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Lauren Feldman, Edward W. Maibach, Connie Roser-Renouf and Anthony Leiserowitz

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# Climate on Cable: The Nature and Impact of Global Warming Coverage on Fox News, CNN, and MSNBC

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**Lauren Feldman<sup>1</sup>, Edward W. Maibach<sup>2</sup>, Connie Roser-Renouf<sup>2</sup>, and Anthony Leiserowitz<sup>3</sup>**

## Abstract

This study examines climate change coverage on the three major cable news channels and assesses the relationship between viewership of these channels and beliefs about global warming. Evidence from a content analysis of climate change coverage on Fox News, CNN, and MSNBC during 2007 and 2008 demonstrates that Fox takes a more dismissive tone toward climate change than CNN and MSNBC. Fox also interviews a greater ratio of climate change doubters to believers. An analysis of 2008 survey data from a nationally representative sample of U.S. adults finds a negative association between Fox News viewership and acceptance of global warming, even after controlling for numerous potential confounding factors. Conversely, viewing CNN and MSNBC is associated with greater acceptance of global warming. Further analyses reveal that the relationship between cable news viewership (both Fox and CNN/MSNBC) and global warming acceptance is stronger among Republicans than among Democrats. That is, the views of Republicans are strongly linked with the news outlet they watch, regardless of how well that outlet aligns with their political predispositions. In contrast, Democrats don't vary much in their beliefs as a function of cable news use. This asymmetry suggests that some Republicans, who as a group tend to be predisposed toward global warming skepticism, are less skeptical when exposed to information on the reality and urgency of climate change.

## Keywords

cable news, climate change, global warming, public opinion, biased processing, polarization, motivated reasoning, persuasion

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Within the scientific community, broad international agreement has been reached about the reality and human causes of global climate change (IPCC 2007). Yet national surveys reveal that many Americans do not believe that scientists are in agreement over this issue (Nisbet and Myers 2007). More troubling, the number of Americans who believe that global warming is happening and that it is a result of human activities has declined in recent years: In April 2008, 71 percent of Americans perceived solid evidence for global warming, relative to only 57 percent in October 2009 (Pew Research Center 2009b). And while President Obama has pledged that passing legislation to curb pollution that contributes to global warming is a priority of his administration, in January 2009, Americans ranked global warming last in a list of twenty policy issues that they felt were important for the president and Congress to address (Pew Research Center 2009a). These surveys also point to stark partisan divides in global warming perceptions, with Democrats far more likely to accept the evidence for the human causes of global warming and to consider environmental protection a policy priority than Republicans.

The impacts of global warming have yet to be felt directly by most Americans. Thus, as with other unobtrusive issues that are beyond individuals' personal experience, the media become the public's principal information source (McCombs 2005). As such, recent research has focused on how the U.S. media cover climate change and is mostly critical of how U.S. reporting, because of its emphasis on norms of balance and objectivity, downplays scientific consensus on the reality of global warming and its human causes (Boykoff 2008; Boykoff and Boykoff 2004). Other research, however, suggests that media coverage of climate change is not monolithic, pointing to significant differences in how Fox News and CNN discuss and frame the issue (Hart 2008). As news outlets, on cable television in particular, increasingly cater to niche partisan audiences (Hamilton 2005), it becomes important to consider how this differential coverage might shape—and potentially polarize—audiences' views toward global warming.

Scholars have begun to examine the influence of the news media, as a whole, on individuals' climate change beliefs. This research, for the most part, suggests that attention to news about global warming increases public knowledge and concern (Kahlor and Rosenthal 2009; Krosnick et al. 2006; Stamm et al. 2000; Zhao 2009). Researchers, however, have not yet compared various news outlets in their influence on public opinion about global warming, although a recent study by Krosnick and MacInnis (2010) found that frequent Fox News viewers were less likely to accept scientists' views of global warming than infrequent viewers. The present study broadens that analysis to investigate the relationship between different forms of cable news use and the public's beliefs about global warming. Following a discussion of the cable news landscape, we review the literature on news media effects on public opinion, and on the effects of partisan news sources in particular. We next present results from a content analysis of climate change coverage on all three major cable news networks: Fox News, CNN, and MSNBC. Using data from a nationally representative survey of U.S. adults, we then demonstrate the relationship between exposure to these cable

news channels and acceptance of global warming, as well as how political partisanship moderates these relationships. This study, therefore, makes several contributions to the literature. It is the first to systematically compare climate change coverage and audience beliefs across the three major cable news networks, thus offering the most comprehensive view of the cable news landscape, vis-à-vis climate change, to date. In so doing, it highlights the implications of both media fragmentation and shifting norms in television journalism for public debate about science issues such as climate change. Finally, in considering whether political partisanship conditions the relationship between cable news viewing and global warming beliefs, this study tests the generalizability of theories of motivated reasoning and polarization to the cable news context—one of the first survey analyses to do so.

## The Cable News Landscape

The past two decades have witnessed dramatic changes in the news media landscape and in the television news landscape, in particular. The advent of platforms like cable television and the Internet has challenged the national network newscasts on ABC, NBC, and CBS as the premier format for delivering political information. Along with the proliferation of news outlets has come a healthier regard for narrowcasting or niche programming: As media audiences fragment, television networks and programs now cater to specific segments of the public rather than to the masses. At the same time, shifting structural, economic, and audience conditions are helping to erode the boundaries between news and entertainment, so that entertainment values now filter into hard news programs and vice versa.

Against this backdrop, cable news outlets have begun to appeal to particular segments of the audience with targeted political messages. This proliferation of opinion and overt partisanship has been plainly observed by popular commentators. As early as 2006, a *New Yorker* article described cable news as “increasingly a medium of out-size super-opinionated franchise personalities.”<sup>1</sup> Similarly, the *New York Times* observed, “What works in cable television news is not an objective analysis of the day’s events but hard-nosed, unstinting advocacy of a specific point of view on a sizzling-hot topic.”<sup>2</sup> Recent content analyses provide more systematic evidence for cable news’ trend toward opinionation and one-sided commentary. For example, the Project for Excellence in Journalism (2005) found that 52 percent of stories on CNN, MSNBC, and Fox News offered only a single point of view on controversial issues, compared to 20 percent of stories on the national network evening news. Further, journalist opinion appeared in 28 percent of cable news stories, twice what was found in network evening news broadcasts.

Significant differences in content and emphasis across the three cable news outlets have also been documented. Fox News was originally conceived as an antidote to what many conservatives see as a liberal bias in the mainstream media (Collins 2004). Accordingly, several content analyses have revealed that Fox News covers issues and events—from the Iraq War to the campaign for the U.S. presidency—in a way that is

more supportive of conservative and Republican interests than CNN, MSNBC, and the national network news programs (Aday et al. 2005; Groeling and Baum 2007; Project for Excellence in Journalism 2008). Coverage on MSNBC, on the other hand, leans toward the left. During the 2008 presidential campaign, MSNBC was more likely to run negative stories about Republican candidate John McCain and less likely to run negative stories about Democratic nominee Barack Obama, relative to the media overall (Project for Excellence in Journalism 2008).

With greatest relevance to the present study, Hart (2008) compared coverage of climate change on CNN and Fox News between 1998 and 2004. His findings suggest that as with other issues, Fox News presented climate change in a way that conformed more closely to Republican and conservative positions than did CNN. Specifically, Fox News anchors tended to emphasize the scientific uncertainty of climate change more so than CNN anchors; conversely, CNN anchors were more likely than Fox anchors to state that global warming is real and happening. Likewise, Fox News interviewed a lower ratio of guests who believed in global warming to those who doubted global warming, relative to CNN.

The present study seeks to replicate this general pattern of results in a content analysis of climate change coverage in 2007 and 2008 that includes MSNBC, as well as CNN and Fox News. Although there is no prior evidence of MSNBC's coverage of climate change, given that the network has been found to take a more liberal perspective on other issues, it is expected that its coverage will align closely with that on CNN. We also expand on and adapt Hart's (2008) analysis by examining the overall tone of coverage as well as coding for *any* mention of scientific agreement on climate change, its reality, and human causes (whereas Hart only coded the anchor's statements and did not code for mention of the human causes of climate change). This more holistic approach is consistent with prior research on false balance in television news coverage of climate change (e.g., Boykoff 2008), in that it allows us to determine the extent to which news coverage promoted an accepting view of climate change, a dismissive view, or a balanced view, while also distinguishing the types of claims that were made, by anchors or guests, relative to the reality and causes of climate change. Specifically, we hypothesize:

*Hypothesis 1:* The tone of coverage on Fox News will be more dismissive and less accepting of climate change than the tone of coverage on CNN and MSNBC.

*Hypothesis 2:* Coverage of climate change on Fox News will be less likely to include claims that affirm the scientific agreement on climate change, its reality, and human causes than coverage on CNN and MSNBC.

*Hypothesis 3:* Among its interview guests, Fox News will feature a greater ratio of climate change doubters to climate change believers than will CNN and MSNBC.

