

Citizen Roles in Framing Issues: The Public Discourse of Climate Change in the United States

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Abstract

The ability of the public to understand scientific issues is essential for them to evaluate potential risk and policy alternatives adequately. Usually the public is portrayed as a passive participant on complex policy issues. They are seen as recipients of messages from the media or elite opinion leaders. We suggest that the public is much more active in this process than the literature recognizes and that through public discourse, they are helping to shape the policy process.

Key words: public discourse, policy process, opinion leaders, opinion targets, climate change, trust in media

The media is often blamed for the perceived polarization of the American public (e.g. Manjoo, 2008; Stroud, 2010; Sunstein, 2009), and it is argued that this could result in alternative constructions of reality (Manjoo, 2008). While it appears the media is increasingly ideological in an effort to gain greater market share (e.g. Hamilton, 2005; Peters, 2010), it also appears as though the public is increasingly choosing to limit their exposure to the media (Baum & Kernell, 1999; Prior, 2007). If the public chooses to not expose themselves to the media (see Bennet & Iyengar, 2008, 2010), how then do they learn about the political issues that face the country? How do they develop opinions on these issues?

One of the most discussed causal links in political behavior research is the two-step model of information flow and mobilization first outlined in the seminal work by Lazarsfeld and his colleagues (Lazarsfeld, Berelson, & Gaudet, 1948). The idea was simple, but profound. Political information is received from media and other sources by elites or opinion leaders who then disseminate that information throughout the polity, affecting both attitudes and behavior of the electorate. This basic idea has been a mainstay of social science research ever since. Political scientists like Zaller (1992) and Jones and Baumgartner (2005); social psychologists like Krosnick (1990); Sociologists like Marsden (1987) and Dietz, Stern, and Guagnano (1998); communications scholars like Weimann (1991); Weimann, Tustin, van Vuuren, and Joubert (2007); and Nisbet and Kotcher (2009); and business scholars like Childers (1986) and Watts and Dodds (2007), just to name a few, have all elaborated on this simple model. The overall research themes and causal steps are similar: 1) media or other mass communications are directed at the larger population; 2) these messages are particularly received and then assimilated by attentives-influentials-opinion leaders (whatever nomenclature is used); who then 3) communicate them to other citizens with whom they have interpersonal networks; so that 4) the messages are

disseminated more fully throughout the polity (or consumers); who then 5) filter them through personal trust and risk parameters; 6) weigh them with their own attitudes and beliefs to 7) identify potential problems areas (or products and services) and 8) support or oppose policy choices and other political behaviors (or specific consumer products and services). This model is outlined graphically in Figure 1 below. (We will focus on the political side in this discussion.)

[Figure 1 about here]

Most of this research has focused on survey research and has identified influentials-opinion leaders-attentives through self-reports of opinion leadership or through self-reports of the possession of certain characteristics, like education, wealth or high levels of political interest and activity. This is understandable because if one wants to discover something about real populations outside the laboratory context, surveys and their inherent subjectivity are part of the price of doing business. These studies are very important and add much to our understanding of the flow of information and knowledge to the public and the creation, within that public, of a sense of policy problems and potential solutions. We believe that there is another important actor, however, left out of these models that may also help elaborate this crucial process. That is the role of average citizens themselves, who through their own interactions with one another may also be playing an important, contributory role to this political process.

The question arises then, are members of the public actually discussing policy issues with others in their social networks and having influence on, or being influenced by, those interactions? One of the few studies to look empirically at the workings of such a network of interpersonal communications was Childers' (1986) study of cable television adoptions in a local community. He asked respondents directly if they talked to others about adoption and if the respondents were more likely to influence others' decisions or be influenced by them, which he

found to be the case. More generally, word-of-mouth research finds that discourse between those of relatively equal social status can have a powerful influence on opinion formation and preferences (e.g. Allsop, Bassett, & Hoskins, 2007).

We believe that on important policy issues, like climate change, members of the public are very likely to be sharing information and discussing risks and preferences with one another. And, if this is so, then citizens may not be just passive recipients of information and knowledge flows from media and other elite sources, but may actually be working together to frame issues, problems, risks and solutions. It is that possibility we will be testing in this study.

The major question under investigation is whether members of the public's discussions with one another are an independent source affecting their opinions, risk evaluations, problem identifications and policy choices regarding issues like climate change (CC). We utilize two national public opinion polls we designed and commissioned that specifically enable us to examine several characteristics of the public discourse of CC. These data allow for a test of who is participating in the public discourse on CC, whether they are influencers or receivers, and what impact they think they may be having on this policy issue. In this manuscript we develop an analytical approach to examine three different aspects of the public discourse on CC. We report the results of our analyses, discuss the implications of our study, and offer suggestions for future research.

Certainly, there is reason to believe that public discourse would influence public understanding of policy issues like CC, but why might this be? Caldeira and Gibson (1992) give us an idea of how this might work in their study of public support for the Supreme Court. They found that opinion leaders are more supportive of the Court than are members of the mass public. However, they identified opinion leaders based on personal characteristics they said they

possess—knowledge, attention, activism. They did not actually tap into self-reports of attempts to communicate with others, as Childers did in his study. As in many others of these types of two-step studies, the link between opinion leaders and the other citizens is assumed, not measured. It is that important gap we hope to fill in this study. Here, we will try to determine, again through self-reports, who is attempting to communicate with others and who is influencing and being influenced. In Figure 2 we present this expanded picture of the refined two-step model.

[Figure 2 about here]

The Give and Take of Public Discourse

For public discourse to have an influence on citizens' orientations to a public issue like CC, there must be a give and take between individuals. If public discourse is a causal factor in the development of public understanding of CC as an issue, what influences the likelihood of engaging in this discourse? What factors encourage an individual to want to discuss an issue like CC with others? What causes someone to be influenced by this discussion?

Opinion Recipients

Of the two sides of discourse, the literature about recipients is quite clear. There is a robust literature examining discourse processing. This literature emphasizes the influence of individual interests on the ability of this discourse to become a part of long-term memory (Petty & Cacioppo, 1986). These are the stable personal dispositions and/or motivational orientations that will develop over time for a given issue. These orientations and dispositions are often associated with increased knowledge, values, and positive feelings about the issue (Renninger 2000; Schiefele 1991, 1992). Individuals are naturally going to be more likely to engage in activities that interest them (e.g. Deci & Ryan, 1985). Schiefele argued that interest “allows for

correct and complete recognition of an object, leads to meaningful learning, promotes long-term storage of knowledge, and provides motivation for further learning” (1991, p. 300).

