

# 10

## THE IMPACT OF CANDIDATES' STATEMENTS ABOUT GLOBAL WARMING ON ELECTORAL SUCCESS IN 2008 TO 2015

Evidence Using Five Methodologies<sup>1</sup>

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According to surveys conducted since 2008, large majorities of Americans have believed that the earth's temperature has been gradually increasing over the last 100 years, have believed that such warming is at least partly human-caused, have believed it is a threat, and supported government action to reduce future emissions of greenhouse gasses (what might be called a set of "green" opinions; see the first four rows of Table 10.1). Such majorities have also appeared among Independents (see rows 7 and 11 of Table 10.1) and might seem to suggest that political candidates could gain votes by staking out green positions on global warming and that taking not-green positions could cause candidates to lose votes.

However, according to the literature on issue publics in political science and to psychology's literature on attitude strength, gauging issue impact on voting should not be done by examining the entire electorate. According to these literatures, a policy issue such as global warming is unlikely to influence the votes of all citizens and will instead only influence the votes of people who consider it to be highly important to them personally (see, e.g., Anand & Krosnick, 2003; Krosnick, 1990; Visser, Bizer, & Krosnick, 2006). According to recent surveys, about 15% of America's adult population have consider the issue to be extremely personally important since 2008 (see row 5 of Table 10.1), and among these individuals, gigantic majorities have apparently taken green positions on the issue (see rows 9 and 13 of Table 10.1). This reasoning also suggests that candidates may have been able to win votes by taking green positions on climate and may have lost votes by taking not-green positions.

**TABLE 10.1** Americans' Beliefs Regarding Global Warming and Personal Importance, 2008–2015

<i>Belief</i>	2008	2009	2010	2011	2012	2013	2015
The planet has probably been warming	80%	75%	75%	83%	73%	73%	69%
Humans have been at least partly responsible for the warming	77%	70%	75%	72%	77%	80%	81%
Global warming will be a very or somewhat serious problem for the U.S.	--	73%	75%	--	79%	80%	79%
The federal government should do more than it is doing now to address global warming	61%	56%	62%	--	61%	66%	61%
Global warming is extremely personally important	16%	16%	16%	15%	10%	18%	13%
The planet has probably been warming							
Among Democrats	87%	82%	87%	91%	86%	86%	82%
Among Independents	79%	74%	75%	84%	71%	73%	70%
Among Republicans	74%	67%	61%	66%	57%	57%	49%
Among people for whom global warming was extremely important personally	94%	92%	89%	89%	91%	90%	86%
The federal government should do more than it is doing now to address global warming							
Among Democrats	78%	71%	77%	--	76%	79%	78%
Among Independents	59%	54%	66%	--	60%	66%	62%
Among Republicans	39%	42%	35%	--	36%	49%	38%
Among people to whom global warming is extremely important personally	90%	86%	90%	--	81%	86%	91%

Notes: Question wording and coding and data collection methodologies for each survey are described in Appendix A.

This paper describes eight studies carried out with five methodologies to test those hypotheses. Methodology 1 consisted of Studies 1 and 2, which were observational studies and focused on the 2008 and 2012 U.S. presidential election, respectively. Political scientists have routinely gauged the impact of a policy issue on vote choices by conducting statistical analyses using survey respondents' reports of their own positions on the issue and their perceptions of the candidates' positions on the issue. We used such measures to construct proximity scores (using various different methods) to quantify which candidate the respondent was closer to, and by how much. Vote choices were regressed on the proximity scores and other potential determinants of candidate preferences using data from a large national survey to look for evidence that global warming proximity might have shaped voting.