## News Media Effects on Public Opinion

Early research found limited evidence for direct, powerful media effects on public opinion (Klapper 1960). In the 1970s and 1980s, however, this limited effects model yielded to the view that the media primarily exert their influence on opinion indirectly, through the cognitive effects of agenda setting, priming, and framing (Iyengar and Kinder 1987). Still, theoretical and empirical evidence has emerged to suggest that direct, persuasive effects may be “more fugitive than minimal” and can be observed if the conditions are right (Bartels 1993: 267). According to Zaller (1992, 1996), media effects reside in “reception gaps,” or the difference in reception rates for two stories of varying intensity or salience. For example, during an election campaign, the people who will be most susceptible to media influence are those who receive a message from one candidate but not from the other. Bartels (1993) makes a similar case for the importance of focusing on “distinctive” media messages—that is, messages that reach one group of voters but not another. Critical for observing media effects, then, is sufficient variation in the message environment. This necessary variation can occur—and direct media effects *have* been observed—in such instances when the message of one political candidate or partisan group is “louder” than the other, when the valence of coverage of a candidate or issue shifts over the course of time, or when the partisan cues in one medium or source are different from the other (see Dalton et al. 1998; Johnston et al. 2004; Zaller 1992, 1996).

This theory of media effects suggests that the distinct partisan cues projected by cable news outlets—on issues such as the Iraq war and climate change—are apt to translate into discernible effects on the perceptions and opinions of their audiences. Indeed, suggestive of the power of cable news coverage to shape opinions, studies have found that people who reported Fox News as their primary news source held more misperceptions about the Iraq War than those who obtained their information from other sources (Kull et al. 2003; Morris 2005). Relative to climate change, Krosnick and MacInnis (2010) found that increasing exposure to Fox News was associated with weaker endorsement of mainstream scientists’ views about global warming. For example, people who watched Fox News were less likely than people who don’t watch Fox to believe the Earth’s temperature has been rising and that it is caused by human activities. While Krosnick and MacInnis also showed that exposure to television news programs other than Fox News was associated with greater acceptance of global warming, they did not specifically examine this relationship among CNN and MSNBC viewers.

This theoretical and empirical evidence suggests that consumption of Fox News undermines viewers’ acceptance of global warming. Although CNN and MSNBC have received less empirical attention, it is reasonable to expect that exposure to these networks will, conversely, increase acceptance of global warming. Formally, these hypotheses are stated as:

*Hypothesis 4a:* Watching Fox News will be negatively associated with acceptance of global warming.

*Hypothesis 4b:* Watching CNN and MSNBC will be positively associated with acceptance of global warming.

## Biased Processing and Cable News

Complicating the effects of cable news, however, is the partisan selectivity of its audience. For example, surveys and experiments consistently demonstrate that liberals and Democrats prefer CNN and MSNBC to Fox News, with the reverse true for conservatives and Republicans (Coe et al. 2008; Iyengar and Hahn 2009; Pew Research Center 2008; Stroud 2008). Scholars have argued that selective exposure to ideologically congruent media sources is likely to limit media effects to, at best, the reinforcement of people's preexisting viewpoints (Bennett and Iyengar 2008). There is evidence, however, for considerable cross-viewing—that is, the consumption of news across ideological, partisan, or attitudinal lines. For example, 33 percent of regular Fox News viewers identify as Democrats, while 18 percent of regular viewers of CNN and MSNBC are Republicans (Pew Research Center 2008). Moreover, approximately four in ten viewers of partisan news programs or listeners of political talk radio report that a major reason they tune in is to hear from people who have a *different* point of view (Jamieson et al. 2007).

Still, even if audiences expose themselves to information sources that disagree with their point of view, this is not to say that they will be responsive to its content. Research on political information processing provides evidence for motivated reasoning, whereby people with strong political commitments process information in defense of their prior beliefs (e.g., Lodge and Taber 2000; Lord et al. 1979). This often manifests as a disconfirmation bias, characterized by active counterarguing of attitudinally incongruent information and ready acceptance of congruent information. Such processing is likely to make partisans even more convinced of their initial position, contributing to attitude polarization (Taber and Lodge 2006). In this view, Republicans should reject or actively counterargue partisan information from CNN or MSNBC, while readily accepting information from Fox. The reverse would be true for Democrats. Thus, even given conditions of one-sided message flow on cable news channels, this information could polarize the opinions of partisan audiences.

On the other hand, evidence for direct persuasion, unconditioned by political predispositions, has been found in response to slanted news (Druckman and Parkin 2005; Kahn and Kenney 2002) and, in some instances, political talk radio (Barker and Lawrence 2006; Jamieson and Cappella 2008). Such examples suggest that when media cues are especially clear and one sided, this is enough to overwhelm partisan biases in processing (Dalton et al. 1998). Although few tests of biased processing and persuasion have been conducted in the context of cable news, a recent experimental study found that opinionated cable news produces uniform shifts in public opinion, without regard to prior partisanship (Feldman 2011). While this is valuable evidence



for the persuasive effect of cable news, traditional experimental designs do not account for the fact that in the real world, audiences self-select the programs to which they are exposed (Bennett and Iyengar 2008). The present study, therefore, uses survey methods to examine these relationships among those who watch cable news in their natural environments.

The extant literature thus offers two competing predictions regarding partisan differences in cable news processing. On one hand, opinionated cable news might stimulate biased processing, or motivated reasoning, among partisans, whereby individuals readily accept like-minded information and reject counterattitudinal information, contributing to polarization between the two groups. In this case, we would expect an interaction between cable news use and partisanship, such that the negative relationship between Fox News viewing and global warming acceptance would be stronger among Republicans than Democrats, whereas the positive relationship between CNN and MSNBC viewing and global warming acceptance would be stronger among Democrats than Republicans. Support for the direct persuasion model, on the other hand, would require no interaction between partisanship and cable news use. In this case, the relationship between cable news use and global warming acceptance would persist regardless of partisanship. In light of these competing expectations, we pose a research question:

*Research question 1: Does viewers' political partisanship moderate the relationship between cable news use and global warming acceptance?*

## Content Analysis Method

Lexis-Nexis was used to identify Fox News, CNN, and MSNBC transcripts from 2007 and 2008 that contained the words *global warming* or *climate change* in the subject line or lead. The search was limited to programs that aired between 5 P.M. and 11 P.M., as Fox transcripts are only available for evening and weekend broadcasts.<sup>3</sup> Still, this is a useful filter given that cable news attracts the largest number of viewers in the evening (Project for Excellence in Journalism 2009). Transcripts that did not contain at least one complete sentence devoted to substantive discussion of climate change or global warming were discarded, as were transcripts for repeat broadcasts and those whose only discussion of climate change was a teaser for an upcoming show. Each program hour was treated as the unit of analysis and coded for several key variables by two graduate students. Because Lexis-Nexis indexes Fox News transcripts by program segment (instead of by full program hour as it does for CNN and MSNBC), when multiple segments within a single Fox program hour dealt with climate change, these were aggregated into one transcript for the purposes of coding. The final sample thus included 269 transcripts, each of which represented a single program hour. Following the recommendations of Riffe et al. (2005) and Krippendorff (2004), inter-coder reliability was verified by having the coders both independently analyze a ran-

dom subset of 52 transcripts, approximately 19 percent of the sample. Disagreements were resolved through discussion.

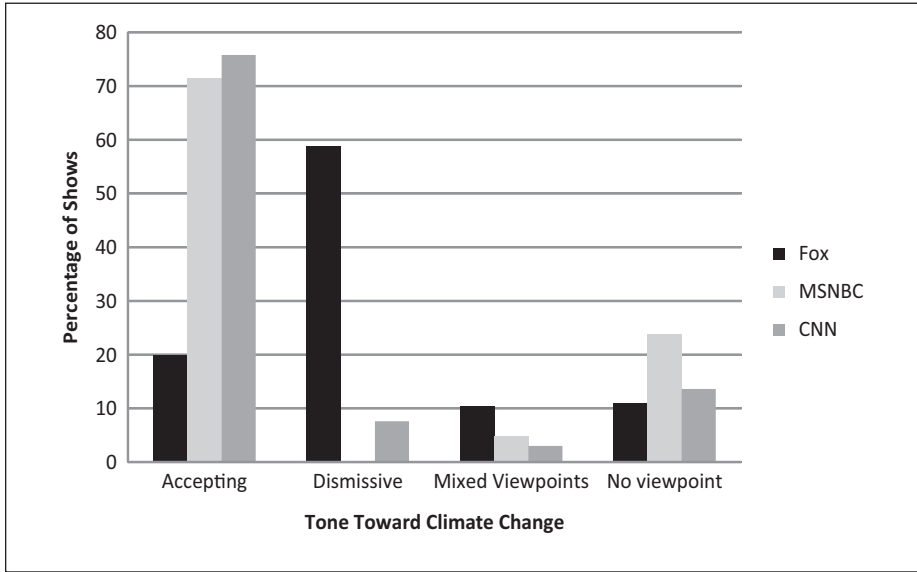
First, the overall tone or valence of the transcript vis-à-vis climate change was coded (Krippendorff's  $\alpha = .78$ ). Transcripts were classified as *accepting* of climate change if at least 80 percent of the viewpoints and information presented conveyed that climate change is a real problem that required significant action. Transcripts were classified as *dismissive* of climate change if at least 80 percent of the viewpoints and information presented challenged the reality or severity of climate change, its human causes, and/or the need for action.<sup>4</sup> Transcripts in which a more equal balance of time was given to the accepting and dismissive perspectives on climate change (i.e., anywhere between a 20/80 and 80/20 split) were classified as having *mixed viewpoints*. Finally, transcripts in which the coverage was characterized by straight reporting without expressing a clear stance on climate change were classified as having *no viewpoint*. A transcript received this code if it was completely devoid of opinions on climate change and simply recounted factual details about an event related to climate change.