Characteristics of the recipients of discourse alter the likelihood of the discourse having an effect. Those with some prior knowledge are more likely to have a lasting impression of the discourse because the new information is able to graft onto an existing mental structure associated with that topic (e.g. Mannes & Kintsch, 1987). This is an important characteristic as polls have consistently shown that greater than sixty percent of the public has heard or read at least some amount of information about CC since 1997, nearly reaching ninety percent by 2007 (Nisbet & Myers 2007, p. 447).

Importantly, there seems to be a difference between assessed and perceived knowledge for CC, where those who believe that they are knowledgeable do not actually know much about CC ([Identifiable Reference]). Those who think that they know a lot about a topic are much more likely to be interested in that topic, which should increase their desire to obtain information. On the other hand, because prior knowledge influences retention, those who actually understand CC – those with higher assessed knowledge – ought to be more likely to connect the information presented to an existing memory structure than those who do not actually understand because they should have a more developed structure.

Furthermore, Schiefele (1992) identified two additional characteristics of individual interests – feeling-related and value-related valences – that influence this process. Feeling-related valences are those feelings that are directly associated with a topic. Usually, these can be thought of as feelings of enjoyment or involvement. For CC, feelings of personal efficacy and trust could influence an individual’s receptiveness and retention as a result of discourse that they receive from a fellow citizen. Value-related valences relate to the ascription of personal significance to

an object. For environmental issues, like CC, this can manifest itself in the presence of ecological values about the proper role of humans within the environment.

Additionally, there are two types of opinion recipients. The first, *opinion seekers*, are actively trying to obtain a better understanding of an issue. The second, *opinion targets*, are approached by others. The difference between these is associated with how this discourse is initiated.¹

If public discourse is, in fact, a relevant factor, then these attitudinal characteristics ought to be associated with the respondents entering into the interpersonal discussion process. Those at the receiving end of this discourse should be directly influenced by their interests in CC, which can be expressed through their prior knowledge, feelings and values. Based on the above discussion, we expect the following regarding opinion targets:

H1: Those with low assessed knowledge, but high perceived knowledge, stronger CC feelings and values will be more likely to be targets for information by others.

H2: Those with low perceived knowledge, but high assessed knowledge, stronger CC feelings and values will be more likely to be influenced by a targeted conversation.

Opinion Givers and Discourse Initiators

The literature about those that initiate a conversation is a bit less clear. In their famous examination of the flow of information, Lazarsfeld et al. (1948) found little direct media effect on voter attitudes. Instead, they found “that ideas often *flow* from radio and print *to* opinion leaders and *from* these to the less active sections of the population”, and that friends, family, and co-workers influenced voting decisions. Leaders are people that others within a group want to emulate and feel comfortable communicating with. For the purposes of this project, a group

could be thought of as a family unit, a group of friends, coworkers in a particular part of the company (e.g. all of the sales representatives, cashiers, or sub-fields in political science), fellow attendees of religious services, or even those on a bowling team. An individual can be a member of several groups, but may not be considered an opinion leader within all of these (e.g. Katz, 1957, p. 73). Rogers noted, “Some individuals are looked to for advice by many of their peers; others are asked for their opinions...by only a few” (1961, p. 226). For CC, an individual may be a leader in their bowling team, family unit, and religious group, but would not be considered a leader at work or amongst a particular group of friends, where the individual may defer to another member. Therefore, we assume that those who are asked their opinions on CC will be from members of a group in which they are a leader on topics such as the environment, which includes CC.

Opinion leadership is often viewed to be a component of perceived knowledge and topic-related behavior that reflects greater familiarity with the topic (Flynn, Goldsmith, & Eastman, 1994, 1996; Katz, 1957). Certainly, those that believe they know a lot about a topic are more likely to discuss it, particularly if they are the most knowledgeable on that topic within their group. Importantly, Flynn et al. (1994, 1996) emphasized that this perception of knowledge is a critical characteristic, not the existence of actual knowledge. Therefore, those that believe they know a lot about CC ought to be more likely to discuss this issue than those who actually understand CC because these two constructs may be unrelated. In the context of public discourse, *opinion givers* are those who have their opinions sought by others, but are not the first to initiate the contact.

Discourse initiators are the first to reach out and are the most likely to be motivated to initiate a discussion of CC with friends, family, and co-workers. The literature on persuasion

presumes that those who try to persuade someone else are usually motivated by self-interest (e.g. Darke & Chaiken, 2005). This literature largely presumes that the persuader will benefit in some manner as a result of this activity. For CC, it is unlikely that someone who initiates a conversation would gain financially or socially. Instead, their motivation is most likely to be associated with a desire to prevent any of the negative consequences associated with CC or to prevent an overreaction that they think is unnecessary. The persuasion literature, then, helps to explain topic-related behavior for discourse initiators.

Additionally, opinion givers and discourse initiators on one topic are probably opinion recipients in other settings, which suggests that feeling-related and value-related valences are likely influencing behavior. Those with the strongest feeling and value-related valences about CC ought to be the most likely to want to learn and to share their knowledge. This desire should cause these individuals to become familiar with the repercussions of CC, or the overreactions to CC, which may enhance these feeling and value-related valences. Therefore, it is likely that these feeling and value-related valences are actually the topic-related behavior associated with opinion givers, opinion recipients and discourse initiators on CC. This discussion results in the following expectation for discourse initiators and opinion givers:

H3: Those with low assessed knowledge, but high perceived knowledge, stronger CC feelings and values will be more likely to contact others about CC.

H4: Those with low assessed knowledge, but high perceived knowledge, stronger CC feelings and values will be more likely to be asked their opinions about CC.

H5: Those with low assessed knowledge, but high perceived knowledge, stronger CC feelings and values will be more likely to believe that their discussion influenced the views of others.

While opinion givers and discourse initiators are influenced by the media, this influence is shaped by the quality of the information reported, which for CC is likely at a sixth to ninth grade level (e.g. Covello & Sandman, 2001), and more inaccurate than accurate ([Identifiable Reference]). Therefore, unlike issue areas that are far less complex, the opinion leaders and discourse initiators start from a disadvantage when trying to explain CC to others. When these individuals provide confirmation of what was reported by the media, it is more likely to have a direct influence on the views of the recipient. Because givers and initiators are more likely to be motivated by a perception that they understand CC, they are the most likely to want to discuss CC.

Analytical Approach

This project seeks to understand who is participating in the public discourse of CC. To do so, we utilize two national public opinion polls that ask questions regarding discussing CC with other members of the public. The first poll was conducted in 2004, and the second in 2007.² This data will not only allow us to determine who is actively discussing CC, but it will also allow us to determine if there have been any significant systematic shifts in public behavior over that time.

