

Understanding climate change: Insights from public opinion research

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[Dr. Rachael Shwom](#), Human Ecology, Rutgers University

PRESENTATION ABSTRACTS

Political polarization in views on climate change

After increasing from the late 1990s through much of this decade, Americans' concern about global warming has fallen substantially in recent years. Using data from the Gallup Organization's annual Earth Day Poll from 1997 through 2010, we document trends in public perceptions of (1) the onset of global warming, (2) whether the media exaggerates the seriousness of global warming, (3) the degree of consensus among scientists over global warming, (4) humans' contribution to global warming, and (5) the degree of threat posed by global warming. We then compare the views of global warming held by self-identified Republicans and Democrats, and find that the former are vastly more skeptical of global warming than are the latter. In fact, the substantial decline in public concern about global warming in recent years is disproportionately due to huge declines among Republicans. We also demonstrate that the correlations between party affiliation and perceptions of global warming are much stronger than those for demographic characteristics, and that the former are not affected by controlling on characteristics such as age, gender and education. Finally, we show that the correlations between partisan identification and views of global warming are stronger among those who believe they understand global warming reasonably well than among those their counterparts. This severe partisan polarization over global warming has important implications for policy-making.

A pilot study on inducing acceptance of an increase in the gasoline tax

A two-phase study was conducted on undergraduate students at Michigan State University. In phase 1, ($n=36$) subjects were told that a 60 cent per gallon increase in the federal gasoline tax has been considered as a way of substantially decrease America's consumption of gasoline. Only 11% supported while 78% opposed this proposal. Respondents were also asked to explain their view and to evaluate some variants of the tax proposal. These responses were used for specification of the phase 2 tax proposal and persuasive arguments.

Phase 2, five weeks later, ($n=43$) presented an argument either a) for reducing fuel consumption in order to prevent major environmental damage from climate change OR b) for using less gasoline and more renewable energy in order to protect America's economic and military security.

The questionnaire then asked respondents to consider an increase in the gasoline tax which was phased in gradually, and in which half the additional revenue is used to reduce other taxes while the other half is used to improve public transportation and alternative energy technology. It then presented gasoline prices in Europe, followed by an argument as to how increasing the tax on gasoline would reduce consumption. The mean acceptable tax increase went from 12.9 cents per gallon in phase 1 to 47.2 cents per gallon in phase 2. Being given the average gasoline price in W. Europe increased the estimate of a *reasonable* price by 55 cents per gallon. This increase was associated with a 16.3 cent per gallon increase in the acceptable tax.

The color of confusion

The power of images to convey information about complex Earth systems is of central importance in sharing climate change with the general public. At the same time, the potential for mis-interpretations to unintentionally arise from seemingly simple depictions cannot be underestimated. We report on an eye tracking- and interview-based investigation of expert-novice interactions with climate-related data,

revealing striking perceptual and cognitive differences as a function of color palette and expertise level. Other studies of climate understanding are mostly qualitative or utilize standard assessment instruments, while eye-tracking research has not yet fully ventured into analysis of interactions with authentic climate data. This study bridges cognitive and climate sciences, and illustrates the influence experience and color palette can have on observations and interpretations of climate data. Heat maps and gaze plots for n=29 subjects sampled from across the expert-novice continuum reveal striking expertise-related differences between both what subjects attend to and how subjects generate map preferences. Both eye-tracking and interview data indicate that: 1) experts and novices attend to different aspects of maps; 2) color palette influences areas of maps that attract attention or are ignored; 3) climate novices rarely attend to map legends unless prompted; and 4) maps utilizing reds and blues to represent hot and cold are both incongruously more confusing and preferred by participants. These findings suggest that the color palette utilized for representation of climate data can have significant influence on both what is perceived and how data are interpreted and understood.

Co-authors: S.K. Clark (Department of Geological Sciences and Center for Research on College Science Teaching and Learning, MSU), R. Simmons (NASA Earth Observatory)

Understanding public opinion formation: Why do people reject or support climate change policies?

