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Understanding Public Opinion on Climate Change: A Call for Research

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UNDERSTANDING PUBLIC Opinion on Climate Change:

THE INTERNATIONAL DAY OF CLIMATE ACTION
ON OCTOBER 24, 2009 IN WASHINGTON, D.C.

A Call for Research

by Sandra T. Marquart-Pyatt, Rachael L. Shwom, Thomas Dietz,
Riley E. Dunlap, Stan A. Kaplowitz, Aaron M. McCright, and Sammy Zahran

There is strong scientific consensus concerning the reality of anthropogenic climate change (CC) and its potential consequences.¹ However, increased confidence among scientists has not translated into a public consensus within the United States.² Indeed, numerous polls indicate a decline in public acceptance of CC over the past two to three years (although some polls show a slight uptick since mid-2010). For example, Gallup Polls, trends for which appear in the figure here, show substantial declines from 2008 to 2010 in the percentages of Americans believing that global warming is already occurring (61 percent to 50 percent); that it is due more to human activities than natural changes (58 percent to 50 percent); and that most scientists believe it is occurring (65 percent to 52 percent).³

Even prior to the recent decline in Americans' acceptance of CC, cross-national surveys consistently found that the U.S. public was less likely to believe that CC is occurring and poses a problem than do citizens in most other wealthy nations.⁴ This uniquely high level of skepticism and the recent decline in public acceptance of CC are a challenge to the scientific community and call for increased examination of the factors influencing public opinion on CC. Although

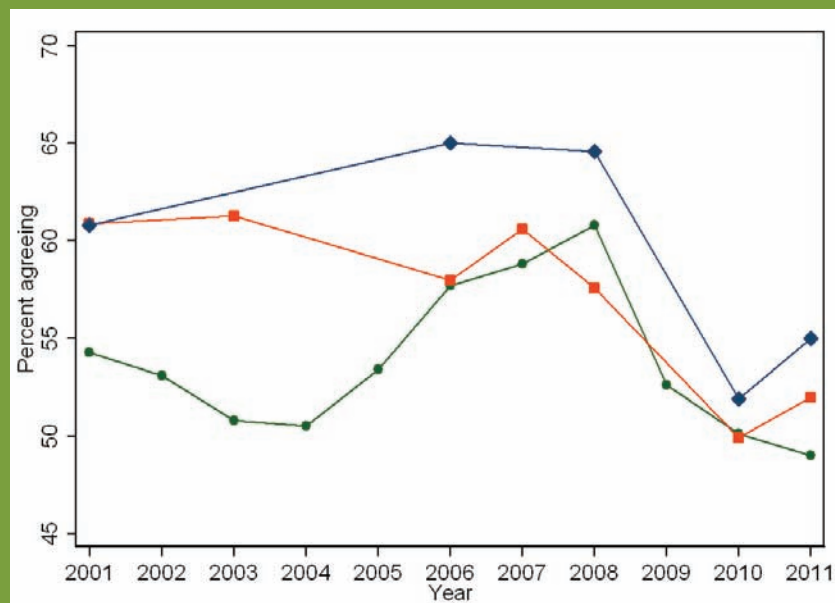
certainly a lack of public understanding is part of the problem, assuming more information will lead to greater public acceptance of the reality and seriousness of CC and greater support for CC policies^{5,6} is overly simplistic. Rather, a more nuanced analytical framework is required to meet this challenge. We know a great deal about the public's views of CC, but for effective communication and development of public support for climate policies we need to know far more.

Sources of Opinion Formation on Climate Change

To understand the dynamics and trends in how the U.S. public views CC, we must account for how people process information about this global environmental problem. Many aspects of CC are cognitively challenging for the public and experts alike.⁷⁻¹⁰ Understanding CC requires linking atmospheric concentrations of greenhouse gases to emissions rates over time, weighing the probabilities of risks and benefits stretching over decades to centuries, detecting long-term trends (climate) in noisy data (weather), understanding degrees of scientific certainty/uncertainty, and many other complexities. Science communicators often implicitly assume that most people deploy a rational choice model in which they weigh benefits against costs, utilizing subjective probabilities and discounting the future.¹¹ It is unlikely that such a cognitive process adequately describes the formation and dynamics of public opinion about CC. The tasks involved are daunting and unlikely to be undertaken around a topic so distant from most people's everyday decision-making. More likely, views about CC are formed via a less cognitively intensive process where people search for clues to map CC into more general beliefs and core values, relying substantially on framing offered by information sources they trust.¹²⁻¹⁵

The American public's views on CC range from "alarmed" to "dismissive."¹⁶ Demographic factors tend to

Figure 1: Changes in U.S. public opinion over time, showing declines from 2008 to 2010 in percent responding that "most scientists believe global warming is occurring" (diamonds), that the effects of global warming "have already begun to happen" (circles), and that increases in the earth's temperature over the last century are due more to "the effects of pollution from human activities" (squares), and slight upticks for two of these in 2011. Data are from Gallup Polls of representative national samples; sample sizes range from 1000 to 1060. A 95 percent confidence interval would be ± 3 percentage points or less.



have modest relationships with CC perceptions,¹⁷⁻¹⁹ but a rich body of research delineates the key features that likely shape public opinion on CC.

