you agree with each statement (1 = strongly disagree, through to 5 = strongly agree):
The government interferes far too much in our everyday lives (M = 3.22, SD = 1.00)
It's not the government's business to protect people from themselves (M = 2.94, SD = 1.08)
The government should stop telling people how to live their lives (M = 3.21, SD = 1.03)
Hierarchical View of Society:
3 items (M = 3.09, SD = 0.92, range 1–5, Cronbach's alpha = 0.703) comprising:
Please indicate how much you agree with each statement (1 = strongly disagree, through to 5 = strongly agree):
We have gone too far in pushing equal rights in this country (M = 3.05, SD = 1.15)
Society as a whole has become too soft and feminine (M = 2.97, SD = 1.12)
It seems like Indigenous Australians, women, homosexuals and other groups don't want equal rights, they want special rights just for them (M = 3.23, SD = 1.22)
Opposition to Gay Rights:
2 items (M = 3.95, SD = 1.12, range 1–5, Cronbach's alpha = 0.829) comprising:
Please indicate how much you agree with each statement (1 = strongly agree, through to 5 = strongly disagree):
Same-sex couples should be allowed to marry (M = 4.00, SD = 1.27)
Do you approve or disapprove of allowing same-sex couples to adopt? (1 = strongly approve, through to 5 = strongly disapprove) (M = 3.91, SD = 1.16)

Christian tradition: Two alternative measures of Christian tradition were used in the present study: the first concerned the denomination of the church that the respondent attended, and the second was the respondent's identification with types of approaches to faith.

Denomination was an attribute of the respondents' local church. Some 41% of the sample attended a Catholic church, 19% Anglican, 13% Baptist or Churches of Christ (the two denominations were grouped due to similarities in structure and evangelical heritage), 9% Uniting Church, 7% Pentecostal church (the largest movement of which is the ACC), and the remaining 11% attended a variety of smaller Protestant denominations (the largest of which was Lutheran) or independent churches.

Respondents were asked to indicate up to two approaches to matters of faith from a list of 11 with which they identified. In the present analysis, after an examination of the approaches to

faith that tend to cluster together, the following were grouped to form six dichotomous approaches: “Catholic or Anglo-Catholic” (40% of respondents), “Evangelical” or “Reformed” (24%), “Charismatic” or “Pentecostal” (17%), “Moderate” or “Traditionalist” (14%), “Liberal” or “Progressive” (6%), and “I do not identify with such descriptions” (19%).

Demographic controls: The demographic controls were age, gender, education, country of birth (Australia, other English-speaking country, non-English-speaking country) and highest level of education (school, trade certificate/diploma/associate diploma, university degree, postgraduate qualification).

2.3. Analysis

The analysis proceeded as follows, using IBM SPSS statistics package version 22. First, the bivariate relationships between climate change belief, voting pattern, hierarchical and individualistic views, opposition to gay rights, and the denominations and approaches to faith were examined (H1 and H2).

Second, binary logistic regressions were performed with climate change belief as the dependent variable, dichotomized into the view that climate change is happening and is human-caused, *versus* all other views (reference category). In the first step, to test H1 with the demographic variables included, denomination and approaches to faith were included in the model, with regressions conducted separately for these two types of religion indicators (Model A1 for denomination, Model B1 for approach to faith). In the second step, voting pattern and hierarchical and individualistic views were added to the regression models (models A2 and B2, to test H2 at the multivariate level as well as H3). In the third step, opposition to gay rights and its interactions with voting and hierarchical and individualistic views were added (models A3 and B3). Demographic controls were included in all regressions. Non-categorical variables (age, individualism, hierarchy and opposition to gay rights) were standardized prior to entry in the regression models.