Transcripts were further coded in order to assess if and what types of statements were made by the anchor, correspondents, and/or guests about the scientific agreement on climate change (Kripp.  $\alpha = .83$ ), the certainty of climate change occurring (Kripp.  $\alpha = .78$ ), and the human causes of climate change (Kripp.  $\alpha = .71$ ), respectively. For each of these variables, transcripts were classified as either making *no mention* of the issue; making at least one statement that *affirmed* the agreement on, certainty of, and human causes of climate change, respectively; making at least one statement that *rejected* the agreement on, certainty of, and human causes of climate change, respectively; or offering *competing* statements on the issue.

Finally, each transcript was coded for the number of interview guests who discussed climate change (Kripp.  $\alpha = 1.00$ ). Each guest was then coded as being a climate change believer, a climate change doubter, or indeterminate (Kripp.  $\alpha = .74$ ). This permitted the computation of a summary variable that captured the ratio of guests within each broadcast, so that each transcript with one or more interview guests was classified as either having *more doubters than believers*, *more believers than doubters*, or an *equal number of believers and doubters*.<sup>5</sup>

## Content Analysis Results

Of the 269 cable news transcripts that discussed climate change or global warming in 2007-2008, 182 (67.7 percent) were from Fox News; 66 (24.5 percent) were from CNN, and 21 (7.8 percent) were from MSNBC. Three-quarters of the transcripts were from 2007, which is the year that Al Gore and the IPCC were jointly awarded the Nobel Peace Prize; the relative decline in coverage of climate change in 2008 was perhaps due, in part, to the cable networks' preoccupation with the presidential election campaign (Project for Excellence in Journalism 2009).



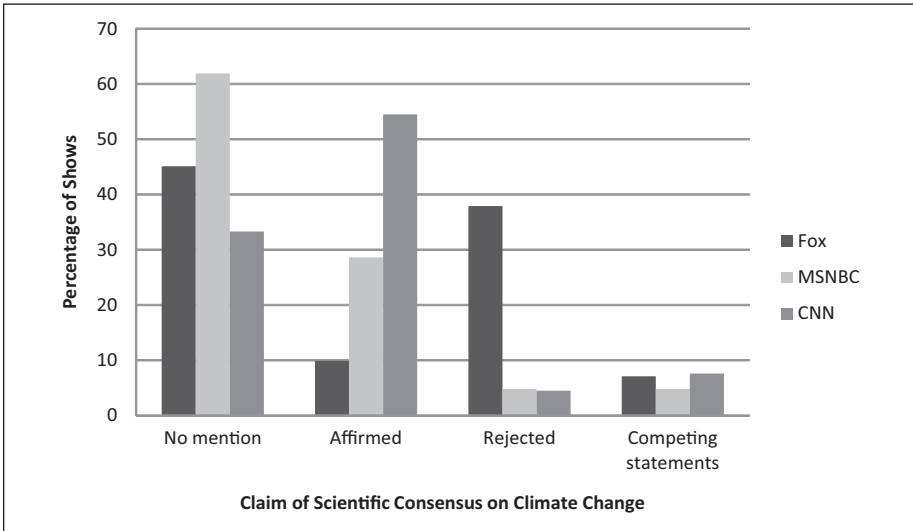
**Figure 1.** Overall tone toward climate change across cable news networks

### Overall Tone

The overall tone of coverage varied significantly across networks,  $\chi^2(6, n = 269) = 93.48, p < .001$ . Of the three networks, Fox News was simultaneously the least likely to be accepting and the most likely to be dismissive of climate change (see Figure 1). Nearly 60 percent of Fox News broadcasts were dismissive of climate change, whereas less than 20 percent were accepting of climate change. On the other hand, more than 70 percent of CNN and MSNBC broadcasts were accepting of climate change. Not a single MSNBC broadcast took a dismissive tone toward climate change and just 7 percent of CNN broadcasts did so.

### Statements of Scientific Agreement, Certainty, and Human Causes

The cable networks varied significantly in their discussion of the scientific agreement on climate change,  $\chi^2(6, n = 269) = 71.26, p < .001$ . As can be seen in Figure 2, Fox News broadcasts were much more likely to include claims that challenged the scientific agreement on climate change than were broadcasts on MSNBC and CNN. CNN, on the other hand, was more likely to feature claims that affirmed the scientific agreement on climate change, relative to Fox News and MSNBC. The difference here between CNN and MSNBC was primarily due to the fact that CNN was the most likely to include *any* discussion of the scientific agreement surrounding climate change, and MSNBC the least.



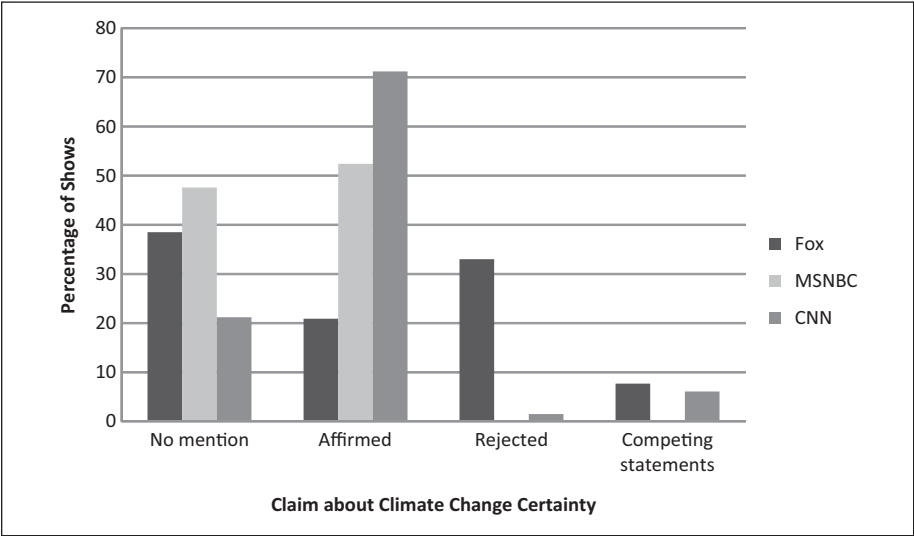
**Figure 2.** Discussion of scientific agreement on climate change across cable news networks

Discussion of the certainty of climate change also varied significantly across outlets,  $\chi^2(6, n = 269) = 69.35, p < .001$ . Virtually no CNN or MSNBC broadcasts challenged the reality of climate change, relative to 33 percent of Fox News broadcasts. Conversely, just 21 percent of Fox broadcasts affirmed that climate change is happening, compared to 71 percent of CNN broadcasts and 52 percent of MSNBC broadcasts (see Figure 3). CNN was again the most likely to discuss this matter.

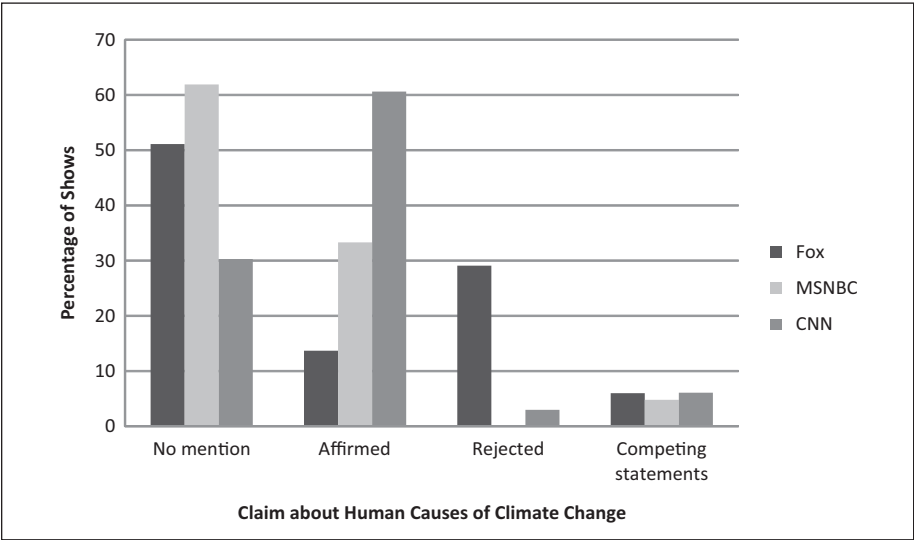
A similar pattern can be seen in Figure 4 with regard to the causes of climate change, the discussion of which also varied significantly across networks,  $\chi^2(6, n = 269) = 66.53, p < .001$ . Whereas just 14 percent of Fox broadcasts included statements that climate change is caused by human activities, such claims were featured in 33 percent of MSNBC broadcasts and in 61 percent of CNN broadcasts. Nearly a third of Fox broadcasts (29 percent) argued that global warming is caused by changes in the environment or claimed that humans' role in climate change is unclear; just 3 percent of CNN broadcasts and no MSNBC broadcasts included such claims.