Methodology 2 consisted of Study 3, which employed a content analysis methodology and focused on votes cast during the 2010 Congressional elections. Speculating about the impact of global warming on those elections, some observers have claimed that supporting legislation to address global warming cost candidates victories (e.g., "Democrats who took risk and voted for climate bill pay price"; Hughes, 2010), whereas others disputed this claim (e.g., "Cap-and-trade didn't kill the Democrats"; Levi, 2010; see also Johnson, 2010; Taylor-Miesle, 2010). To test these speculations, we first conducted a content analysis of Congressional candidates' campaign websites and incumbents' Congressional websites to determine whether each candidate took a green position on global warming, took a not-green position, or was silent or mixed. Then, we conducted statistical analyses to assess whether these groups of candidates differed in their electoral success, while controlling for potential confounding factors. We also explored whether taking a green position paid off more when a candidate's opponent took a not-green position than when the opponent was silent and whether taking a not-green position hurt more when a candidate's opponent took a green position than when the opponent was silent.

Methodology 3, a mixture of methodologies of observational studies and content analysis, consisted of Study 4, which was an analysis relating statements made about global warming by candidates for the 2012 primary elections with respondents' intent for vote for them in hypothetical matchups. Study 4 involved a within-subject experiment embedded in a survey of a nationally representative sample of American adults (in September 2011) as well as content analysis of political candidates' stances on the issue of global warming. In the experiment, each respondent was asked the following five questions of hypothetical matchup voting questions with actual candidates (the order in which these questions were asked in each respondent was randomized): "If the 2012 presidential election were being held today and the candidates were Barack Obama, the Democrat, and [randomly selected: Mitt Romney / Jon Huntsman / Michelle Bachmann / Ron Paul / Rick Perry], the Republican, for whom would you vote?" We used the standard method in political science to assess the potential impact of global

warming beliefs and issue proximity on voting choice controlling for various other possible causes of vote choice. We employed a content analysis on the six candidates evaluated in the hypothetical matchup voting questions, and assigned each of them an index score on his/her stance on global warming.

Methodology 4, direct inquiry without manipulation, consisted of Study 5, which was an analysis of how various stances on global warming by hypothetical candidates would impact the likelihood of respondents' intent to vote for them. Study 5 involved a within-subject experiment embedded in a survey of a nationally representative sample of American adults (in January 2015). In the experiment, each respondent heard statements from three hypothetical candidates running for the U.S. Senate or the president of the United States. The three hypothetical candidates expressed a green position, a not-green position and a not-committal position on the issue of global warming. The order in which respondents heard the candidate with green, not-green, or not-committal position was randomized. After hearing the statement from each of the three candidates, respondents were asked that if a candidate says that statement, how this would affect how likely they would be to vote for the candidate. This experimental design allowed assessment of the electoral impact of a candidate's expressing a stance on global warming.

Methodology 5, experimental studies, consisted of Studies 6, 7, and 8. Studies 6 and 7 involved between-subject experiments embedded in surveys of representative samples of all American adults (in November 2010) and of adults residents of Florida, Maine, and Massachusetts (in July 2010), respectively. In both experiments, telephone interviewers read quotes from a hypothetical candidate said to be running for the U.S. Senate in the respondent's state, and the respondent indicated the likelihood that he or she would vote for the candidate. All respondents heard the candidate take positions on a series of issues other than global warming. For some respondents, the candidate took no position on global warming. Other respondents heard the candidate take a green position on global warming. And, in the national survey only, some respondents heard the candidate take a not-green position on global warming. This experimental design allowed assessment of the impact of adding a statement on global warming to a candidate's utterances.

Study 8 employed an experiment embedded in an Internet survey of Americans from a non-probability sample to assess the electoral impact of candidates' taking different stances on the issue of global warming. Study 8 used a different study design from Studies 5–7 in a number of aspects: (1) Study 8 used real candidates' real speeches in video as experiment stimuli; (2) Study 8 evaluated the electoral impact of a (real) candidate's taking different stances on the issue of global warming when that candidate was presented alone as if in a single candidate election, as well as when that candidate was presented with the opponent as in a two-candidates election; and (3) Study 8 explored the impact of a (real) candidate's taking different stances on the issue of global warming on measures of electoral outcomes, as well as others, such as effect and personality traits perception.