3. Results

3.1. Bivariate Results

As shown in Table 3, there were differences in climate change belief between the denominations ($\chi^2 = 49.0$; $df = 15$; $p < 0.001$). In support of Hypothesis H1, the Anglican, Uniting and Catholic churches had higher proportions of people believing in anthropogenic climate change, whereas the Baptist/Churches of Christ, Pentecostal and Other Protestant denominations had lower proportions. Moreover, the beliefs of Sydney Anglicans, who belong to a diocese that is recognized across the worldwide Anglican Communion as having a strongly evangelical character, did not differ significantly from other Anglicans (58% of both groups believed in anthropogenic climate change). When it came to identification with approaches to faith, and in line with the results for Pentecostal denominations, those who identified as charismatic or Pentecostal were less likely to believe in anthropogenic climate change than people who identified with other approaches (note however that these approaches to faith were not mutually exclusive). Identification with liberal or progressive approaches was most strongly associated with belief in anthropogenic climate change.

Hypothesis H2 was also supported. Voting was associated with climate change beliefs ($\chi^2 = 157.3$; $df = 6$; $p < 0.001$), with some 7 in 10 progressive voters agreeing that climate change was happening and caused by humans, compared with a third of conservative voters. There was also an association between climate change beliefs and both individualism (effect size $\eta^2 = 0.086$) and hierarchy (effect size $\eta^2 = 0.119$): respondents who felt that climate change was not happening scored highest on both scales and those who felt that it was happening and caused by humans scored lowest. Individualism was also associated with voting (mean scores of 2.89 for progressive voters, 3.29 for conservative voters and 3.04 for other respondents, effect size $\eta^2 = 0.040$) as was hierarchy (mean scores of 2.77 for progressive voters, 3.32 for conservative voters and 2.96 for other respondents, effect size $\eta^2 = 0.064$).

Table 3. Bivariate relationships between climate change beliefs and other study measures.

	Climate Change not Happening	Don't Know	Climate Change Happening, Natural	Climate Change Happening, Human-Caused
Denomination %				
Anglican	5.1%	6.3%	30.4%	58.1%
Baptist/Churches of Christ	9.1%	9.7%	39.2%	42.0%
Catholic	8.9%	6.1%	32.9%	52.1%
Pentecostal	10.5%	14.7%	40.0%	34.7%
Uniting	6.2%	7.1%	31.9%	54.9%
Other Protestant	6.1%	9.5%	51.0%	33.3%
Approach to Faith %				
Catholic/Anglo-Catholic	8.2%	6.7%	33.0%	52.2%
Evangelical/Reformed	7.0%	7.0%	38.9%	47.2%
Charismatic/Pentecostal	11.1%	11.9%	38.1%	38.9%
Moderate/Traditionalist	9.7%	4.3%	40.9%	45.2%
Liberal/Progressive	2.4%	7.1%	29.8%	60.7%
Don't identify	7.3%	9.3%	30.8%	52.6%
Voting %				
Progressive	5.3%	5.6%	19.6%	69.5%
Conservative	9.9%	7.7%	50.0%	32.4%
Other	6.1%	9.5%	24.3%	60.1%
Mean Scores				
Individualism	3.61	3.20	3.33	2.89
Hierarchy	3.56	3.22	3.39	2.77
Opposition to gay rights	4.34	4.18	4.21	3.67

The strongest progressive vote was among Catholics, followed by Uniting Church and Anglican respondents, as shown in Table 4 ($\chi^2 = 52.2$; $df = 10$; $p < 0.001$). The strongest conservative vote was among Baptist/Churches of Christ respondents, followed by Pentecostal and Other Protestant churches. Conservative voting was high in the Uniting Church, but when those who didn't vote were excluded (voting is compulsory in Australia, and a high proportion of those who indicated that they didn't vote were too young to vote, and/or were born outside Australia so may not have been Australian citizens), the conservative vote was similar among Pentecostals and Baptist/Churches of Christ respondents at approximately 70%, compared with around 55% in Anglican and Uniting churches and 45% in Catholic churches. Individualism and hierarchy scores were highest among Baptist/Churches of Christ respondents and Pentecostals, but the effect sizes for denomination were low ($\eta^2 < 0.02$). The patterns for approaches to faith were that the highest progressive vote was among those who identified as liberal or progressive, and the highest conservative vote was among those who identified as evangelical or reformed, followed by charismatic/Pentecostal respondents and those who identified as moderate or traditionalist.