### Interview Guests

Fox featured 149 guests across 89 (48.9 percent) of its 182 broadcasts. Of these guests, 59 (39.6 percent) were climate change believers, 69 (46.3 percent) were doubters, and the remaining 21 (14.1 percent) had an indeterminate stance toward climate change. CNN featured 53 guests across 29 (43.9 percent) of its 66 broadcasts. A full 41 (77.4 percent) of these guests were climate change believers, 9 (17.0 percent) were doubters,

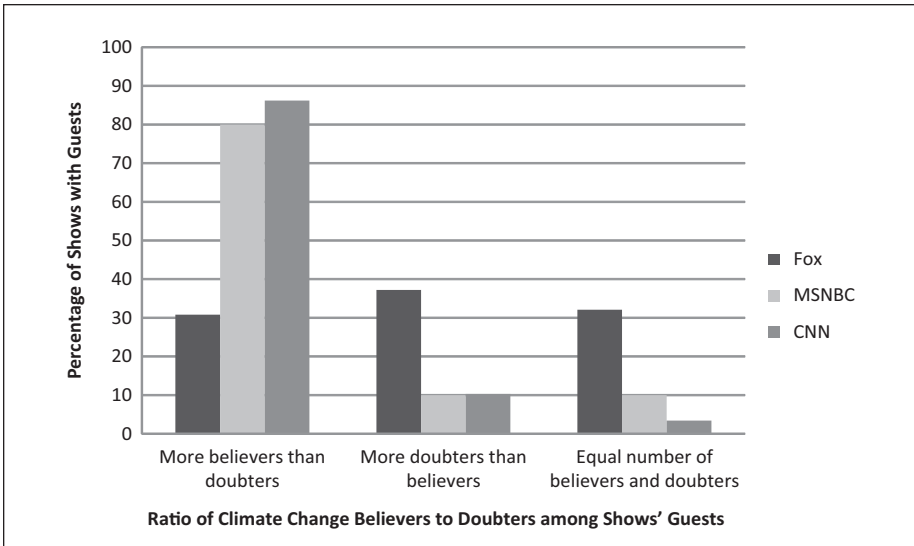


**Figure 3.** Discussion of climate change certainty across cable news networks



**Figure 4.** Discussion of human causes of climate change across cable news networks

and 3 (5.7 percent) were indeterminate. Finally, MSNBC featured 20 guests across 14 (66.7 percent) of its 21 broadcasts. Of these guests, 11 (55 percent) were climate change believers, 3 (15 percent) were doubters, and the remaining 6 (30 percent) had no discernible stance toward climate change.



**Figure 5.** Climate change interview guests across cable news networks

Note: Only includes those shows that featured at least one guest with a determinate stance on climate change ( $n = 117$ ).

The ratio of climate change believers to doubters within broadcasts varied significantly across networks,  $\chi^2(4, n = 117) = 30.52, p < .001$ . As can be seen in Figure 5, of those shows that interviewed guests with a determinate stance toward climate change, the vast majority on CNN and MSNBC featured more climate change believers than doubters. At least 80 percent of CNN and MSNBC interview broadcasts featured more believers than doubters, whereas only 31 percent of Fox broadcasts did so. On the other hand, whereas nearly 40 percent of Fox broadcasts interviewed more doubters than believers, just 10 percent of CNN and MSNBC broadcasts did. The presence of an equal number of believers and doubters was relatively rare, occurring in 23 percent of broadcasts overall, although this was more likely on Fox than on the other networks.

In sum, the content analysis results suggest that, in 2007 and 2008, Fox News painted a very different picture of climate change than CNN and MSNBC, thereby supporting Hypotheses 1 through 3. Although Fox discussed climate change most often, the tone of its coverage was disproportionately dismissive. Fox broadcasts were more likely to include statements that challenged the scientific agreement on climate change, undermined the reality of climate change, and questioned its human causes. Conversely, MSNBC and especially CNN were more likely to affirm the scientific agreement on climate change, claim that climate change is real, and that it results from human activities. Fox also featured a higher ratio of climate change doubters to

believers as interview guests than MSNBC and CNN; MSNBC and CNN featured a higher ratio of believers to doubters. These findings are suggestive of how cable news audiences come to understand climate change as a result of the coverage to which they are exposed and, as such, provide a critical foundation for our survey analysis, to which we turn next.

## Survey Method

Data for this study were obtained from a national survey conducted in October and November, 2008. Respondents were adult members of an online, probability-based panel recruited and maintained by Knowledge Networks. The panel consists of fifty thousand members, recruited using random digit dialing with a sample frame consisting of the entire U.S. telephone population. Knowledge Networks provides selected households with free hardware and Internet access to ensure that segments of the population without computers or Internet access are represented in the panel. Panelists complete an average of two surveys of five to twenty minutes per month for which they receive small monetary incentives.

The length of the questionnaire mandated that we divide it into two parts. An invitation to participate in the first survey was emailed to four thousand randomly selected panel members in September 2008. Two weeks after administration of the first survey ended, respondents received an invitation to participate in the second survey. The period of administration for each survey—from invitation to termination of data collection—was approximately ten days, during which one reminder email was sent to nonrespondents. Perception of scientific agreement, belief in human causes of climate change, global warming certainty, and party identification and ideology were measured in the first wave; the remaining variables were measured in the second wave. Completed questionnaires were received from 2,164 respondents.

Response metrics for online panel surveys are still under development, and do not compare directly to surveys in which a single questionnaire is administered. Following Callegaro and DiSogra's (2008) recommendations for the computation and reporting of response metrics for online panels, Table 1 reports the panel recruitment rates, profile rates, completion rates, and final cumulative response rates for both survey waves. While the cumulative response rate appears low relative to telephone surveys, studies show that probability-based Internet surveys yield more accurate results than telephone interviews, with an optimal combination of both sample composition and response accuracy (Chang and Krosnick 2009).

## Sample

The sample was 50.1 percent male, with a mean age of 49.7 ( $SD = 16.4$ ). The racial makeup of the sample was 79.2 percent non-Hispanic white, 8 percent non-Hispanic black, 6.3 percent Hispanic, and 6.5 percent other races. With regard to education, 31.6 percent of the sample had attained a bachelor's degree or higher; 29 percent had

**Table 1.** Survey Response Metrics

	Recruitment Rate, %	Profile Rate, %	Completion Rate, %	Cumulative Response Rate (CUMMRR1), %
Wave 1	21.6	56.4	62.5	7.6
Wave 2	22.1	56.7	87.3	10.9
Combined			54.1	6.6

Note: The combined completion rate is the product of the completion rates for both waves. The combined cumulative response rate is the product of the Wave 1 recruitment rate, the Wave 1 profile rate, and the combined completion rate.

completed some college; 30.1 percent had completed high school; and 9.3 percent had less than a high school degree. Probability weights were used to adjust the sample to census parameters in data analysis.<sup>6</sup>

### *Dependent Variable Measurement*

Five beliefs and perceptions were used as indicators of global warming acceptance: the perception of scientific agreement on global warming, belief in the human causes of global warming, certainty that global warming is happening, concern about the impact of global warming, and the valence of expectations regarding the outcomes of taking action on global warming. For the sake of parsimony, these five variables were combined into a single omnibus index, which served as the dependent variable in our analyses. A principal components factor analysis confirmed that these five variables load on a single factor (eigenvalue = 2.92; all factor loadings > .64), and internal reliability was high ( $\alpha = .82$ ). Each of the five variables was standardized before being summed into an index. Measurement of the five individual variables is described below.

*Perception of scientific agreement.* Respondents were asked to indicate which of the following comes closer to their own views: “most scientists think global warming is happening,” “most scientists think global warming is not happening,” “there is a lot of disagreement among scientists about whether or not global warming is happening,” or “don’t know enough to say.” Responses were collapsed to create a dichotomous variable, where 1 represented the perception that most scientists think global warming is happening (46.5 percent) and 0 represented other opinions, including don’t know.

*Belief in the human causes of global warming.* Respondents were asked whether they thought global warming is caused mostly by human activities, mostly by natural changes in the environment, a combination of human activities and natural changes, neither because global warming isn’t happening, or if they didn’t know. Responses were collapsed to create a dichotomous measure, where 1 represented the belief that



global warming is caused mostly by human activities (57.1 percent) and 0 represented other opinions, including don't know.

**Global warming certainty.** Certainty about the occurrence of global warming was measured on a 9-point scale ranging from (1) "extremely sure that global warming is not happening" through (5) "don't know" to (9) "extremely sure that global warming is happening" ( $M = 6.88$ ,  $SD = 2.1$ ).

**Concern about global warming impact.** Twelve items assessed concern about the impact of global warming on plants, marine life, animals, birds, all people, all children, your children, people in the United States, you, your health, your lifestyle, and your future, respectively. Question wording was adapted to the climate change context from Schultz's (2001) measure of concern for the harm caused by environmental problems. Response options ranged from (1) "not at all concerned" to (7) "extremely concerned." Responses to the twelve items, which loaded on a single factor, were averaged to form a scale ( $\alpha = .98$ ;  $M = 4.7$ ,  $SD = 1.7$ ).

**Valence of expectations regarding the outcome of taking action on global warming.** To measure outcome expectations, respondents were presented with a list of ten potential positive outcomes of taking national action on global warming (e.g., help free us from dependence on foreign oil, improve people's health, save many plant and animal species from extinction, prevent the destruction of most life on the planet) and six potential negative outcomes of taking action on global warming (e.g., cost jobs and harm our economy, cause energy prices to rise). Respondents were asked to indicate all of the items that they thought were true. Responses to the positive outcome items were tallied to form an index of expected positive outcomes ( $\alpha = .86$ ;  $M = 4.8$ ,  $SD = 3.2$ ). Likewise, responses to the negative outcome items were tallied to form an index of expected negative outcomes ( $\alpha = .77$ ;  $M = 1.2$ ,  $SD = 1.6$ ). A final summary measure reflecting the relative number of positive to negative outcome expectations was computed by subtracting the negative outcome index from the positive outcome index ( $M = 3.5$ ,  $SD = 3.9$ ). Thus, scores on the relative index could range from  $-6$  to  $+10$ , such that positive scores indicated a greater balance of positive outcomes expected, whereas negative scores indicated a greater balance of negative outcomes expected.