## **Study 1—An Observational Study about the 2008 Presidential Election**

Study 1 employed traditional analytic methods to assess the impact on candidate choice in the 2008 U.S. presidential election of voter proximity to candidates on global warming policy.

### ***Data and Method***

#### *Data Collection*

The data used in this study is Face-to-Face Recruited Internet Survey Platform (FFRISP). Respondents in the FFRISP were recruited via face-to-face area probability sampling and were all given a free laptop (or its equivalent value in cash), high-speed Internet access at home (if they didn't have it already), and regular cash payments in exchange for completing monthly questionnaires for a year. The FFRISP began with 1,000 panelists, who were recruited between June and October 2008. The current study is based on data collected during the first, second, fifth, and seventh waves, initiated in October 2008, November 2008, February 2009 and July 2009, respectively. The response rate for panel enrollment was 47% (AAPOR RR4), and 989, 978, 970, 955 individuals completed the first, second, fifth and seventh wave questionnaires, respectively, yielding a cumulative response rate of 45%.

Following DeBell and Krosnick (2009), weights were constructed to adjust for unequal probability of household selection, household listing interview nonresponse, within-household selection of potential panel member, and non-coverage and nonresponse through post-stratification. In post-stratification, an iterative raking procedure implemented by Pasek (2010) was performed to closely match the FFRISP data to the population benchmarks of age, gender, educational attainment, race, Hispanic ethnicity, marital status, presence of children in household, household size, whether a language other than English was spoken in the household, region, type of housing unit, and whether internet connection had been available in the household in the previous two months. These benchmarks were the population estimates of non-institutionalized adults aged 18 years or older in American Community Survey in 2008, except that the benchmark of households with internet connections was based on the supplement on Computer and Internet Use in the 2009 Current Population Survey.

Table 10.2 displays unweighted and weighted distributions of demographics for the FFRISP respondents, as well as national benchmarks computed using the data from the 2008 American Community Survey. Before the weights were applied, the FFRISP respondents were similar to the American population, with a slight under-representation of males, people ages 65 and older, and people without a high school

degree and high school graduates, and with a slight over-presentation of people aged 25–34, people with some college, and college graduates. After the weights were applied, the FFRISP respondents were nearly identical to the population.

**TABLE 10.2** Study 1: Demographics of the Sample and the American Community Survey

<i>Demographic</i>	<i>FFRISP (unweighted)</i>	<i>FFRISP (weighted)</i>	<i>American Community Survey (ACS) 2008</i>	<i>Difference: FFRISP (weighted)—ACS</i>
Gender				
Male	41.6%	48.3%	48.3%	.0%
Female	58.5	51.7	51.7	.0
Total	100.0%	100.0%	100.0%	
	(N=970)	(N=970)	(N=222,146,343)	
Age				
18–24	10.4%	12.2%	12.2%	.0%
25–34	22.4	17.7	17.7	.0
35–44	21.7	18.9	18.9	.0
45–54	22.0	19.7	19.7	.0
55–64	15.1	15.0	15.0	.0
65+	8.6	16.6	16.6	.0
Total	100.0%	100.0%	100.0%	
	(N=970)	(N=970)	(N=222,146,343)	
Ethnicity				
Hispanic	13.5%	14.0%	13.5%	.5%
Non-Hispanic	86.5	86.0	86.5	-.5
Total	100.0%	100.0%	100.0%	
	(N=970)	(N=970)	(N=222,146,343)	
Race				
Black	12.0%	12.8%	11.9%	.9%
Nonblack	88.0	87.3	88.1	-.8
Total	100.0%	100.0%	100.0%	
	(N=970)	(N=970)	(N=222,146,343)	

continued...

Table 10.2 continued...