Opposition to gay rights was weakly positively correlated with individualism ($r = 0.151$, $p < 0.001$) and moderately positively correlated with hierarchy ($r = 0.406$, $p < 0.001$). The mean scores on opposition to gay rights were 3.52 for progressive voters, 4.27 for conservative voters and 3.77 for other respondents (effect size $\eta^2 = 0.082$).

Table 4. Bivariate relationships between political measures and religion measures.

	Voting %			Mean Score		
	Progressive	Conservative	Other	Individualism	Hierarchy	Opposition to Gay Rights
Denomination						
Anglican	25.3%	48.2%	26.5%	2.97	2.96	3.99
Baptist/Churches of Christ	12.5%	61.9%	25.6%	3.05	3.29	4.34
Catholic	31.4%	40.9%	27.7%	3.20	3.04	3.77
Pentecostal	11.6%	55.8%	32.6%	3.12	3.29	4.41
Uniting	27.4%	52.2%	20.4%	3.18	2.99	3.51
Other Protestant	15.6%	55.8%	28.6%	3.15	3.19	4.16
Approach to Faith						
Catholic/Anglo-Catholic	32.0%	43.2%	24.8%	3.21	3.06	3.80
Evangelical/Reformed	17.4%	59.8%	22.8%	2.96	3.16	4.32
Charismatic/Pentecostal	21.1%	49.6%	28.3%	3.12	3.24	4.29
Moderate/Traditionalist	25.3%	47.8%	26.9%	3.29	3.23	4.00
Liberal/Progressive	39.3%	35.7%	25.0%	3.04	2.69	3.30
Don't identify	22.7%	40.5%	36.8%	3.09	2.99	3.72

3.2. Multivariate Results

As shown in Model A1 (Table 5), when demographics were controlled, and compared with respondents from the Uniting Church, the odds of believing in anthropogenic climate change decreased by approximately two-thirds for Pentecostals and for Other Protestants, and over half for respondents from Baptist or Churches of Christ churches. Anglicans and Catholics were not statistically different to people from the Uniting Church. Thus, Hypothesis H1 was confirmed at the multivariate level. When approaches to faith were included in the model instead of denomination (Model B1, Table 6), identifying as liberal or progressive increased the odds of believing in anthropogenic climate change by almost 90%. Identifying as charismatic or Pentecostal decreased the odds by almost a third.

Table 5. Prediction of belief in anthropogenic climate change beliefs from demographics, denomination, and political factors.

	Model A1			Model A2			Model A3		
	B	S.E.	Exp(B)	B	S.E.	Exp(B)	B	S.E.	Exp(B)
Constant	−0.208	0.225	0.812	0.633 *	0.272	1.883	0.480	0.280	1.616
Age	−0.297 ***	0.061	0.743	−0.133	0.070	0.876	−0.098	0.071	0.891
Female	0.143	0.118	1.154	0.053	0.130	1.055	0.057	0.131	1.058
Education: school (ref)									
Trade cert./diploma	0.568 ***	0.151	1.764	0.579 ***	0.165	1.784	0.593 ***	0.166	1.810
Degree	0.699 ***	0.155	2.012	0.585 ***	0.173	1.795	0.586 ***	0.175	1.797
Postgraduate	1.155 ***	0.180	3.173	0.849 ***	0.201	2.338	0.839 ***	0.202	2.315
Birth: Australia (ref)									
Other English-speaking	−0.075	0.191	0.928	−0.287	0.212	0.751	−0.285	0.213	0.752
Non-English-speaking	0.328 *	0.159	1.388	0.198	0.173	1.218	0.265	0.174	1.303
Denom.: UCA (ref)									
Anglican	−0.126	0.239	0.882	−0.082	0.263	0.921	−0.029	0.270	0.972
Baptist/Ch. of Christ	−0.754 **	0.256	0.471	−0.465	0.280	0.628	−0.368	0.287	0.692
Catholic	−0.336	0.219	0.715	−0.399	0.241	0.671	−0.389	0.246	0.677
Pentecostal	−1.137 ***	0.305	0.321	−0.851 **	0.329	0.427	−0.712 *	0.335	0.491
Other Protestant	−1.086 ***	0.271	0.338	−0.988 ***	0.294	0.372	−0.912 **	0.300	0.402
Voting: Progr. (ref)									
Conservative				−1.300 ***	0.166	0.273	−1.226 ***	0.170	0.294
Other				−0.331	0.185	0.718	−0.290	0.189	0.748

Table 5. Cont.