We will analyze three different perspectives on this process. Each perspective captures a different process, which will provide an overview of the way the public discusses CC. Our three perspectives encompass those that are targeted by others about CC (opinion targets), those that are asked their opinions (opinion givers), and those that contact someone to specifically tell them about CC (discourse initiators). Additionally, we will examine how successful each respondent felt they were in influencing their target's opinion, and the ability of someone else to influence their opinion. All of the questions allow a "yes" or "no" response. Therefore, we code all "yes"

responses as 1, and all “no” responses as 0. Due to this coding scheme, the most appropriate analytical approach is a logit regression.³

The primary independent variables for our analyses reflect components of discourse discussed above. First, knowledge is recognized as a predictor within this environment. Therefore, we create measures of both assessed and perceived knowledge. The assessed measure is constructed using six questions about CC.⁴ The perceived measure is a self-assessment of each respondents understanding of CC. Second, values are also influential. Accordingly, we will control for each respondent’s ecological values. Ecological values measure a respondent’s views about the relationship between humans and our place in the environment. Those that hold greater ecological values ought to be more likely to discuss CC.

Finally, feelings should also contribute.⁵ There are several feelings that need to be measured when examining CC. We include three general categories of feelings – trust, efficacy, and concern. We presume that those that feel most strongly in these attitudinal attributes will be the most likely to discuss CC with others (Stern, Dietz, & Kalof, 1993). Those that have greater concern about CC ought to have stronger feelings. Personal efficacy reflects how responsible one feels for the environment. Those that feel most responsible ought to be more likely to want to discuss CC with others in order to convince them that they too should own some responsibility for the problem.

The role of the media is very important and we control for that by assessing respondent perceptions of trust in the media to accurately report on CC. The field of risk communication regularly finds that credibility, or trust, is the first requirement for effective risk communication (e.g. Heldring, 2004). Miller and Krosnick (2000) have found that those who have the greatest trust in the media are most likely to be influenced by media effects. Additionally, the media has

the power to set, or at least influence, the political agenda. Consequently, we expect that those who trust the media would be more likely to want to discuss CC.

Similar to media trust, we suspect that those who trust experts should also be more likely to believe these experts. Similarly, those who have confidence in the science of CC ought to trust this science. Trust is a powerful feeling, and those that express greater trust ought to have stronger relationships with the dependent variable.

We also control for the usual collection of demographic characteristics that could influence behavior. Specifically, we control for the influence of gender, church attendance, income, race, ideology, age, education and party identification. These characteristics are often found to have an influence on the public's views toward CC (e.g. Leiserowitz, 2006).

Results

The results of our analyses are presented below. Table 1 presents a summary distribution of the levels of citizen public discourse interactions. These rates of public discourse are much higher than one would expect to find if one were looking at those defined as opinion leaders-attentives-influentials through the more indirect methods of the earlier studies. So there is much more interactive public discussion in play than may have been thought.

Interestingly, the rate of perceived influence is similar between opinion givers and discourse initiators, despite there being significantly fewer discourse initiators. Additionally, opinion targets are less likely to believe that this conversation influenced their opinion, though the rate is still in the mid-forty percent.

[Insert Table 1 about here]

To simplify the presentation of our results, we will examine the analyses in the following order: 1) discussions when respondent's opinion is sought (opinion givers), 2) discussions where

the respondent is purposefully contacting someone to talk about CC (discourse initiators), and 3) discussions where the respondent is targeted by someone else to change the respondent's opinion (opinion targets). We will first focus on the pooled analyses of those that discuss CC before shifting to the influence of these discussions.

Opinion Givers

Whose opinion is sought by others? This analysis should provide the most direct test of opinion leadership. Within circles of friends, families, co-workers, or any other social group, who is most likely to be asked their opinion on CC? The analyses are based on the question, "Has anyone ever asked you for your opinion on global warming and climate change?" The results of these models are presented in Table 2.

[Insert Table 2 about here]

The results of the pooled analysis indicate that those that have less confidence in the science of CC are more likely to be asked their opinion. As expected, those who perceive themselves as being knowledgeable were more likely to be asked. The results also indicate that males, those with more education, and young adults are more likely to have their opinion sought. Importantly, this analysis provides mixed support for H4, as those with higher levels of perceived knowledge were more likely to have their opinion sought. However, none of the feelings or value-valence measures provided an expected influence, though ecological values, efficacy, trust in experts, and concern were in the expected direction.

When asked to give their opinion on CC, did the respondent think that they influenced the other person's opinion? Our secondary analyses on this topic are also reported in Table 2. The dependent variable is based on the question, "Do you think you influenced their opinions on global warming?" The model suggests that those who trust experts, are concerned about CC,

perceive themselves to be knowledgeable, are male, and young adults are more likely to feel they influenced opinion. These results provide some support for H5. The knowledge measures and two of the feeling-valence measures identified the expected relationship. However, ecological values do not appear to play an important role for opinion leaders in this context.

Discourse Initiators

Conversations about CC could randomly occur in the course of interacting with family and friends, and someone might solicit an opinion leader's viewpoint during the course of this normal interaction. However, when examining the spreading of information through conversation, it is important to explicitly examine those who contact others to specifically tell them about CC. This advocacy occurs with the intent of influencing the opinions of others, which is a completely different process than the random flow of conversation where this intent is absent. Table 3 presents analyses of the determinants of those who specifically contact someone to discuss CC. This model is based on the question, "Have you ever contacted anyone to tell him/her about global warming and climate change?"

[Insert Table 3 about here]

The results reveal a good picture of those who contact someone else to tell them about CC. The results continue to suggest that those who believe they are more knowledgeable about CC are also more likely to contact someone else. Importantly, these results provide support for H3 for every variable except trust in media. Specifically, we learn that those who trust experts, have greater efficacy, have greater ecological values, have confidence in the science of CC, and have greater concern for CC are all more likely to contact someone. The analysis also suggests that males, religious attendees, those with more education, and older adults are more likely to contact others about CC.