<i>Demographic</i>	<i>FFRISP (unweighted)</i>	<i>FFRISP (weighted)</i>	<i>American Community Survey (ACS) 2008</i>	<i>Difference: FFRISP (weighted)—ACS</i>
Education				
HS but no degree	8.4%	14.9%	14.9%	.0%
HS graduates	24.7	28.6	28.6	.0
Some college	27.9	23.3	23.3	.0
College or higher	39.0	33.2	33.2	.0
Total	100.0%	100.0%	100.0%	
	(N=970)	(N=970)	(N=222,146,343)	
Region				
Northwest	16.6%	18.4%	18.4%	.0%
Midwest	20.3	21.9	21.9	.0
South	38.5	36.6	36.6	.0
West	24.6	23.1	23.1	.0
Total	100.0%	100.0%	100.0%	
	(N=970)	(N=970)	(N=222,146,343)	

### *Measures*

Question wording and coding of all the measures described below is available in Appendix B.

#### TURNOUT AND CANDIDATE CHOICE

The dependent measure is a four-category variable: voting for Mr. Obama, voting for Mr. McCain, voting for a non-major party candidate, or not voting at all. This measure was constructed using responses to questions asked of respondents in November 2008, about whether they voted in the Presidential Election and for whom they voted. Respondents who said they definitely or probably voted and said they voted for Obama, McCain, or someone else were coded “voting for Obama,” “voting for McCain,” “voting for a non-major party candidate,” respectively. All respondents who said they definitely or probably did not vote in the Presidential Election were coded as “not voting at all.” Question wordings and coding of this dependent variable and all other variables are described in Appendix B.

## PROXIMITY ON GLOBAL WARMING POLICY

Proximity to the candidates on global warming policy was measured using three methods: Euclidean distance, and city block distance (Downs, 1957; Enelow & Hinich, 1984), and directional similarity (Rabinowitz, 1978; Rabinowitz & Macdonald, 1989).  $V_i$  and  $C_j$  denote voter  $i$ 's own and his/her perception of candidate  $j$ 's placement on the issue, where the neutral point is 0, and favoring and opposing with intensity are represented by positive and negative integers, respectively. That is, a positive value of self-placement  $V_i$  or candidate placement  $C_j$  indicates that the respondent is or the candidate is perceived to be green and supportive of global warming policies; greater positive values indicate more support for policies.  $(V_i - C_j)^2$ ,  $|V_i - C_j|$ , and  $V_i * C_j$  are the Euclidean distance, city block, and directional measures of voter-candidate issue congruence, respectively.

We focused on two policy issues: the federal government lowering the amount of greenhouse gases that power plants were allowed to put into the air to reduce future global warming, and the federal government requiring automakers to build cars that use less gasoline. Global warming policy issue proximity score was averaged over the two policies. Regressions controlled for factors that might influence voting turnout and outcomes including political party identification, interest in politics, President Bush's job approval, perception of the health of the national economy, and demographics such as sex, age, race, ethnicity, education, income and region.

Measures of  $C_j$  were based respondent reports of whether Mr. Obama and Mr. McCain favored, opposed, or neither favored nor opposed the following two policies: the federal government lowering the amount of greenhouse gases that power plants were allowed to put into the air to reduce future global warming, and the federal government requiring automakers to build cars that use less gasoline. Respondents who answered either "favor" or "oppose" then reported whether they thought Mr. Obama and Mr. McCain favored or opposed a great deal, moderately, or a little. This allowed us to place each candidate perception on a 7-point scale.

Measures of  $V_i$  were constructed in a similar way. Respondents were asked whether they favored, opposed, or neither favored nor opposed the same government policy, and the same follow-up question was asked, allowing placement on the same 7-point scale. The climate policy proximity score for each respondent was averaged over the two policies.

## IDEOLOGICAL PROXIMITY

Political ideological congruence between the respondent and the candidates was computed in a similar way. Respondents were asked whether they would describe Mr. Obama and Mr. McCain as liberal, conservative, or neither liberal or conservative. Respondents who said "liberal" or "conservative" were asked a follow-up question about whether the candidate was very liberal/conservative

or somewhat liberal/conservative. Respondents who said “neither liberal nor conservative” were asked whether they thought the candidate was closer to liberals, closer to conservatives, or neither. This again allowed for placement on a 7-point scale, and respondents answered a pair of questions to place themselves on the same 7-point scale.