	Model A1			Model A2			Model A3		
	B	S.E.	Exp(B)	B	S.E.	Exp(B)	B	S.E.	Exp(B)
Individualism				−0.214 **	0.076	0.807	−0.244 **	0.077	0.784
Hierarchy				−0.481 ***	0.077	0.618	−0.421 ***	0.082	0.657
Opp. to gay rights							−0.170	0.143	0.844
Voting by Opp.									
Conservative by Opp.							0.062	0.178	1.064
Other by Opp.							−0.079	0.184	0.924
Individualism by Opp.							0.051	0.081	1.052
Hierarchy by Opp.							0.149	0.080	1.160

χ^2 : Model A1 $\chi^2 = 125.1$; $df = 12$; $p < 0.001$; Model A2 $\chi^2 = 325.5$; $df = 16$; $p < 0.001$; Model A3 $\chi^2 = 340.3$; $df = 21$; $p < 0.001$. Pseudo R2 (Nagelkerke): Model A1 = 0.120; Model A2 = 0.290; Model A3 = 0.302. * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

Table 6. Prediction of belief in anthropogenic climate change beliefs from demographics, approaches to faith, and political factors.

	Model B1			Model B2			Model B3		
	B	S.E.	Exp(B)	B	S.E.	Exp(B)	B	S.E.	Exp(B)
Constant	−0.912	0.210	0.402	0.185	0.259	1.204	0.091	0.262	1.095
Age	−0.263 ***	0.061	0.768	−0.105	0.069	0.900	−0.072	0.071	0.931
Female	0.165	0.118	1.180	0.047	0.130	1.049	0.043	0.131	1.044
Education: school (ref)									
Trade cert./diploma	0.627 ***	0.151	1.873	0.608 ***	0.165	1.837	0.609 ***	0.166	1.839
Degree	0.777 ***	0.155	2.175	0.631 ***	0.172	1.880	0.620 ***	0.174	1.859
Postgraduate	1.216 ***	0.179	3.375	0.881 ***	0.199	2.413	0.863 ***	0.201	2.370
Birth: Australia (ref)									
Other English-speaking	−0.043	0.188	0.958	−0.208	0.208	0.812	−0.202	0.210	0.817
Non-English-speaking	0.347 *	0.158	1.415	0.214	0.172	1.238	0.278	0.173	1.321
Approach to faith:									
Catholic/Anglo-Catholic	0.313	0.174	1.368	0.098	0.189	1.103	0.064	0.191	1.066
Evangelical/Reformed	0.063	0.179	1.065	0.127	0.195	1.136	0.188	0.197	1.207
Charismatic/Pentecostal	−0.387 *	0.182	0.679	−0.430 *	0.197	0.650	−0.395 *	0.197	0.674
Moderate/Traditionalist	0.042	0.187	1.043	−0.012	0.203	0.988	−0.027	0.204	0.974
Liberal/Progressive	0.621 *	0.252	1.860	0.184	0.281	1.202	0.040	0.292	1.040
Don't identify	0.331	0.214	1.392	0.094	0.233	1.099	0.048	0.235	1.049
Voting: Progr. (ref)									
Conservative				−1.320 ***	0.165	0.267	−1.236 ***	0.170	0.291
Other				−0.362	0.185	0.696	−0.308	0.189	0.735
Individualism				−0.212 **	0.076	0.809	−0.239 **	0.077	0.787
Hierarchy				−0.482 ***	0.078	0.618	−0.423 ***	0.082	0.655
Opp. to gay rights							−0.200	0.143	0.818
Voting by Opp.									
Conservative by Opp.							0.081	0.178	1.084
Other by Opp.							−0.035	0.183	0.966
Individualism by Opp.							0.047	0.081	1.048
Hierarchy by Opp.							0.160 *	0.080	1.173