Weather and Climate. Perceived^{20,21} and actual²² weather fluctuations influence people's views of CC. Unusually warm, dry, or stormy weather and extreme hydro-meteorological events appear to increase the likelihood that an individual will recognize CC risks and support CC policies.²³ There is some evidence that local weather matters more than distant events.²⁴

Values, Beliefs, and Political Identification. Environmental values and beliefs have been shown to influence CC beliefs²⁵ and policy support.²⁶ Proposed

climate change mitigation policies entail governmental regulations, invoking well-established political cleavages. Self-identified conservatives and Republicans express greater skepticism toward CC,^{27,28} while self-identified liberals and Democrats report greater concern about CC²⁹⁻³¹ and support for CC policies.³² The recent decline in public belief in CC stems primarily from a sharp drop among conservatives and Republicans, while the views of liberals and Democrats have remained relatively constant.³³ Indeed, there has been significant political polarization on climate change beliefs and concern within the American public from 2001 to 2010.³⁴

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Knowledge. Scientists tend to assume that more knowledge about CC will lead to greater concern—an assumption with, at best, a mixed record of empirical support. While there is some evidence that people who are aware of the scientific consensus about the reality and consequences of global warming are more supportive of ameliorative policies than are persons who know less,³⁵ other evidence suggests that knowledge may not lead to such support. Recent studies indicate that political orientation interacts with relationships between educational attainment and self-reported understanding on one side and CC beliefs and concern on the other.³⁶⁻³⁸ That is, the effects of educational attainment and self-assessed understanding on CC beliefs and concern are positive for liberals and Democrats, but are weaker and often negative for conservatives and Republicans.³⁹

Trust. Climate change is very complex, and most members of the public lack the background and time to carefully consider the scientific literature. Instead, they are likely to accept the views of trusted information sources and endorse policies promoted by organizations they trust.⁴⁰⁻⁴² While some people trust scientists,⁴³ environmental groups,⁴⁴ and regulatory agencies,⁴⁵ others do not. Also, which sources one trusts is substantially associated with political orientation.⁴⁶

Falling Belief in Climate Change: The Perfect Storm

While the scientific consensus has strengthened in recent years, public be-

lief in and concern about CC has fallen since 2008.⁴⁷ This decline coincided with several factors. The long-term campaign to cast doubt on the reality and significance of climate change by undermining trust in climate science⁴⁸⁻⁵⁰ accelerated over concern that the Obama administration and a Democratic Congress would pass domestic legislation and agree to international agreements to reduce carbon emissions.⁵¹ The campaign received a boost in late 2009 and 2010 with the widely publicized release of hacked e-mails from the Climate Research Unit at the University of East Anglia, dubbed “Climategate,” and with publicity about relatively minor errors in the 2007 International Panel on Climate Change (IPCC) report. Given that research on environmental risk perceptions has highlighted the importance of trusted sources,⁵² part of the recent decline in public acceptance of climate change likely stems from the success of coordinated efforts to question the trustworthiness, credibility, and integrity of climate scientists.⁵³ However, this is clearly not the only factor. The heightened campaign to cast doubt on climate science coincided with a major economic crisis in the United States, focusing public attention on shorter term

economic issues rather than longer term problems such as CC.^{54,55} This dire economic situation created fertile ground for campaigns against climate science and policymaking.

Next Steps for Future Research

It would be naive to think that public acceptance of CC as a major problem translates directly into the implementation of effective climate policy. But it would be equally naive to think that such beliefs do not matter at all. Awareness of CC’s effects, knowledge about CC, and concern for CC have been found to positively influence support for CC policies.⁵⁶ And by many measures, the majority of Americans remain convinced CC is occurring, that it is a problem, and that action should be taken. However, strong opposition, bolstered in part by lagging public support, has prevented the passage of climate legislation and raised the question of whether actions to mitigate climate change should be focused elsewhere—e.g., on the voluntary behaviors of individuals, households, and local institutions.

Given the importance of public opinion on CC both as a source of policy support and as a motivation for individual action, we need to know much more about public understanding, policy support, trust, household mitigation actions, and the dynamics of opinion change. However, the research community is hampered by lack of an ongoing data series with large representative samples, including questions repeated over time. Having high-quality longitudinal data would enable us to examine the effects of changes in the factors theorized to be influential in CC public opinion, such as economic conditions, weather, and trust. Such data are essential if we are to understand what is driving public opinion on CC and how the dynamics vary across subgroups within the general public.

Second, the role of trust deserves special attention within long-term survey projects, and also in experiments

and in-depth interviews. Trust has been found to be an important factor in environmental and health risk perceptions, but there is very little empirical evidence on its role in perceptions of CC. We need to know more about where members of the public get their information about climate science and how they assess the trustworthiness of these sources. Does public trust in science vary depending on whether the information comes from government, industry, think tanks, universities, or environmental organizations and/or the venue in which it is presented? Knowing the answer to this question could inform public dialogue about CC, which might allow trust to be reestablished where it has been eroded.

Third, effective communications efforts will require more knowledge of how people form their views about climate change, climate policy, and household actions, including an understanding of the role of media and of social networks. For instance, research could explore whether polarization of views about climate change is the result of people choosing news and commentary sources that reinforce their initial views.⁵⁷ Longitudinal surveys could collect data on where respondents go for news, including television and radio programs, print media, and the web. In addition, surveys could ask who respondents talk to about CC, while in-depth interviews and experiments could assess the relative importance of media sources and social networks. Indeed, the media serves as an important interface between the public, the scientific community, and decision makers, and



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contributes to public understanding of environmental issues.⁵⁸

Fourth, if the next steps in U.S. climate policy emphasize household actions, we need to know far more about how public opinion on CC translates into behavior. How do beliefs about climate change relate to willingness to make household changes in energy use? Are there certain actions that people are willing to take regardless of beliefs about climate change? How does CC public opinion relate to individual knowledge about personal options to reduce energy consumption and emissions?^{59,60}

Over the last decade, as scientific understanding of the physical processes of climate change has advanced, so too has our understanding of public opinion. But progress in science is strongly dependent on the availability of high-quality data. The needed advances in our understanding of the public's views of climate change depend on improved data sets. Such data sets are essential for providing a better basis for science communication and for developing effective policy.

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