### *Measurement of Independent and Moderating Variables*

**Cable news use.** Using a response scale from (1) "never" to (4) "often," respondents were asked to report how frequently they watch CNN ( $M = 2.2$ ,  $SD = 1.1$ ), MSNBC ( $M = 2.0$ ,  $SD = 1.0$ ), and the Fox News cable channel ( $M = 2.2$ ,  $SD = 1.1$ ).<sup>7</sup> Because the correlation between CNN and MSNBC was substantial ( $r = .66$ ,  $p < .001$ ), responses to these two items were averaged to form a combined measure of CNN/MSNBC cable viewing ( $M = 2.1$ ,  $SD = 1.0$ ). This was further justified given that the content analysis results indicated similar trends in climate change coverage across these two networks.

**Political partisanship.** Respondents were asked to specify their party identification (Democrat, Republican, Independent, other, or no affiliation). Those

who identified as Independent or Other were then asked to indicate whether they see themselves as closer to the Republican Party, the Democratic Party, or neither. A 5-point ordinal partisanship measure was constructed from these responses (Democrat, lean Democrat, Independent/other/no affiliation, lean Republican, Republican;  $M = 2.8$ ,  $SD = 1.6$ ).

### *Measurement of Control Variables*

All analyses also controlled for demographic variables (age, gender, education, race/ethnicity, income), other news media use (print news, online news, national network news), global warming information seeking, as well as relevant values and predispositions (church attendance, biblical values, egalitarianism, individualism, materialism, environmentalism, approval of modern science). Measurement of the control variables is described in the appendix.

## **Survey Results**

### *Main Effects of Cable News Use*

To examine the relationship between cable news use and global warming acceptance (Hypothesis 4), the dependent variable was regressed on frequency of Fox News and CNN/MSNBC viewing, along with the battery of control variables. The results are presented in Table 2, Model 1. Consistent with expectations, Fox viewing manifests a significant, negative association with global warming acceptance, whereas CNN/MSNBC viewing is positively related to global warming acceptance.<sup>8</sup> The standardized regression coefficients suggest that cable news use is roughly as predictive of global warming acceptance as political partisanship and one's identification as an environmentalist.

### *Interactive Effects of Cable News Use and Political Orientation*

Research Question 1 was concerned with whether audiences' political predispositions bias the way that they process cable news—such that Republican viewers would be more likely to accept the global warming messages presented on Fox News and to reject those on CNN and MSNBC, with the reverse true for Democrats—or if the relationship between cable news viewing and global warming acceptance follows a pattern more consistent with direct persuasion. In order to address this question, the interactions between political partisanship and Fox News and CNN/MSNBC viewing, respectively, were tested. It is first important to note, however, that although viewership of cable news outlets is driven by partisan selectivity, the audiences for Fox, CNN, and MSNBC are not monolithic. Indeed, in our sample, there are only moderate bivariate correlations between political partisanship and both Fox News use ( $r = .195$ ;  $p < .001$ ) and CNN/MSNBC use ( $r = -.228$ ;  $p < .001$ ). A cross-tabulation further

**Table 2.** Effects of Demographics, Media Use, and Values and Predispositions on Global Warming Acceptance

	Model 1		Model 2	
	B (SE)	Beta	B (SE)	Beta
Demographics				
Age	−0.002 (0.01)	−0.01	−0.001 (0.01)	−0.01
Gender (male)	−0.40 (0.16)*	−0.05	−0.40 (0.16)*	−0.05
Race (white)	−0.13 (0.20)	−0.02	−0.12 (0.19)	−0.02
Education	0.02 (0.08)	0.01	0.04 (0.08)	0.01
Income	0.05 (0.05)	0.02	0.05 (0.05)	0.03
Media use				
Print news	−0.03 (0.03)	−0.02	−0.03 (0.03)	−0.02
Online news	−0.07 (0.03)*	−0.05	−0.07 (0.03)*	−0.05
Network TV news	−0.01 (0.07)	−0.003	−0.05 (0.07)	−0.02
Fox News	−0.33 (0.08)***	−0.10	−0.31 (0.08)***	−0.09
CNN/MSNBC	0.32 (0.09)***	0.08	0.37 (0.09)***	0.10
Information-seeking	1.63 (0.13)***	0.31	1.63 (0.13)***	0.31
Values & predispositions				
Political partisanship	−0.25 (0.06)***	−0.11	−0.25 (0.06)***	−0.11
Church attendance	−0.13 (0.05)*	−0.06	−0.13 (0.05)*	−0.06
Biblical values	−0.12 (0.10)	−0.03	−0.13 (0.10)	−0.03
Egalitarianism	1.22 (0.14)***	0.22	1.21 (0.14)***	0.22
Individualism	−1.15 (0.15)***	−0.19	−1.14 (0.15)***	−0.19
Materialism	0.03 (0.14)	0.005	−0.002 (0.14)	−0.0003
Approval of modern science	0.01 (0.09)	0.002	0.01 (0.09)	0.002
Environmentalism	0.43 (0.11)***	0.10	0.43 (0.11)***	0.10
Interactions				
Fox × Partisanship			−0.11 (0.04)**	−0.06
CNN/MSNBC × Partisanship			0.12 (0.05)*	0.05
Constant	−1.66 (0.83)*		−2.95 (0.86)**	
R <sup>2</sup>	0.519		0.522*	
N	2,057		2,057	

Note: Probability weights were applied.

\*\*\**p* < .001. \*\**p* < .01. \**p* < .05.

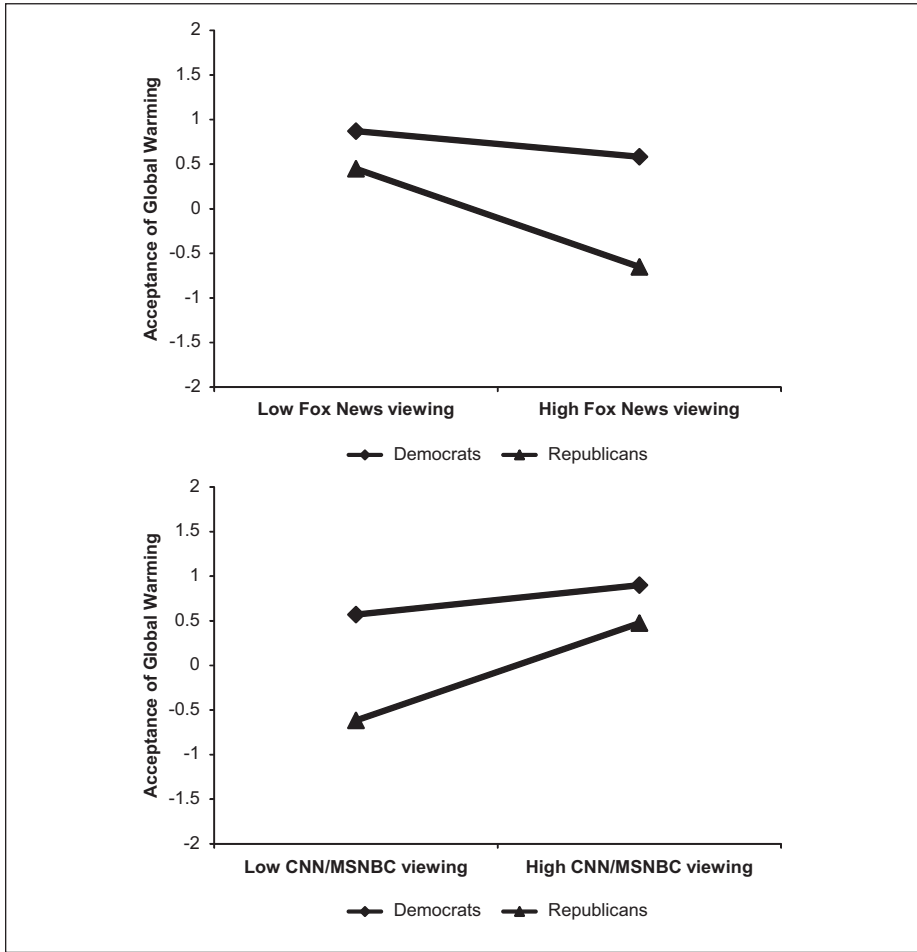
reveals that nearly 42 percent of Democrats watch Fox sometimes or often and 17 percent of Republicans watch CNN and MSNBC sometimes or often. Thus, there is sufficient cross-viewership to permit an exploration of how audiences respond to cable networks that are not aligned with their political predispositions.

The interactions between cable news use and political partisanship were tested by examining both the *R*<sup>2</sup> change and the coefficients of the interaction effects in a hierarchical regression. Step 1 entered all variables included in Model 1 of Table 2. Step 2

then entered the interactions between political partisanship and both Fox News viewing and CNN/MSNBC viewing, respectively. To avoid multicollinearity problems, the cable news use and partisanship variables were mean-centered before computing the product term. The results of the final model are presented in Table 2, Model 2. A significant change in  $R^2$  from Model 1 to Model 2 ( $p < .05$ ) indicates that it is appropriate to interpret the direction and significance of the coefficients of the interaction effects. The interaction between Fox News viewing and political partisanship is negative, whereas the interaction between CNN/MSNBC viewing and partisanship is positive; both are significant. This suggests that the negative association between Fox News and global warming acceptance increases among stronger Republicans. This is consistent with biased processing, in that Fox News' dismissive view of global warming appears to resonate most with those who share the network's partisan perspective. Interestingly, however, the direction of the interaction between CNN/MSNBC viewing and partisanship suggests that the positive association between CNN/MSNBC viewing and acceptance of global warming is also stronger among Republicans. This is opposite of what would be predicted by a biased processing model.