χ^2 : Model B1 $\chi^2 = 111.1$; $df = 13$; $p < 0.001$; Model B2 $\chi^2 = 313.6$; $df = 17$; $p < 0.001$; Model B3 $\chi^2 = 329.6$; $df = 22$; $p < 0.001$. Pseudo R2 (Nagelkerke): Model B1 = 0.107; Model B2 = 0.281; Model B3 = 0.294. * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

When voting and hierarchical and individualistic views were included in the denominational regression (Model A2, Table 5), the denominational differences were attenuated to an extent, in support of Hypothesis H3: Baptist/Churches of Christ churchgoers no longer differed from Uniting Church people and the odds ratios for Pentecostals and Other Protestants became somewhat larger. The political measures also attenuated the relationship with liberal/progressive approach to faith, but not the charismatic/Pentecostal approach to faith (Model B2, Table 6).

The main effects for the political variables were in the expected directions, consistent with Hypothesis H2. Voting for conservative political parties reduced the odds of believing in anthropogenic climate change by almost three quarters, a one standard deviation increase in hierarchy reduced them by almost 40 percent, and a one standard deviation increase in individualism reduced them by a fifth.

Addition of opposition to gay rights and its interactions with hierarchical and individualistic views and voting made a statistically significant but marginal change to the model fit. There was no interaction between voting and opposition to gay rights—the influence of voting on climate change beliefs did not vary with level of opposition to gay rights (Models A3 and B3). There was a weak positive interaction between hierarchy and opposition to gay rights, but only in the regression with approaches to faith (Model B3, Table 6). This indicates that, among people with stronger opposition to gay rights, hierarchy is a weaker predictor of their climate change views. Among people who scored at the mean value on opposition to gay rights, the log of the odds ratio for a one standard deviation increase on hierarchy was -0.423 , compared with -0.263 among people who scored one standard deviation above the mean on opposition to gay rights. The interaction between hierarchy and opposition to gay rights was just outside of statistical significance in the denominational regression (Model A3, Table 5). There was no interaction between individualism and opposition to gay rights.

The demographic predictors of belief in anthropogenic climate change were lower age, being born in a non-English-speaking country and higher levels of education, especially holding a postgraduate qualification, however once political variables were taken into account, the association with age and non-English background no longer remained.

4. Discussion

The results confirm that there are differences in climate change beliefs when it comes to different denominations and approaches to faith. It is Pentecostals and Protestants from the smallest Protestant denominations and independent churches who stand out as being least likely to hold the view that climate change is anthropogenic, and this remains the case when voting and hierarchical and individualistic views are taken into account. The “Other Protestant” grouping consists of people from a range of churches, and larger sample sizes would be required to better understand the results from these churches. People from Baptist churches and Churches of Christ are also less likely than Uniting Church people to believe in anthropogenic climate change, but this difference can be explained by political conservatism.

Comparing the analysis for denominations and identification with approaches to faith appears to indicate that it is certain types of evangelicalism, rather than identifying as evangelical as such, that relate to climate change beliefs. Identifying as evangelical or reformed did not predict climate change beliefs, whereas belonging to the Baptist or Churches of Christ denominations did. Moreover, churchgoers from the evangelical Sydney Anglican Diocese did not differ from other Anglicans in their climate change beliefs.

The relationships between the religion factors, political factors and beliefs about climate change give broadly similar results to those found in the United States, inasmuch as Christians from conservative Protestant denominations are less pro-environmental than other Christians, and that political factors are partially an explanation for these differences (e.g., [14–16]). However, in an Australian context, it appears to be Pentecostalism in particular where skepticism about the causes of climate change is prevalent. This finding mirrors the connections between Pentecostalism and the Christian Right and the ways in which the latter has aligned with conservative political agendas (e.g., [40])—although the distinctiveness of Pentecostalism (and of the smallest Protestant denominations and independent churches) with regard to their climate change beliefs remained even when several measures of political conservatism were taken into account in the analyses. The results also mirror a distinct lack of engagement from the Pentecostal churches, and the parachurch organisations with which they are associated, on climate change and environmental concerns more generally. NCLS data concerning institutional activity by churches has shown that compared with

other denominations, the Pentecostal churches and their clergy typically occupy last or close to last position on a range of measures of environmental activity [66,67]. Relatedly, ecotheological beliefs about the relationships between God, humanity and the natural world are important predictors of environmental attitudes (e.g., [68–70]) and help to explain denominational differences in Australia on an index of views about climate change [25]. Belief that humanity has the right to rule over nature—a perspective which impedes environmental concern—is more prevalent among Australian Pentecostals than among the mainstream Christian denominations [25]. It may well be that differences on climate change beliefs between Christian traditions can be fully explained by the combination of political and ecotheological factors—this remains a subject for further research.