While these individuals purposefully contact others to inform them about CC, it may be useful to understand who actually felt that they were able to change the recipient's opinion. The secondary analysis on these individuals is presented in Table 3. The analysis is based on the question, "Do you think you caused anyone to change his/her opinion?" The model provides mixed support for H4. Those with greater perceived knowledge were more likely to believe that they were able to influence someone else's opinion. The model also suggests that those who trust the media, have lower ecological values, and greater concern about CC were more likely to report that they influenced their target's opinion. Additionally, we find that those who are male, non-white, younger in age, and Republican are more likely to feel they changed someone's opinion. Finally, we find that respondents in 2004 were marginally less likely to believe they had this influence than those in 2007. While we find that the knowledge measures behave as expected, the value-value measure is the opposite direction of what is expected. It still holds that those who feel most strongly believe they had an influence, except the strength was in the opposite direction – those that had the weakest ecological values believe that they had an impact. This may reflect the existence of a skeptic's construction of CC knowledge.

Opinion Targets

The analyses have thus far sought to understand those that have had others ask their opinion and those that specifically contact someone to tell them about the issue. However, these analyses have been unable to tell us much about those that are the recipient of these conversations. In the give and take of public discourse, who are the takers? To answer this, we seek to determine whom others are contacting in an attempt to influence opinion. This analysis is based on the question, "Has anyone tried to influence your opinion on global warming and climate change?" The results are presented in Table 4.

[Insert Table 4 about here]

The analysis suggests that those who perceive that they are more knowledgeable are more likely to have someone try to influence them. The data also indicate that those who are male, have higher incomes, are white, are young adults, and have more education are more likely to have someone try to influence their opinion. These results are only able to confirm one aspect of H1, that those with greater perceived knowledge were more likely to be opinion takers. It is possible that the model is unable to differentiate the influence of the value and feeling-valance measures fully because the question does not differentiate between those that are approached, and those who are not. We operate under the assumption that people would not subject themselves to such a conversation if they were not interested in CC, but there is no way of verifying this. Regardless, there is something about those who think they understand CC that makes them more likely to have someone try to influence their view.

The final secondary analysis seeks to understand who felt that these attempts by others actually influenced their opinion. Specifically, these respondents were asked, “Did that contact affect your opinion?” While we do not know to what extent their opinion was affected (e.g. did they change their mind, were their views strengthened, etc.), we can determine who was likely to indicate that these opinions were affected. The results of the analysis are presented in Table 4. We find mixed support for H2. The model reveals that those with greater perceived knowledge were less likely to believe that their opinion was affected. The analysis also indicates that those with more trust in experts and greater efficacy were more likely to have their opinion affected. Unfortunately, while they may have a more advanced mental structure for this information to graft, those with greater assessed knowledge were no more likely to believe their views were altered, which may provide an indication of the quality of the information discussed.

Discussion

We began this project intending to understand if the public's discussions with one another are an independent source affecting their opinions, risk evaluations, problem identifications and policy choices regarding issues like CC. Following our analyses, we have a good understanding of this discourse. This allows us to offer the following implications that derive from this project.

First, public discourse is occurring at relatively high levels, much higher than expected, and seems to be, even controlling for other factors, helping citizens frame the CC issue. Consequently, public discourse is likely filling the information void left by those who have self-selected away from the media. Public discourse is, therefore, an important construct that should be included for future research to look at the two-step communication model more completely. Our results provide support for the role that public discourse likely plays in the propagation of an alternative knowledge construct of CC. Indeed, our results consistently indicate that those who discuss CC are more likely to think that they are knowledgeable about the issue. However, as [Identifiable Reference] illustrate, those who think they are knowledgeable do not necessarily have actual, science-based knowledge of CC. Therefore, those who are talking most about CC may include some who do not actually understand CC. Those that do have knowledge that is associated with a scientific knowledge construct are statistically no more likely to discuss CC.

Second, these results have important implications for the knowledge-deficit model that argues that citizens know less than experts, and that when the gap is closed, citizen positions will more closely approximate those of experts. Interestingly, while those who believe they are knowledgeable are more likely to discuss CC as well as believe that they are able to influence someone else's opinion, they do not believe that situations where someone attempts to tell them

about CC influences their opinion. In other words, those that already think they understand CC are unwilling or unable to have their opinions altered. If these individuals are unwilling to allow others to try to influence their views, how will the knowledge deficit between experts and the layperson shrink?

Third, the two-step communications model relies upon the expectation that the opinion givers and discourse initiators filter pertinent media information to their discussants. As noted, for risk-related information to be properly understood, there needs to be some level of trust in the source (e.g. Heldring, 2004). Consequently, our measure of trust in media ought to provide a direct indicator of the influence of the media on these opinion givers and discourse initiators. If they trust the media, then their conversations should reflect that coverage (see Miller & Krosnick, 2000). However, we do not find that media trust is a predictor of CC discourse. With the exception of a weak relationship in the examination of discourse initiator influence, there is nothing to suggest that those who are discussing CC are relying upon trusted media to provide their information. Therefore, the opinions of these individuals may be formed outside of the framing and agenda setting influences of the media, which raises questions about what actually informs their opinions. Regardless of whether the media serves to “inform” the public or “legitimize” a position (see Katz, 1957), our results require that scholarship revisit the role of the media in regards to CC discourse, and possibly other highly complex issue domains.

Fourth, it is interesting that political ideology and party identification are largely insignificant influences on the likelihood of discussing CC. Political ideology and party identification are commonly found to have a significant influence on a wide variety of issues related to CC (e.g. Leiserowitz, 2006), which may suggest they are playing a much more

complex role in the discussion of CC. One would suspect this to be the case for the likelihood of discussing it as well. However, we do not find this relationship.

Finally, we believe that the role of public discourse identified in this project is not unique to CC. Any time that an issue is complex, there is a greater likelihood that interpersonal sources of information and knowledge exist. In particular, these results suggest that when people believe they are knowledgeable about a topic, regardless of the validity of that belief, they are more likely to discuss the topic.

Notes

1 Due to data limitations, we will only be able to examine opinion targets.

2 Both are national public surveys conducted as part of a larger project for the National Oceanic and Atmospheric Administration. Both surveys obtained phone based national random samples of subscribed telephone exchanges and banks provided by the sampling firm Survey Sampling International (SSI). The 2004 survey was conducted from July 13 to August 10, 2004 and took about 35 minutes to complete. The 2007 survey was in the field from April 3 to July 18, 2007 and took about the same time to complete. Both surveys were conducted by professional CATI survey research units.

3 It is possible that an individual may fall into more than one of these categories. To examine this phenomenon, we estimated the correlations between the variables. The correlation between opinion givers and discourse initiators is .2063 (only 4.25 percent of the variance of each variable is in common), which indicates a fairly weak correlation between the two. We also estimated correlations for both of these with opinion takers. We find that takers and givers are moderately correlated at .5261 (27.67 percent), while takers and initiators are weakly correlated at .1811 (3.27 percent). Consequently, we feel that it is safe to analyze the data separately without concerns regarding the causality proposed.