Indeed, as can be seen in Figure 6, which plots the interaction between cable news use and political partisanship in predicting global warming acceptance, Democrats are relatively unchanged in their beliefs as a function of cable news use, whereas the beliefs of Republicans depend on whether they watch Fox News (top panel of Figure 6) or CNN/MSNBC (bottom panel of Figure 6).<sup>9</sup> As a result, at high levels of Fox viewing, Democrats and Republicans are more polarized in their global warming beliefs than at low levels of Fox viewing. Conversely, at high levels of CNN/MSNBC viewing, the gap between the two partisan groups is minimized.

One explanation for the observed interactions could arise from differences in the Republicans who choose to watch Fox News as opposed to those who watch CNN/MSNBC. That is, Republicans who frequently watch Fox could be especially conservative, making them more responsive to Fox content, whereas those who frequently watch CNN and MSNBC could be more left-leaning, thereby explaining their receptivity to these ideologically contrary news sources (see Lee and Cappella 2001 for parallel evidence among political talk radio listeners). To test for this possibility, we reran the interaction analysis reported in Table 2, Model 2, to also include political ideology as a control (measured on a 5-point continuum from strong liberal to strong conservative). The interaction results were unchanged (Fox  $\times$  Partisanship  $B = -.12$ ,  $SE = .04$ ,  $p < .01$ ; CNN/MSNBC  $\times$  Partisanship  $B = .12$ ,  $SE = .05$ ,  $p < .05$ ). Thus, the pattern of findings depicted in Figure 6 persists even when ideology is held constant. We also examined differences in ideology among (1) Fox Republicans (i.e., those who frequently watch Fox and rarely watch CNN/MSNBC), (2) Fox and CNN/MSNBC Republicans (i.e., those who frequently watch both Fox and CNN/MSNBC), (3) CNN/MSNBC Republicans (i.e., those who frequently watch CNN/MSNBC and infrequently watch Fox), and (4) no cable Republicans (i.e., those who infrequently watch Fox and CNN/MSNBC). We then repeated this for Democrats and Independents. As reported in Table 3, Republicans and Democrats who watch news programming that is inconsistent with



**Figure 6.** Interaction between cable news use and political partisanship in predicting acceptance of global warming

their partisanship are less ideologically extreme. That is, Republicans who frequently watch CNN/MSNBC (either “High Fox & CNN/MSNBC” or “More CNN/MSNBC”) are less conservative than other Republicans, particularly “More Fox” viewers. Similarly, Democrats who frequently watch Fox (either “More Fox” or “High Fox & CNN/MSNBC”) are less liberal, or more conservative, than the other Democrats, especially “More CNN/MSNBC” viewers. What is important to note, however, is that the conservatism of “More CNN/MSNBC” Republicans still falls well above the scale

**Table 3.** Mean Political Ideology (1 = Very Liberal, 5 = Very Conservative) by Partisanship and Cable News Viewership

	More Fox <sup>a</sup>	High Fox & CNN/MSNBC <sup>b</sup>	More CNN/MSNBC <sup>c</sup>	Low Fox & CNN/MSNBC <sup>d</sup>	Overall
Republicans $F(3, 634) = 3.40$ , $p < .05$	3.99 (0.11) <sub>a</sub> $n = 190$	3.57 (0.09) <sub>b</sub> $n = 176$	3.60 (0.12) <sub>b</sub> $n = 72$	3.74 (0.10) <sub>a,b</sub> $n = 199$	3.73 (0.05) $n = 637$
Democrats $F(3, 724) = 6.62$ , $p < .01$	2.83 (0.20) <sub>a,c</sub> $n = 52$	2.76 (0.08) <sub>a</sub> $n = 197$	2.28 (0.09) <sub>b</sub> $n = 219$	2.51 (0.06) <sub>b,c</sub> $n = 259$	2.51 (0.05) $n = 727$
Independents $F(3, 720) = 18.17$ , $p < .001$	3.71 (0.09) <sub>a</sub> $n = 106$	3.12 (0.14) <sub>b</sub> $n = 184$	2.80 (0.08) <sub>b</sub> $n = 124$	2.95 (0.09) <sub>b</sub> $n = 309$	3.07 (0.06) $n = 723$

Note: Means are weighted. Standard errors are in parentheses. Within rows, cells with different subscripts are significantly different from one another at  $p < .05$ , using the Sidak correction for multiple comparisons.

a. Includes respondents who watch Fox "often" or "sometimes" and watch CNN/MSNBC "hardly ever" or "never."

b. Includes respondents who watch both Fox and CNN/MSNBC "often" or "sometimes."

c. Includes respondents who watch CNN/MSNBC "often" or "sometimes" and watch Fox "hardly ever" or "never."

d. Includes respondents who watch both Fox and CNN/MSNBC "hardly ever" or "never."

midpoint, and this group is considerably more conservative than all Democrat viewing groups. We can conclude, then, that although ideology is, in fact, related to partisans' cable news viewing, the relatively weaker conservatism of Republican CNN/MSNBC viewers does not fully account for the fact that frequent Republican and Democrat viewers of CNN/MSNBC manifest similar levels of global warming acceptance, as depicted in Figure 6.

In sum, the results overwhelmingly support Hypothesis 4, demonstrating that Fox News viewing is associated with lower levels of global warming acceptance, with the reverse true for CNN/MSNBC viewing. The results for Research Question 1 are less clear-cut. The views of Republicans seem to reflect the cable news outlet they watch, regardless of whether it is Fox or CNN/MSNBC. Democrats, on the other hand, do not vary significantly in their global warming beliefs as a function of cable news use.

## Discussion

The fragmentation of audiences across diverse news outlets holds important consequences for how the public understands the most pressing issues of the day. This study provides strong evidence that different forms of cable news use are associated with divergent views on global climate change. Specifically, the more often people watched Fox News, the less accepting they were of global warming. Conversely, frequent CNN and MSNBC viewing was associated with greater acceptance of global

warming. These relationships emerged despite robust controls for demographics, other media use, political partisanship, and values and predispositions related to science and the environment.

While the cross-sectional nature of the survey data prohibits unequivocal assertions about causal direction, there is good reason to believe that these patterns were, at least in part, an effect of exposure to starkly different coverage of climate change among the cable news networks. For one, the patterns of global warming beliefs among Fox and CNN/MSNBC viewers aligned closely with the expectations borne out by our content analysis. CNN and MSNBC offered a depiction of climate change consistent with expert scientific opinion (IPCC 2007), and this was reflected in the beliefs of their audiences. Fox News promulgated a more dismissive view toward global warming, which was likewise shared by its audience. Notably, Fox also provided substantially more coverage on climate change than the other two networks, thereby amplifying doubt about global warming within the cable news landscape. Given previous survey research that reported an association between Fox News consumption and misperceptions about the Iraq war (Kull et al. 2003; Morris 2005), as well as experimental studies that showed the persuasive effects of opinionated, cable news on public views about health and immigration policy (Feldman 2011), the present findings add to a growing body of work that demonstrates the power of cable news to shape public knowledge and attitudes. To the extent that Fox News presents a different view of reality than does CNN or MSNBC, the knowledge and opinions of the networks' respective audiences will likewise tend to polarize.

Interestingly, the data were not altogether supportive of the biased processing of cable news messages; instead, the evidence supported a model of direct persuasion, at least among Republicans. Although the negative association between Fox News use and global warming acceptance was stronger among Republicans than among Democrats, the *positive* association between CNN/MSNBC use and global warming acceptance was also stronger among Republicans. The former finding, taken in isolation, is consistent with biased processing. However, when considered along with the latter finding, it suggests a direct persuasion effect, in which the views of Republicans on global warming reflected the cable news outlet they watched, regardless of how well that news outlet aligned with their political predispositions. The views of Democrats, on the other hand, did not vary as a function of their cable news consumption.

Differences in the strength of political ideology among Republicans who watched Fox News versus CNN/MSNBC were explored as a possible explanation for this finding. Although ideology was related to partisans' cable news viewing, this could not fully account for Republicans' disproportionate susceptibility to CNN/MSNBC and Fox News. Rather, Republicans' greater willingness to accept the different views promulgated by these news sources could be a function of their high "need for closure" (Jost et al. 2003). Kruglanski (2004) argues that certain individuals possess a dispositional trait that makes them more likely to come to closure on an attitude object. Because of their lower tolerance for ambivalence, individuals who are high in need for closure are

more affected by persuasive messages. At the same time, if Republicans are less attentive to or knowledgeable about climate change relative to Democrats, exposure to any specific message—and, in particular, to the distinct points of view offered on cable news—is likely to shape their opinions. Future studies will want to explore these explanations for the stronger relationships seen here among Republicans. In any case, the good news for climate change advocates is that at least some Republicans, who as a group tend to be predisposed toward global warming skepticism, are less skeptical when exposed to information on the reality and urgency of climate change.

The implications of the findings presented herein are significant. While follow-up longitudinal or experimental research is needed to confirm the directionality of the relationship between cable news use and global warming acceptance, the results are strongly suggestive of the power of cable news to shape and polarize public opinion. However, contrary to models of motivated reasoning, this study provides only inconsistent evidence that the attitudes of opposing partisans who view the *same* cable news program polarize as a function of exposure; this was true of Fox News viewers but not CNN/MSNBC viewers. The most convincing evidence for polarization occurs *across* cable outlets (Fox vs. CNN/MSNBC), with viewers of the former emerging with different beliefs about climate change than viewers of the latter. When taken in concert with other, experimental research (Feldman 2011), this suggests that opinion polarization in the cable news environment occurs most clearly as a function of exposure, as opposed to biased processing of ideological news content. Thus, to the extent that the cable news networks continue to provide partisan content in the quest for a lucrative niche audience, the opportunity for consensus-building and cooperation on global warming—as well as on other critical issues of the day—diminishes.