The associations between political factors and climate change beliefs appear to be similar among Australian churchgoers and among the broader Australian population. There are moderate differences between conservative and progressive voters, likewise, individualism and hierarchy are strongly associated with disbelief in anthropogenic climate change (as Leviston and colleagues demonstrated [27,28]). An intriguing finding is the relatively small variation between denominations on individualism and hierarchy, compared with larger differences on voting patterns between denominations. This suggests that the political differences between denominations are not as much a question of a broader worldview as they are reflective of longer-standing political identifications as well as hot-button issues such as marriage and family. Moreover, consistent with McCrea and colleagues' findings [34], the lack of interaction between voting and opposition to gay rights suggests that churchgoers simply take their cues about climate change from political opinion leaders who they support and trust, whatever the reason for that support/trust. Explicit engagement with climate change has generally been lacking from the leadership of Pentecostal and evangelical Protestant churches [23]. There has not been open polarization among the leadership, in contrast to the USA [19,20]. Because action on climate change is so politicized on party lines, Christian leaders who have conservative views of marriage and the family but are concerned for those affected by climate change face a dilemma which might suggest that it is easier to ignore climate change. The alternative, however, is to use their influence within conservative parties to advocate to these parties to change their position and become more proactive on climate change issues.

For churchgoers who are not as opposed to gay rights, belief in anthropogenic climate change is related to a more egalitarian (less hierarchical) worldview. The hierarchical-egalitarian dimension concerns normative beliefs about inequalities between different social groups with egalitarians seeing structural inequality as less acceptable. It may be that there are two different dynamics operating. One dynamic is for people to respond to issues according to their generalized values and beliefs about society whereby an egalitarian view is associated with both more progressive views on gay rights and concern for those affected by climate change. People operating within this dynamic would be expected to hold more egalitarian views on a range of other topics. A second dynamic might be a response to hot topics and political stances of religious leaders and political leaders that they trust in relation to current media foci. In this case their opinions can be quite clear-cut but do not necessarily reflect a consistent worldview. People who had strongly negative views about gay rights and climate change but did not have an underlying hierarchical view might reflect this dynamic. The suggestion of two different dynamics is consistent with previous findings whereby people without a strong knowledge of politics did not respond in a consistent way across issues [56,58]. In those previous studies cultural worldviews were more consistent predictors of responses to various issues than was political orientation. In the present results we are suggesting that worldviews might not be consistent either. However, this is speculation and requires further research. Moreover, the finding in the present study for the interaction between hierarchical views and opposition to gay rights was weak, and the individualism and hierarchy scales were short, containing only three items each. The research should be repeated using more robust scales, and examining policy views on a wider range of social issues, to understand how hierarchical-egalitarian views operate among the different churches in Australia.

Future work would also address the particular sample limitations of the present study—namely the lower response rate and demographic skew of the respondents.

The years since the 2011 NCLS have seen increased engagement with climate change by the institutional churches, most notably by Catholic institutions in the lead up to and following the release of the papal cyclical *Laudato Si'*, and by new parachurch initiatives such as the evangelical Hope for Creation and Common Grace climate change campaigns. Examining how such engagement is reflected in the views and actions of churchgoers at large is therefore of interest. Future work should also attend to a range of views about climate change, such as support for various climate change policy measures, not only climate change beliefs. In a context where the window for mitigating the worst excesses of climate change is shrinking, the sharpening of a research agenda around specific policy matters that are particularly relevant in an Australian context, such as whether new coal mines should be opened, is important. Given the role of Australia in international climate politics, it is also where climate change policy and church activity in relation to such policy gains international significance.

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