Global Environmental Change 33 (2015) 154–164

Contents lists available at ScienceDirect

Global Environmental Change

journal homepage: www.elsevier.com/locate/gloenvcha

Scepticism in a changing climate: A cross-national study

Bruce Tranter *, Kate Booth

University of Tasmania, Australia

ARTICLE INFO

Article history:
Received 4 October 2014
Received in revised form 29 April 2015
Accepted 11 May 2015
Available online 17 June 2015

Keywords:
Climate change
Climate change sceptics
Partisans
CO_2 emission
Cultural values
Postmaterial values

ABSTRACT

Despite the findings of climate scientists, the proportions of climate sceptics appear to be increasing in many countries. We model social and political background, value orientations and the influence of CO_2 emissions per capita and vulnerability to climate change upon climate scepticism, drawing upon data from the International Social Survey Programme. Substantial differences in the levels of climate scepticism are apparent between nations. Yet cross national data show that climate sceptics are not merely the mirror image of environmentalists. Typical predictors of environmental issue concern, such as education level, postmaterial value orientations and age are poor predictors of climate scepticism. Affiliation with conservative political parties, gender, being unconcerned about 'the environment' or having little trust in government are consistent predictors of scepticism. Climate change scepticism is also correlated positively with CO_2 emissions and vulnerability to climate change. While high levels of scepticism have been documented among citizens of the United States, scepticism is as high or higher in countries such as Australia, Norway and New Zealand.

1. Introduction

A plethora of research outlines the characteristics of environmentally friendly attitudes and behaviours (e.g. Clements, 2012; Franzen and Vogl, 2013; Givens and Jorgenson, 2011; Tranter, 2010) and the political bases of environmental attitudes (e.g. Dunlap et al., 2001; Nawrotzki, 2012). This includes works that consider attitudes towards climate change, such as public opinion on the veracity of climate science (e.g. Brechin and Bhandari, 2011), political polarisation on climate change (e.g. McCright and Dunlap, 2011a) and the role of conservative political elites in influencing public opinion and determining climate change policy (e.g. McCright and Dunlap, 2010; Tranter, 2011). However, few scholars aim to specifically profile climate change sceptics. There are some exceptions such as Poortinga et al. (2011) who examined types of British sceptics and the association between scepticism and attitudinal constructs, and Engels et al. (2013) who assessed scepticism in Germany. Yet few studies examine associations between attitudinal and socio-demographic variables and a sceptical stance (Poortinga et al., 2011; Whitmarsh, 2011; McCright and Dunlap, 2011a).

In addition, Crona et al. (2013) observe that most studies of climate change perceptions are 'place-based': situated within particular locales, regions or nation states. While acknowledging the importance of these, they highlight the need for more comparative cross national studies. Engels et al. (2013) note that the "specific composition of factors correlating with climate-change scepticism depend strongly on the political and cultural context in which [a] model is tested" (2013: 1019). However, they also argue that accounting for such differences reduces the capacity for cross national comparisons that allow identification of differences and similarities between nation states (Engels et al., 2013). The strength of using the same model of scepticism for cross national analysis is that such differences can be gauged, compared and contrasted.

According to Brechin and Bhandari (2011), there has been some consideration of cross-national data on public perceptions of climate change and limited determination of cross-national levels of scepticism. Yet systematic cross-national analyses that correlate scepticism with socio-demographic data and other mediating factors such as scientific knowledge, political party identification, levels of national CO_2 emissions, climate vulnerability, and postmaterialist value orientations are lacking, a deficiency we begin to address here. We attempt to model levels of climate scepticism across 14 advanced industrialised nations using survey data from the 2010–2011 International Social Survey Program, Environment module (ISSP Research Group, 2012). Based upon several social and political correlates of environmental issue concern that we argue should be associated with acceptance of anthropogenic climate change, and the profiles of climate change

* Corresponding author. Tel.: +61 362262362.
E-mail address: Bruce.Tranter@utas.edu.au (B. Tranter).

http://dx.doi.org/10.1016/j.gloenvcha.2015.05.003
0959-3780/

sceptics from relevant literature, we ask, *to what extent are the background characteristics of climate sceptics the mirror image of environmentalists*, and, *to what extent are the socio-economic and political backgrounds of climate sceptics consistent cross-nationally?* Specifically, we consider how well the following hypotheses, derived from existing research on climate scepticism, hold up within and between countries:

1. Conservative (right leaning) political party identifiers are more likely than progressive (left) identifiers to be climate sceptics.
2. Men are more likely than women to be climate sceptics.
3. Older people are more likely than younger people to be climate sceptics.
4. City dwellers are less sceptical than those living in other locations.
5. Those who believe that science can solve environmental problems are less sceptical.
6. Identifying with a religion increases levels of scepticism.
7. Understanding how to solve environmental problems is associated with less scepticism.
8. Those less trusting of government hold more sceptical positions on climate change.
9. Postmaterialists are less likely than materialists to be sceptical about climate change.
10. Concern over environmental issues is negatively associated with climate scepticism.
11. 'Individualistic' worldviews will be positively associated with scepticism.
12. The tertiary educated right will be more sceptical than the tertiary educated left (i.e. education by party left-right interaction effect is expected).
13. At the country level, CO_2 emissions will be associated positively with climate change scepticism.
14. At the country level, climate vulnerability will be associated negatively with climate scepticism.