## Appendix

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### Control Variables

#### *Demographics*

- Age in years ( $M = 46.4$ ,  $SD = 16.8$ )
- Gender (48.1 percent male)
- Race (69.3 percent white)
- Education ( $Range = 1$  [less than high school] to 5 [post-graduate degree];  $Median = 3$  [some college])
- Income ( $Range = 1$  [less \$25,000] to 5 [\$100,000 or more];  $Median = 4$  [\$50,000-\$74,999])

#### *Media Use*

- Days per week read a printed newspaper ( $M = 3.6$ ,  $SD = 2.7$ )
- Days per week read news online ( $M = 3.7$ ,  $SD = 2.7$ )



- Network TV news use (*Range* = 1 [never] to 5 [often]; *Median* = 3 [sometimes])
- Global warming information-seeking (Mean of three items: “How much attention do you pay to information about global warming?” “In the past 30 days, how much have you actively looked for information about global warming?” and “How closely do you follow news about the environment?” *Range* = 1 to 4, where 4 indicates higher information seeking;  $\alpha = .80$ ;  $M = 2.0$ ,  $SD = 0.7$ ).

### *Values and Predispositions*

- Frequency of religious service attendance (*Range* = 1 [never] to 6 [more than once a week]; *Median* = 3 [a few times a year])
- Biblical values (Mean agreement with three items: “Human beings, as we know them today, evolved from earlier species of animals” [reverse-coded]; “One must believe in God in order to be moral and have good values”; “Just as the Bible says, the world literally was created in six days.” *Range* = 1 to 4, where 4 indicates stronger biblical values;  $\alpha = .77$ ;  $M = 2.6$ ,  $SD = 0.9$ )
- Egalitarianism (Mean agreement with four items: “The world would be a more peaceful place if its wealth were divided more equally among nations”; “In my ideal society, all basic needs would be guaranteed by the government for everyone”; “I support government programs to get rid of poverty”; “Discrimination against minorities is still a very serious problem in our society.” *Range* = 1 to 4, where 4 indicates more egalitarianism;  $\alpha = .72$ ;  $M = 2.6$ ,  $SD = 0.7$ )
- Individualism (Mean agreement with five items: “If the government spent less time trying to fix everyone’s problems, we’d all be a lot better off”; “Our government tries to do too many things for too many people. We should just let people take care of themselves”; “The government interferes too much in our everyday lives”; “Government regulation of business usually does more harm than good”; “People should be allowed to make as much money as they can, even if it means some make millions while others live in poverty.” *Range* = 1 to 4, where 4 indicates more individualistic attitudes;  $\alpha = .77$ ;  $M = 2.6$ ;  $SD = 0.6$ )
- Materialism (Mean agreement with four items: “You can tell if people are successful by the things they own and the way they dress”; “It’s very important to me to have a home as well-equipped and furnished as that of other people I know”; “I follow the latest trends and fashions”; “I prefer brands and products that make me feel accepted by others.” *Range* = 1 to 4, where 4 indicates greater materialism;  $\alpha = .67$ ;  $M = 1.9$ ;  $SD = 0.6$ )
- Approval of modern science (Agreement with statement “Overall, modern science does more harm than good”; *Range* = 1 to 4, where 4 indicates more disagreement;  $M = 3.1$ ;  $SD = 0.8$ )

- Environmentalism (Agreement with statement “I consider myself an environmentalist”; *Range* = 1 to 4, where 4 indicates more agreement; *M* = 2.5; *SD* = 0.8)

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### Notes

1. N. Lemann, “The Wayward Press: Fear Factor,” *The New Yorker*, March 27, 2006, <[http://www.newyorker.com/archive/2006/03/27/060327fa\\_fact](http://www.newyorker.com/archive/2006/03/27/060327fa_fact)> (accessed November 4, 2010).
2. B. Carter and J. Steinberg, “Anchor-Advocate on Immigration Wins Viewers,” *New York Times*, March 29, 2006, <<http://www.nytimes.com/2006/03/29/politics/29dobbs.html>> (accessed November 4, 2010).
3. Lexis Nexis does not index transcripts from *Fox Report with Shephard Smith*, which airs weekdays from 7 P.M. to 8 P.M. For the sake of comparability, we considered omitting the 7 P.M. hour from our CNN and MSNBC samples. However, we determined that such a revision would make little difference to our findings. On MSNBC, the 7 P.M. hour was a repeat of *Hardball*, which originally airs at 5 P.M., and each episode of a program was already included only once in our sample. On CNN, through November 2007, the *Situation Room* aired at 7 P.M. The climate change coverage in six of ten transcripts during this hour was identical to segments that aired during the 5 P.M. edition of the *Situation Room* and were thus dropped from our sample. After November 2007, *Lou Dobbs Tonight* aired in the 7 P.M. slot—only six transcripts from this show appeared in our sample.
4. More specifically, in transcripts categorized as “accepting,” at least 80 percent of the viewpoints and information conveyed about climate change indicated that climate change is real and happening; that there is consensus about climate change in the scientific community; that climate change is caused by human activities; that the impacts are real, immediate, and consequential; and/or that taking action to mitigate climate change is necessary and will yield positive consequences. In such transcripts, less than 20 percent of the viewpoints and information indicated that climate change is not real or is uncertain, that there is debate about climate change in the scientific community, that humans do not cause climate change, that the impacts are not real, or that taking action on climate change would have negative consequences. The opposite pattern was required in order for a transcript to be coded as “dismissive.”

5. The coders were trained on the coding scheme using a set of cable transcripts from 2006, which were similar to the sample of transcripts included in the present analysis. The coders achieved reliability on this sample before moving on to code the study sample. Although the coders were unaware of the specific hypotheses being tested, there is some concern that because they were not also blinded to the source of the transcripts, the coders' expectations could have introduced bias into the coding process. While this is a legitimate concern, it is important to note that with the exception of "overall tone," the codes were fairly unambiguous (i.e., coders looked for an explicit statement affirming scientific agreement on climate change, affirming the reality of climate change, etc). Similarly, most of the guests on these programs were not people who would have been particularly familiar to the graduate student coders; therefore, it is unlikely that the coders based their assessments of the guests' climate change stance on any preconceptions.
6. The probability weights used in the analyses incorporate (1) a base weight, which corrects for any known sources of deviation from an equal probability of selection into the Knowledge Networks panel; (2) a panel demographic poststratification weight, which reduces the effects of any nonresponse and noncoverage bias in panel estimates (the poststratification variables are benchmarked to the most recent Current Population Survey, and include age, race, gender, Hispanic ethnicity, and education); and (3) study-specific poststratification weights to adjust for this particular study's sample design and survey nonresponse (demographic and geographic distributions representing the study population within the Knowledge Networks panel are used as benchmarks for this adjustment, including gender, age, race/ethnicity, education, census region, metropolitan area, and Internet access). The sample descriptives were reported before the weights were applied; for all subsequent statistics (i.e., variable descriptives, correlations, regression parameters, etc.), the probability weights were applied.
7. The field of political communication continues to grapple with how to best measure media exposure (e.g., Althaus and Tewksbury 2007; [Prior 2009](#)) but has yet to arrive at a new consensus. Our measures, while not perfect, are consistent with prior studies of cable news (e.g., [Coe et al. 2008](#); Morris 2005). Still, we recognize that by using ordinal-level measurement we are unable to precisely quantify exposure; however, this does not preclude the ability to estimate associations between cable news exposure and public opinion.
8. In order to further illuminate the nature of global warming beliefs among cable news audiences, we tested an interaction between CNN/MSNBC and Fox News viewing, which was nonsignificant ( $B = .05$ ,  $SE = .06$ ,  $p = .46$ ). Thus, the negative association between Fox viewing and global warming acceptance does not vary as a function of CNN/MSNBC viewing.
9. Figure 6 plots the predicted values for global warming acceptance generated from the regression equation reported in Table 2, Model 2. All predictors in the model, other than cable news use (i.e., Fox New use in the top panel and CNN/MSNBC use in the bottom panel) and political partisanship, have been set to their means. For both cable news use and political partisanship, "high" ("Republican") and "low" ("Democrat") values correspond to one standard deviation above the sample mean and one standard deviation below the

mean, respectively. A test of simple slopes (Preacher et al. 2006) at these conditional values of political partisanship indicates that the association between global warming acceptance and Fox News and CNN/MSNBC use, respectively, is significant among Republicans ( $p < .001$  for both Fox and CNN/MSNBC) while nonsignificant among Democrats.