4 A summary of the questions used in this analysis can be found in Appendix Table 1.

5 The literature traditionally refers to these “feelings” as “beliefs.” We will continue to use the term “feelings” to be consistent with the terminology used by Schiefele (1991, 1992).

References

- Allsop, D. T., Bassett, B. R., & Hoskins, J. A. (2007). Word-of-mouth research: Principles and applications. *Journal of Advertising Research*, 47(4), 398–411.
- Baum, M. A., & Kernell S. (1999). Has cable ended the golden age of presidential television? *American Political Science Review*, 93(1), 99–114.
- Bennett, W. L., & Iyengar, S. (2008). A new era of minimal effects? The changing foundations of political communication. *Journal of Communication*, 58(4), 707–731.
- Bennett, W. L., & Iyengar, S. (2010). The shifting foundations of political communication: Responding to a defense of the media effects paradigm. *Journal of Communication*, 60(1), 35–39.
- Caldeira, G. A., & Gibson, J. L. (1992). The etiology of public support for the Supreme Court. *American Journal of Political Science*, 36(3), 635–664.
- Childers, T. L. (1986). Assessment of the psychometric properties of an opinion leadership scale. *Journal of Marketing Research*, 23(2), 184–188.
- Covello, V., & Sandman, P. M. (2001). Risk communication: Evolution and revolution. In A. Wolbarst (Ed.), *Solutions to an environment in peril*. Baltimore: Johns Hopkins University Press.
- Darke, P. R., & Chaiken, S. (2005). The pursuit of self-interest: Self-interest bias in attitude judgment and persuasion. *Journal of Personality and Social Psychology*, 89(6), 864–883.
- Deci, E. L., & Ryan, R. M. (1985). *Intrinsic motivation and self-determination in human behavior*. New York: Plenum.
- Dietz, T., Stern, P. C., & Guagnano, G. A. (1998). Social structural and social psychological bases of environmental concern. *Environment and Behavior*, 30(4), 450–471.

- Flynn, L. R., Goldsmith, R. E., & Eastman, J. K. (1994). The King and Summers opinion leadership scale: Revision and refinement. *Journal of Business Research*, 31(September), 55–64.
- Flynn, L. R., Goldsmith, R. E., & Eastman, J. K. (1996). Opinion leaders and opinion seekers: Two new measurement scales. *Journal of the Academy of Marketing Science*, 24(2), 137–147.
- Hamilton, J. T. (2005). The market and the media. In G. Overholser & K. Hall Jamieson (Eds.), *The institutions of American democracy: The press*. Oxford: Oxford University Press. pp. 351–370.
- Heldring, M. (2004). Talking to the public about terrorism: Promoting health and resilience. *Families, Systems, & Health*, 22(1), 67–71.
- Jones, B. D., & Baumgartner, F. R. (2005). The politics of attention: How government prioritizes problems. Chicago: University of Chicago Press.
- Katz, E. (1957). The two-step flow of communication: An up-to-date report on an hypothesis. *Public Opinion Quarterly*, 21(1), 61–78.
- Krosnick, J. A. (1990). Government policy and citizen passion: A study of issue publics in contemporary America. *Political Behavior*, 12(1), 59–92.
- Lazarsfeld, P. F., Berelson, B., & Gaudet, H. (1948). *The people's choice: How the voter makes up his mind in a presidential campaign*. New York: Duell, Sloan and Pierce.
- Leiserowitz, A. (2006). Climate change risk perception and policy preferences: The role of affect, imagery, and values. *Climate Change*, 77(1–2), 42–72.
- Manjoo, F. (2008). *True enough: Learning to live in a post-fact society*. New York: Wiley.

- Mannes, S. M., & Kintsch, W. (1987). Knowledge organization and text organization. *Cognition and Instruction*, 4(2), 91–115.
- Marsden, P. V. (1987). Core discussion networks of Americans. *American Sociological Review*, 52(1), 122–131.
- Miller, J. M., & Krosnick, J. A. (2000). News media impact on the ingredients of presidential evaluations: Politically knowledgeable citizens are guided by a trusted source. *American Journal of Political Science*, 44, 301–315.
- Nisbet, M. C., & Myers, T. (2007). The polls – trends: Twenty years of public opinion about global warming. *Public Opinion Quarterly*, 71(3), 444–470.
- Nisbet, M. C., & Kotcher, J. E. (2009). A two-step flow of influence?: Opinion-leader campaigns on climate change. *Science Communication*, 30(3), 328–354.
- Peters, C. (2010). No-spin zones: The rise of the American cable news magazine and Bill O'Reilly. *Journalism Studies*, 11(6), 832–851.
- Petty, R. E., & Cacioppo, J. T. (1986). *Communication and persuasion: Central and peripheral routes to attitude change*. New York: Springer-Verlag.
- Prior, M. (2007). *Post-broadcast democracy: How media choice increases inequality in political involvement and polarizes elections*. New York: Cambridge University Press.
- Renninger, K. A. (2000). Individual interest and its implications for understanding intrinsic motivation. In C. Sansone & J. M. Harackiewicz (Eds.), *Intrinsic and extrinsic motivation: The search for optimal motivation and performance*. New York: Academic.
- Rogers, E. M. (1961). *Characteristics of innovators and other adopter categories* (Research Bulletin No. 882). Wooster: Ohio Agriculture Experiment Station.

- Schiefele, U. (1991). Interest, learning, and motivation. *Educational Psychologist*, 26(3–4), 299–323.
- Schiefele, U. (1992). Topic interest and levels of text comprehension. In K. A. Renninger, S. Hidi, & A. Krapp (Eds.), *The role of interest in learning and development*. Hillsdale, NJ: Erlbaum.
- Stern, P. C., Dietz, T., & Kalof, L. (1993). Value orientations, gender, and environmental concern. *Environment and Behavior*, 25(3), 322–348.
- Stroud, N. J. (2010). Polarization and partisan selective exposure. *Journal of Communication*, 60(3), 556–576.
- Sunstein, C. R. (2009). *Going to extremes: How like minds unite and divide*. New York: Oxford University Press.
- Watts, D. J., & Dodds, P. S. (2007). Influentials, networks, and public opinion formation. *Journal of Consumer Research*, 34(4), 441–458.
- Weimann, G. (1991). The influentials: back to the concept of opinion leaders? *Public Opinion Quarterly*, 55, 267–279.
- Weimann, G., Tustin, D. H., van Vuuren, D., & Joubert, J. P. R. (2007). Looking for opinion leaders: Traditional vs. modern measures in traditional societies. *International Journal of Public Opinion Research*, 19 (2), 173–189.
- Zaller, J. R. (1992). *The nature and origins of mass opinion*. London: Cambridge University Press.