Using data collected from on-line and mail surveys of the general public, I present an analysis of the discursive arguments utilized for supporting or rejecting a number of policies that could be implemented to meet GHG reductions. Analyses of the relationships between respondents' rationales, social psychological and demographic characteristics, and policy support will also be provided. Based on questions raised by this analysis and theories in science & technology studies, environmental sociology and political sociology, the presentation will conclude with a proposed theoretical model of and future research agenda for studying the social processes involved in climate change policy support formation.

SPEAKER BIOSKETCHES

[Dr. Riley Dunlap](#), Sociology, Oklahoma State University;

Riley Dunlap's empirical research has three major foci: (1) Environmental concern, including trends in public opinion on environmental issues; cross-national comparisons of citizen concern for the environment; and the nature and sources of environmental attitudes, beliefs and worldviews; (2) The environmental movement, including the evolution and current status of American environmentalism, public support for the environmental movement, and the development of international environmentalism; (3) Anti-environmentalism, particularly anti-environmentalists' sources of support, ideology and tactics. Besides co-editing the Handbook of Environmental Sociology (Greenwood Press, 2002) and Sociological Theory and the Environment (Rowman-Littlefield, 2002), Dr. Dunlap has served as President of the International Sociological Association's Research Committee on Environment and Society and as Chair of the American Sociological Association's Section on Environment and Technology, the Rural Sociological Society's Natural Resources Research Group, and the Society for the Study of Social Problems' Division on Environment and Technology.

[Dr. Aaron McCright](#), Sociology and Lyman Briggs, MSU

Aaron M. McCright (Ph.D., Washington State University) holds a joint academic appointment in Lyman Briggs College and the Department of Sociology. He specializes in environmental sociology, political sociology, and sociology of science. Much of his work examines the relationships among social movements, countermovements, and the structure of power within the state--particularly concerning problems of environmental degradation and technological risks. He currently conducts research in five areas: (a) climate change skepticism; (b) climate change media coverage and public opinion; (c) the effects of globalization processes on natural resource management practices in formerly remote communities; (d) the ideas of European grand theorists on societal risk and risk management; and (e) the dynamics of scientific practices at tropical field stations.

[Dr. Stan Kaplowitz](#), Sociology, MSU

Stan Kaplowitz is Professor of Sociology (Ph.D. U of Michigan). He specializes in social psychology, especially of attitudes and communication, He also applies quantitative methods to predicting risk of lead

poisoning from environmental and socio-demographic data. His current research direction focuses on attitudes and behavior regarding climate change.

[Dr. Julie Libarkin](#), Geological Sciences and Division of Science and Mathematics Education, MSU
I am an Associate Professor at Michigan State University with a joint appointment in the Department of Geological Sciences and the Division of Science and Mathematics Education (DSME). In addition to ESPP, I am also affiliated with the Center for Research on College Science Teaching and Learning (CRCSTL) & MSU's Cognitive Science Program. My work focuses primarily on geocognition, the way in which people perceive and understand the Earth. I am particularly interested in building interdisciplinary research partnerships to investigate issues of importance to climate and environmental science.

[Dr. Rachael Shwom](#), Human Ecology, Rutgers University
Rachael Shwom is an assistant professor in the Human Ecology department who specializes in climate and society. She earned her Ph.D. in Sociology with a specialization in Environmental Science and Policy at Michigan State University in 2008. Her dissertation research focused on how different governmental, business, and environmental organizations sought to influence U.S. policies on appliance energy efficiency over the past three decades. She is interested in energy efficiency policy because efficiency improvements are often identified as an important and politically feasible step for reducing U.S. greenhouse gas emissions that drive climate change. She has also researched formation of public opinions on climate change, social science's role in enabling decision-makers to act on climate change under uncertainty, and media's coverage of climate change. In the future, she will continue her research on environmental and energy advocacy organizations and the factors that influence their decisions. She is also interested in the role that production decisions, such as those made by real estate developers and automobile manufacturers, play in changing energy consumption patterns.