A growing body of evidence suggests public concern over the risks of global warming is waning in advanced industrialised nations (e.g. McCright and Dunlap, 2011a; Leiserowitz et al., 2011; Ratter et al., 2012; Scruggs and Benegal, 2012). If this heralds a rise in *actual* climate scepticism, more research into climate scepticism is warranted and timely.

We begin by reviewing empirical research on identified indicators and mediators of climate scepticism. After describing the data and methods and presenting the results of our analysis, we conclude with observations on the predictors of climate scepticism that apply across nations and a preliminary ranking of countries based on levels of climate scepticism.

2. Background

Poortinga et al. (2011) note that 'scepticism' is an imprecise term that has multiple meanings in the context of complex debates surrounding climate change, with a significant degree of heterogeneity among those identified as sceptics. Hobson and Niemeyer (2012: 403–404) identify five discourses associated with climate change sceptics: *empathic negation* (we are not in the position to say whether it is real or not given the state of knowledge about climate change); *unperturbed pragmatism* (climate change policy rejection combined with belief that if there is a problem there is time to sort it out); *proactive uncertainty* (no need to do anything as rash as question that climate change is happening and what kind of impact it will have if it is. If something is to be done it should be focused on adaption); *earnest acclimatisation* (climate change is a natural phenomenon that we should be concerned about but as its natural the focus needs to be on adaptation, not, for example, on emission reductions); and *noncommittal consent* (uncertainty about the knowledge to do with climate change but a sense that it is possibly happening and is anthropogenic – focus on managing impacts rather than causes). They argue that the complex nature of scepticism may result in an under-reporting of scepticism (Hobson and Niemeyer, 2012).

Poortinga et al. (2011) found that climate scepticism is not widespread in Britain, although there is uncertainty about its potential effects. Citing a range of studies from the United Kingdom, Whitmarsh (2011: 691) similarly argues that climate change denial is fairly *uncommon*. However, she found that many people question the seriousness of climate change, and while complete rejection of human-induced climate change stands at between 10 and 20 per cent, public *uncertainty* is significantly higher. This is supported by previous UK studies, for example, Downing and Ballantyne (2007), who found 40 per cent agreed 'climate change is too complex and uncertain for scientists to make useful forecasts', while 56 per cent agreed that 'many leading experts still question if human activity is contributing to climate change'.

Country level research on attitudes towards climate change provides clues about the social and political background of climate sceptics. McCright and Dunlap (2011b, 2013) have shown conservative white males to be significantly more likely than others to endorse sceptical positions on climate change in the United States, while in the UK, sceptics tend to be aged over 65, are more likely to be male, right-of-centre in their political orientations and to hold individualistic worldviews (Whitmarsh, 2011). The most important predictors of scepticism in the UK are environmental values and political affiliation with demographic factors mediated by these (Whitmarsh, 2011).

There are deep divides over global warming on the basis of political party identification in the United States (e.g. Hamilton, 2010; Dunlap and McCright, 2008; McCright and Dunlap, 2011a, 2011b), the United Kingdom (Poortinga et al., 2011; Whitmarsh, 2011) and Australia (Tranter, 2011, 2013). For example, Republicans and conservatives are far less likely than Democrats and liberals to accept climate change as a serious problem and are less willing to act to address climate change in the United States (e.g. Wood and Vedlitz, 2007; Jacques et al., 2008; McCright and Dunlap, 2011a, 2011b), while conservative Liberal and National party members exhibit similar sceptical attitudes in Australia (Tranter, 2011, 2013; Fielding et al., 2012).

Political scientists have long argued that political leaders influence public attitudes and behaviour and provide 'cues' that partisans tend to follow (Campbell et al., 1960; Bartels, 2000; Green et al., 2002). By filtering complex political issues, party identification has a 'simplifying function', with political leaders providing cues that 'guide the political thought and action of the party identifier' (Miller, 1976: 23). Gilens and Murakawa (2002: 21) suggest partisans tend to follow the cues of political leaders more often than they engage with 'substantive assessment of competing evidence and arguments'. Conservative politicians in many countries question and sometimes even reject climate science outright, with divisions among political elites leading to polarisation among party supporters (Sciarini et al., 2007). This process has been referred to as 'party sorting' among voters 'wherein the more visible and active members of a party, especially its elected officials and party activists, sort first and provide cues to voters that party positions are evolving' (Fiorina and Abrams, 2008: 581).

Several scholars have pointed to the role of mass media in the formation of attitudes towards climate change and the dissemination of climate science. Brulle et al. (2012) found that media coverage of climate change in the US directly affects public concern about this issue, but public opinion in this area competes with