Figure 1: Model of Two-Step Communication

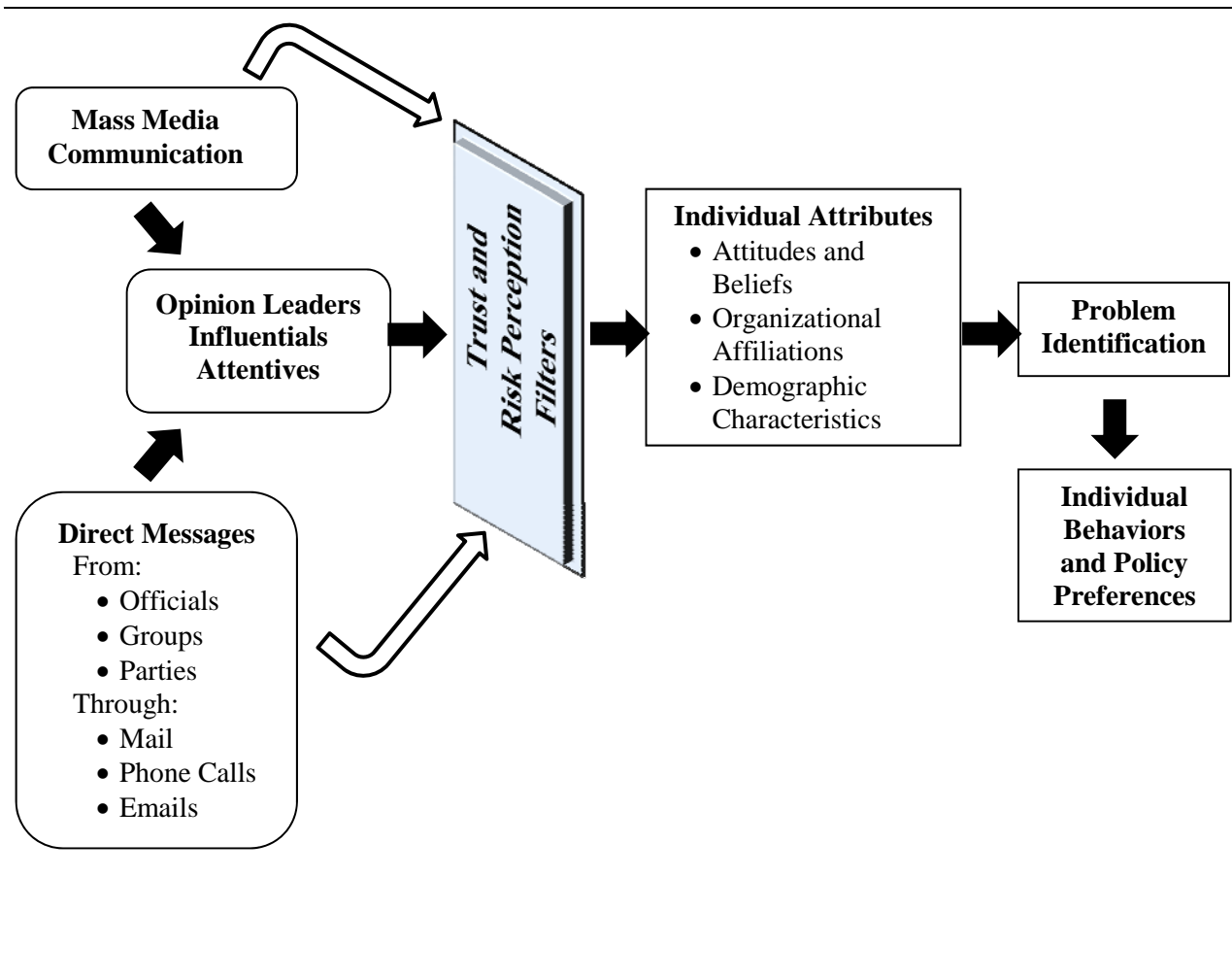


Figure 2: Adding Public Discourse Component to Two-Step Communication Model

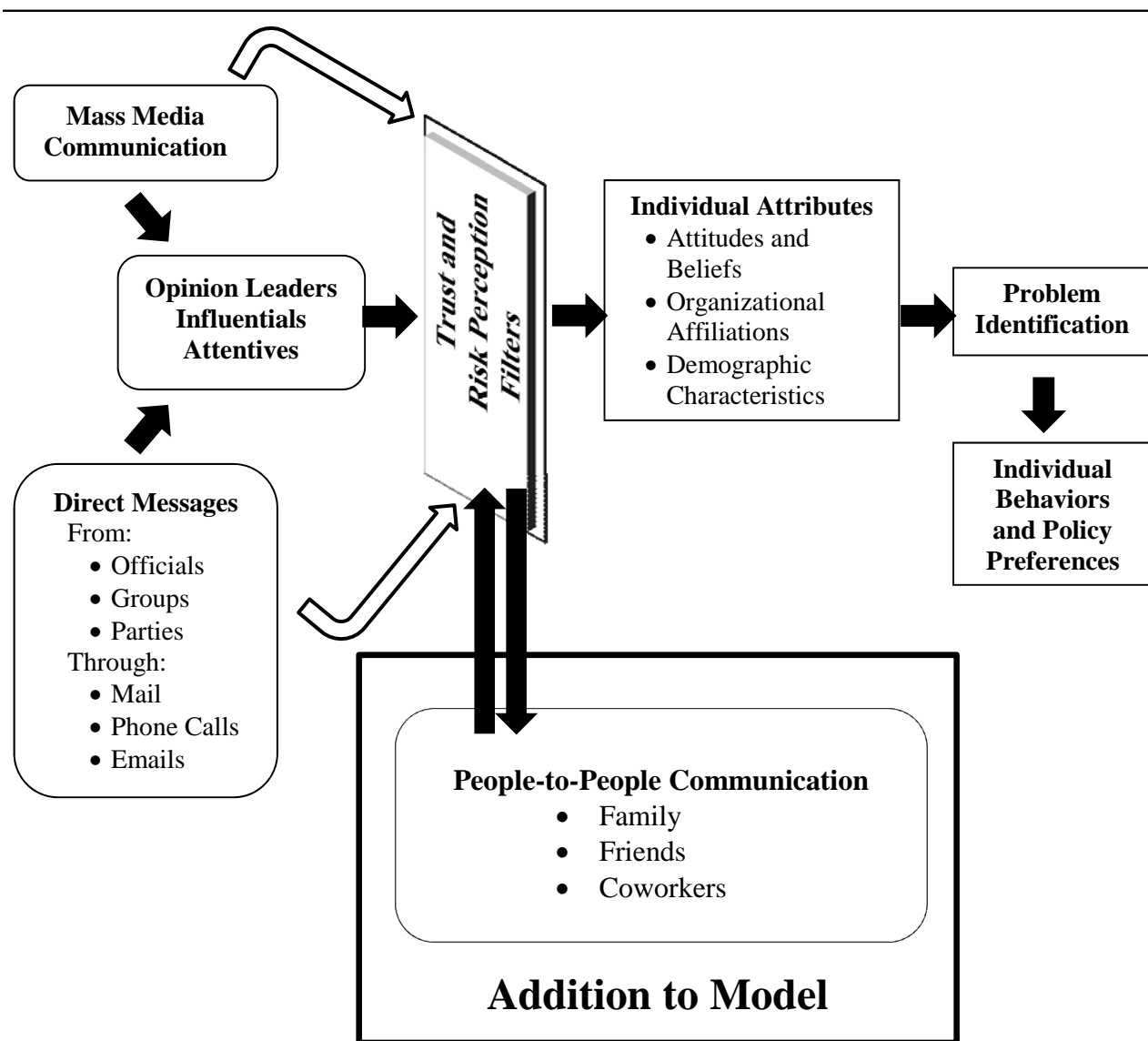


Table 1: Summary of Public Discourse

	2004	2007	Total
Opinion Givers			
Asked Their Opinion	307 (42.40%)	218 (37.13%)	525 (40.14%)
Influenced Someone	190 (61.88%)	136 (62.38%)	326 (62.09%)
Discourse Initiators			
Contact Someone	94 (13.01%)	110 (18.77%)	204 (15.58%)
Influenced Someone	58 (61.70%)	78 (70.90%)	136 (66.66%)
Opinion Takers			
Opinion Takers	301 (41.80%)	252 (43.00%)	553 (42.34%)
Influenced	140 (46.51%)	111 (44.04%)	251 (45.38%)

Table 2: The Discourse and Perceived Influence of Opinion Givers

	Discuss		Influence	
	Coefficient	Prob.	Coefficient	Prob.
Knowledge				
Perceived	.115 (.028)	.000	.185 (.047)	.000
Assessed	-.073 (.282)	.795	-.044 (.489)	.928
Values				
Ecological Values	.037 (.152)	.807	.031 (.243)	.897
Feelings				
Trust Media	-.016 (.042)	.692	.022 (.073)	.757
Trust Experts	.062 (.039)	.110	.132 (.068)	.054
Concern for CC	.154 (.118)	.193	.343 (.195)	.079
Confidence in Science	-.158 (.083)	.056	.069 (.136)	.610
Efficacy	.219 (.155)	.158	.210 (.248)	.397
Demographics				
Male	.416 (.123)	.001	.378 (.210)	.061
Religious Attendance	-.085 (.126)	.499	.127 (.210)	.546
Income	.003 (.002)	.125	.001 (.003)	.697
White	.286 (.181)	.116	.331 (.301)	.271
Ideology	.037 (.040)	.357	.010 (.067)	.882
Age	-.021 (.004)	.000	-.016 (.006)	.016
Education	.144 (.033)	.000	.040 (.058)	.486
Republican	-.082 (.157)	.599	.270 (.261)	.302
2004	.148 (.135)	.271	.047 (.225)	.833
Constant	-3.695 (.745)	.000	-3.471 (1.325)	.009
Number of Cases	1311		525	
Likelihood Ratio Chi2	113.71	.0000	54.75	.0000
Pseudo R2	.0634		.0783	
Log Likelihood	-840.415		-322.455	