## References

- Aday, S., S. Livingston, and M. Hebert. 2005. "Embedding the Truth: A Cross-Cultural Analysis of Objectivity and Television Coverage of the Iraq War." *International Journal of Press/Politics* 10:3–21.
- Althaus, S., and D. Tewksbury. 2007. "Toward a New Generation of Media Use Measures for the ANES." American National Election Studies Pilot Study Report, No. nes011903. <<http://www.electionstudies.org/resources/papers/Pilot2006/nes011903.pdf>> (accessed April 15, 2011).
- Barker, D. C., and A. B. Lawrence. 2006. "Media Favoritism and Presidential Nominations: Reviving the Direct Effects Model." *Political Communication* 23:41–59.
- Bartels, L. M. 1993. "Messages Received: The Political Impact of Media Exposure." *American Political Science Review* 87:267–85.
- Bennett, W. L., and S. Iyengar. 2008. "A New Era of Minimal Effects? The Changing Foundations of Political Communication." *Journal of Communication* 58(4):707–31.
- Boykoff, M. T. 2008. "Lost in Translation: United States Television News Coverage of Anthropogenic Climate Change, 1995–2004." *Climate Change* 86:1–11.
- Boykoff, M. T., and J. M. Boykoff. 2004. "Balance as Bias: Global Warming and the US Prestige Press." *Global Environmental Change* 14:125–36.
- Callegaro, M., and C. DiSogra. 2008. "Computing Response Metrics for Online Panels." *Public Opinion Quarterly* 72(5):1008–32.
- Chang, L., and J. A. Krosnick. 2009. "National Surveys via RDD Telephone Interviewing versus the Internet." *Public Opinion Quarterly* 73(4):641–78.
- Coe, K., D. Tewksbury, B. J. Bond, K. L. Drogos, R. W. Porter, A. Yahn, and Y. Zhang. 2008. "Hostile News: Partisan Use and Perceptions of Cable News Programming." *Journal of Communication* 58(2):201–19.
- Collins, S. 2004. *Crazy Like a FOX: The Inside Story of How Fox News Beat CNN*. New York: Penguin.
- Dalton, R. J., P. A. Beck, and R. Huckfeldt. 1998. "Partisan Cues and the Media: Information Flows in the 1992 Presidential Election." *American Political Science Review* 92:111–26.
- Druckman, J. N., and M. Parkin. 2005. "The Impact of Media Bias: How Editorial Slant Affects Voters." *Journal of Politics* 67:1030–49.
- Feldman, L. 2011. "The Opinion Factor: The Effects of Opinionated News on Information Processing and Attitude Change." *Political Communication* 28(2):163–81.
- Groeling, T., and M. A. Baum. 2007. "Iraq and the 'Fox Effect': An Examination of Polarizing Media and Public Support for International Conflict." Paper presented at the annual meeting of the American Political Science Association, Chicago, IL.

- Hamilton, J. T. 2005. "The Market and the Media." In *The Press*, ed. G. Overholser and K. H. Jamieson. New York: Oxford University Press.
- Hart, P. S. 2008. "Market Influences on Climate Change Frames in CNN and Fox News Climate Change Broadcasts." Paper presented at the International Communication Association Annual Meeting. Montreal, Quebec, Canada.
- Intergovernmental Panel on Climate Change (IPCC). 2007. "Summary for Policymakers." In *Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change*, ed. S. Solomon, D. Qin, M. Manning, Z. Chen, M. Marquis, K.B. Averyt, M. Tignor, and H. L. Miller. Cambridge: Cambridge University Press.
- Iyengar, S., and K. S. Hahn. 2009. "Red Media, Blue Media: Evidence of Ideological Selectivity in Media Use." *Journal of Communication* 59(1):19-39.
- Iyengar, S., and D. Kinder. 1987. *News That Matters: Television and American Public Opinion*. Chicago: University of Chicago Press.
- Jamieson, K. H., and J. N. Cappella. 2008. *Echo Chamber*. New York: Oxford University Press.
- Jamieson, K. H., B. Hardy, and D. Romer. 2007. "The Effectiveness of the Press in Serving the Needs of American Democracy." In *A Republic Divided*, ed. The American Democracy Project. New York: Oxford University Press.
- Johnston, R., M. Hagen, and K. H. Jamieson. 2004. *The 2000 Presidential Election and the Foundation of Party Politics*. New York: Cambridge University Press.
- Jost, J. T., J. Glaser, A. W. Kruglanski, and A. F. Sulloway. 2003. "Political Conservatism and Motivated Social Cognition." *Psychological Bulletin* 129:339-75.
- Kahlor, L., and S. Rosenthal. 2009. "If We Seek, Do We Learn? Predicting Knowledge of Global Warming." *Science Communication* 30(3):380-414.
- Kahn, K. F., and P. J. Kenney. 2002. "The Slant of the News: How Editorial Endorsements Influence Campaign Coverage and Citizens' Views of Candidates." *American Political Science Review* 96:381-94.
- Klapper, J. T. 1960. *The Effects of Mass Communication*. Glencoe, IL: Free Press.
- Krosnick, J. A., A. L. Holbrook, L. Lowe, and P. S. Visser. 2006. "The Origins and Consequences of Democratic Citizens' Policy Agendas: A Study of Popular Concern about Global Warming." *Climate Change* 77:7-43.
- Krosnick, J. A., and B. MacInnis. 2010. "Frequent Viewers of Fox News Are Less Likely to Accept Scientists' Views of Global Warming." Report for The Woods Institute for the Environment. <http://woods.stanford.edu/docs/surveys/Global-Warming-Fox-News.pdf>.
- Krippendorff, K. 2004. *Content Analysis: An Introduction to Its Methodology*. Thousand Oaks, CA: Sage.
- Kruglanski, A. W. 2004. *The Psychology of Closed-Mindedness: Essays in Social Psychology*. New York: Psychology Press.
- Kull, S., C. Ramsay, and E. Lewis. 2003. "Misperceptions, the Media, and the Iraq War." *Political Science Quarterly* 118:569-98.
- Lee, G. H., and J. N. Cappella. 2001. "The Effects of Political Talk Radio on Political Attitude Formation: Exposure versus Knowledge." *Political Communication* 18:369-94.

- Lodge, M., and C. Taber. 2000. "Three Steps toward a Theory of Motivated Political Reasoning." In *Elements of Reason: Cognition, Choice, and the Bounds of Rationality*, ed. A. Lupia, M. D. McCubbins, and S. L. Popkin. Cambridge, UK: Cambridge University Press.
- Lord, C. G., L. Ross, and M. R. Lepper. 1979. "Biased Assimilation and Attitude Polarization: The Effects of Prior Theories on Subsequently Considered Evidence." *Journal of Personality and Social Psychology* 37:2098–109.
- McCombs, M. E. 2005. "The Agenda-Setting Function of the Press." In *The Press*, ed. G. Overholser and K. H. Jamieson. New York: Oxford University Press.
- Morris, J. S. 2005. "The Fox News Factor." *International Journal of Press/Politics* 10:56–79.
- Nisbet, M. C., and T. Myers. 2007. "The Poll—Trends: Twenty Years of Public Opinion about Global Warming." *Public Opinion Quarterly* 71:444–70.
- Pew Research Center. 2008. "Key News Audiences Now Blend Online and Traditional News Sources: Audience Segments in a Changing News Environment." <<http://people-press.org/report/444/news-media>> (accessed November 4, 2010).
- Pew Research Center. 2009a. "Economy, Jobs Trump All Other Policy Priorities in 2009." <<http://people-press.org/report/485/economy-top-policy-priority>> (accessed November 4, 2010).
- Pew Research Center. 2009b. "Fewer Americans See Solid Evidence for Global Warming." <<http://people-press.org/report/556/global-warming>> (accessed November 4, 2010).
- Preacher, K. J., P. J. Curran, and D. J. Bauer. 2006. "Computational Tools for Probing Interactions in Multiple Linear Regression, Multilevel Modeling, and Latent Curve Analysis." *Journal of Educational and Behavioral Statistics* 31:437–48.
- Prior, M. 2009. "Improving Media Effects Research through Better Measurement of News Exposure." *Journal of Politics* 71:893–908.
- Project for Excellence in Journalism. 2005. "The State of the News Media 2005: An Annual Report on American Journalism." <<http://www.stateofthemedias.org/2005/>> (accessed November 4, 2010).
- Project for Excellence in Journalism. 2008. "The Color of News: How Different Media Have Covered the General Election." <<http://www.journalism.org/node/13436>> (accessed November 4, 2010).
- Project for Excellence in Journalism. 2009. "The State of the News Media 2009: An Annual Report on American Journalism." <<http://www.stateofthemedias.org/2009/>> (accessed November 4, 2010).
- Riffe, D., S. Lacy, and F. G. Fico. 2005. *Analyzing Media Messages: Using Quantitative Content Analysis in Research*. Mahwah, NJ: Lawrence Erlbaum.
- Schultz, P. W. 2001. "Assessing the Structure of Environmental Concern: Concern for the Self, Other People, and the Biosphere." *Journal of Environmental Psychology* 21:327–39.
- Stamm, K. R., F. Clark, and P. R. Eblacas. 2000. "Mass Communication and Public Understanding of Environmental Problems: The Case of Global Warming." *Public Understanding of Science* 9:219–37.
- Stroud, N. J. 2008. "Media Use and Political Predispositions: Revisiting the Concept of Selective Exposure." *Political Behavior* 30:341–66.
- Taber, C. S., and M. Lodge. 2006. "Motivated Skepticism in the Evaluation of Political Beliefs." *American Journal of Political Science* 50:755–69.

- Zaller, J. R. 1992. *The Nature and Origins of Mass Opinion*. Cambridge, UK: Cambridge University Press.
- Zaller, J. 1996. "The Myth of Massive Media Impact Revived: New Support for a Discredited Idea." In *Political Persuasion and Attitude Change*, ed. D. Mutz, P. M. Sniderman, and R. A. Brody. Ann Arbor: University of Michigan Press.
- Zhao, X. 2009. "Media Use and Global Warming Perceptions: A Snapshot of the Reinforcing Spirals." *Communication Research* 36:698–723.

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