Standard errors are in parentheses. Two-tailed test. *Discuss* dependent variable based on: "Has anyone ever asked you for your opinion on global warming and climate change? Yes or no." *Influence* dependent variable is based on a "yes" response to *Discuss* and: "Do you think you influenced their opinions on global warming? Yes or no."

Table 3: The Discourse and Perceived Influence of Discourse Initiators

	Discuss		Influence	
	Coefficient	Prob.	Coefficient	Prob.
Knowledge				
Perceived	.166 (.043)	.000	.235 (.087)	.007
Assessed	.404 (.398)	.310	-.374 (.882)	.671
Values				
Ecological Values	.503 (.206)	.015	-.968 (.421)	.022
Feelings				
Trust Media	-.005 (.057)	.921	.286 (.127)	.024
Trust Experts	.101 (.054)	.064	.063 (.115)	.580
Concern for CC	.446 (.164)	.007	.646 (.350)	.065
Confidence in Science	.335 (.118)	.005	-.020 (.244)	.932
Efficacy	.616 (.224)	.006	-.322 (.430)	.454
Demographics				
Male	.568 (.168)	.001	.727 (.352)	.039
Religious Attendance	.344 (.171)	.044	-.166 (.377)	.660
Income	-.001 (.002)	.496	.006 (.006)	.259
White	.218 (.244)	.372	-1.244 (.605)	.040
Ideology	.022 (.054)	.685	-.164 (.116)	.157
Age	.010 (.005)	.063	-.020 (.012)	.099
Education	.128 (.047)	.006	-.107 (.109)	.324
Republican	-.273 (.246)	.266	1.485 (.603)	.014
2004	-.033 (.193)	.863	-.722 (.434)	.096
Constant	-10.308 (1.128)	.000	2.409 (2.357)	.307
Number of Cases	1309		204	
Likelihood Ratio Chi2	171.06	.0000	41.53	.0008
Pseudo R2	.1435		.1583	
Log Likelihood	-510.384		-110.427	

Standard errors are in parentheses. Two-tailed test. *Discuss* dependent variable based on: "Have you ever contacted anyone to tell him/her about global warming and climate change? Yes or no." *Influence* dependent variable is based on a "yes" response to *Discuss* and: "Do you think you caused anyone to change his/her opinion? Yes or no."

Table 4: The Discourse and Perceived Influence of Opinion Takers

	Discuss		Influence	
	Coefficient	Prob.	Coefficient	Prob.
Knowledge				
Perceived	.113 (.029)	.000	-.105 (.046)	.023
Assessed	-.078 (.287)	.786	.035 (.462)	.939
Values				
Ecological Values	.059 (.155)	.702	-.061 (.226)	.786
Feelings				
Trust Media	-.013 (.043)	.759	-.020 (.069)	.771
Trust Experts	.019 (.040)	.627	.162 (.067)	.015
Concern for CC	.143 (.120)	.234	.203 (.179)	.256
Confidence in Science	-.117 (.084)	.163	.065 (.130)	.615
Efficacy	.173 (.157)	.272	.642 (.252)	.011
Demographics				
Male	.345 (.125)	.006	.122 (.187)	.513
Religious Attendance	-.059 (.128)	.646	.168 (.197)	.394
Income	.007 (.002)	.001	-.002 (.003)	.517
White	.307 (.185)	.097	-.044 (.279)	.872
Ideology	-.026 (.041)	.534	-.080 (.064)	.209
Age	-.025 (.004)	.000	-.008 (.006)	.217
Education	.197 (.034)	.000	-.046 (.057)	.418
Republican	.182 (.159)	.254	-.068 (.248)	.782
2004	-.114 (.137)	.407	-.015 (.217)	.942
Constant	-4.073 (.765)	.000	-.299 (1.244)	.810
Number of Cases	1306		553	
Likelihood Ratio Chi2	150.07	.0000	48.23	.0001
Pseudo R2	.0842		.0634	
Log Likelihood	-815.753		-356.040	

Standard errors are in parentheses. Two-tailed test. *Discuss* dependent variable based on: "Has anyone tried to influence your opinion on global warming and climate change? Yes or no."

Influence dependent variable is based on a "yes" response to *Discuss* and: "Did that contact affect your opinion? Yes or no."

Appendix Table 1: Variable Definitions

Variable	Operation
Dependent Variables	
Opinion Giver	Measured nominally using the question "Has anyone ever asked you for your opinion on global warming and climate change? Yes or no." 1 = yes, 0 = no
Opinion Giver Influence	Measured nominally using the question "Do you think you influenced their opinions on global warming? Yes or no." 1 = yes, 0 = no
Discussion Initiator	Measured nominally using the question "Have you ever contacted anyone to tell him/her about global warming and climate change? Yes or no." 1 = yes, 0 = no
Discussion Initiator Influence	Measured nominally using the question "Do you think you caused anyone to change his/her opinion? Yes or no." 1 = yes, 0 = no
Opinion Taker	Measured nominally using the question "Has anyone tried to influence your opinion on global warming and climate change? Yes or no." 1 = yes, 0 = no
Opinion Taker Influence	Measured nominally using the question "Did that contact affect your opinion? Yes or no." 1 = yes, 0 = no
Knowledge	
Assessed	Measured using an average of correct responses to six questions. Both the 2004 and 2007 surveys asked for evaluations of the truth of the following statements: (1) Nitrous Oxide is a greenhouse gas, (2) The major cause of increased atmospheric concentration of greenhouse gases is human burning of fossil fuels, (3) Biological diversity will increase as global temperature increases, and (4) Aerosols are airborne particles that are known to contribute to the formation of clouds and precipitation. The 2004 survey also asked, (5a) Forest growth is likely to decrease as a result of climate changes that are caused by Global Warming, and (6a) Water vapor is the principal greenhouse gas. The 2007 survey also asked, (5b) Scientists agree that, as a result of global warming, the sea level will continue to rise for at least a century, and (6b) There is scientific consensus that there will be an increase in global precipitation as a result of global climate change.
Perceived	Measured using an 11-point scale. Respondents were asked to indicate how informed they considered themselves to be on the issue of climate change or global warming, with 10 = very well informed, and 0 = not at all informed. Rescaled such that 0-1 = 0, 2-3=1, 4-6=2, 7-8=3, and 9-10=4.
Values	
Ecological Values	Measured as an index that average respondent concern for GW using a 4-point scale where 3 = strongly agree and 0 = strongly disagree, respondents were asked to state their agreement with (1) We are approaching the limit of people the earth can support; (2) When humans interfere with nature it produces disastrous consequences; (3) Plants and animals have as much right to exist as humans; (4) The earth is like a spaceship with limited resources; (5) Balance of nature is delicate; (6) If things continue on their present course, we will experience a major ecological catastrophe; and (7) Today's policies must consider the needs of future generations.
Feelings	
Trust Media	Measured as an index that averages responses to 4 items. Using an 11-point scale, respondents were asked to indicate the trustworthiness of information on climate change provided by newspapers, television news, radio, and the Internet, with 10 = very trustworthy, and 0 = not trustworthy at all. Rescaled such that 0-1 = 0, 2-3=1, 4-6=2, 7-8=3, and 9-10=4
Trust Experts	Measured as an index that averages responses to 4 items. Using an 11-point scale, respondents were asked to indicate the trustworthiness of information on climate change provided by government agencies, nonprofit organizations, environmental interest groups, and other interest groups, with 10 = very trustworthy, and 0 = not trustworthy at all. Rescaled such that 0-1 = 0, 2-3=1, 4-6=2, 7-8=3, and 9-10=4
Concern for CC	Average concern for GW using a 4-point scale where 3 = strongly agree and 0 = strongly disagree, respondents were asked their agreement with (1) GW having a noticeably negative impact on their health, (2) GW will have a noticeably negative impact on their economic and financial situation, and (3) GW will have a noticeably negative impact on the environment where they live.
Confidence in Science	Measured using a 4-point scale. Respondents were asked "How clearly do you think scientists understand Global Warming and Climate Change," with 1 = very unclear understanding and 4 = very clear understanding.
Efficacy	Measured as an index that average respondent concern for GW using a 4-point scale where 3 =

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strongly agree and 0 = strongly disagree, respondents were asked to state their agreement with (1) I believe my actions have an influence on GW; (2) My actions to reduce the effects of GW in my community will encourage others to reduce their effects; (3) I have an obligation to future generations to reduce my impact on GW.

Demographics	
Male	Measured nominally as 1 = male, and 0 = female
Religious Attendance	Measured nominally as 1 = yes (attended a religious service in the last 7 days), 0 = no (did not attend a religious service)
Income	Measured as the estimated annual household income (11 ordered categories representing \$10,000 increments where a range of \$10,000 to \$19,999 would be coded 15)
White	Measured nominally as 1 = white, and 0 = nonwhite
Ideology	Measured as a 7-point scale, with 1 = strongly liberal, and 7 = strongly conservative
Age	Measured in years.
Education	Measured in years of education.
Republican	Measured nominally as 1 = Republican, and 0 = Democrat or no preference
2004	Measured nominally as 1 = 2004 participant, and 0 = 2007 participant