#### PERSONAL IMPORTANCE

Respondents were asked how important the issue of global warming was to them personally. People who said it was extremely or very important were treated as the high importance group, and all others were treated as the low importance group.

#### BELIEF IN ANTHROPOGENIC WARMING

Respondents who believed that the earth has been gradually warming over the last 100 years due to human activity were categorized as “green.”

#### CONTROL VARIABLES

Respondents reported their political party affiliation, interest in politics, overall approval of President Bush’s performance of his job, and perception of the health of the national economy. Demographics included sex, race, Hispanic ethnicity, age, education, income, and region.

### *Analysis*

Multinomial logistic regression predicting polychromous outcomes is based on the assumption of Independence of Irrelevant Alternative (IIA). The Hausman specification test revealed no evidence that this assumption was violated in our data. An alternative model for predicting polychromous outcomes is the multinomial probit specification, which makes an untestable assumption that the error terms for each category outcome are jointly normally distributed. Our results were similar whether conducted in multinomial logistic or multinomial probit regressions.

Another analytic approach we could take is modeling an individual fixed effect to capture all the factors that may have impacted each citizen’s behavior, including variables that are observable and measured in the survey (e.g., the voter’s political party affiliation), variables that are observable but were not measured in the survey (e.g., the citizen’s positions on many other policy issues), and unobservable attributes of individuals. All these factors could have influenced voter’s self-placements as well as candidate placements, so an appropriate estimation method would be conditional or individual fixed effect logistic regression, with a first-difference estimator. Similar results were obtained with this alternative estimation.

## Results

A large majority, 81%, of respondents were green on the global warming issues (that is, the average global warming policy index score of self-placement was positive). A small minority, 13%, of respondents were not-green on the global warming issues (that is, the average global warming policy index score of self-placement was negative). The remaining 6% of respondents were neutral (that is, the average global warming policy index score was zero). A majority, 55%, of respondents perceived Mr. Obama to be greener than Mr. McCain on the global warming issues (that is, the average global warming policy index score of Mr. Obama's placement was greater than that of Mr. McCain's). Nearly half, 45%, of respondents said the issue of global warming was highly important to them personally (that is, they thought global warming was extremely important or very important personally). Among these high importance respondents, 86% were green on the global warming issues, 4% were not-green, and the remaining 10% were neutral. 60% of high importance respondents thought Mr. Obama was greener than Mr. McCain on the global warming issues. Because the vast majority of high importance respondents were green, and more high importance respondents saw Mr. Obama as being greener than Mr. McCain, these numbers suggest that Mr. Obama was advantaged overall by being perceived as greener than Mr. McCain.

### *Impact of Issue Proximity on Voting Behavior*

Controlling for many other predictors of voting behavior, global warming issue proximity was a significant predictor in the expected direction using all three analytic methods (see Table 10.3). Matching Mr. Obama's position on global warming more closely than Mr. McCain's led people to be less likely to vote for Mr. McCain than for Mr. Obama (e.g.,  $b = -.39, p < .01$  with the city block measure; see row 1 in columns (1) in Table 10.3; see row 1 in columns (4) and (7) in Table 10.3 for the results using Euclidian distance and directional models, respectively).

Other factors thought to influence candidate choice were also significant predictors in expected directions when using all three methods. People who matched Mr. Obama's ideology more closely than Mr. McCain's were less likely to vote for Mr. McCain. Democrats were less likely than were Independents to vote for Mr. McCain, and Republicans were more likely to do so than were Independents. People who approved of President Bush's performance were more likely to vote for Mr. McCain than were disapprovers. Blacks were less likely to vote for Mr. McCain than were non-blacks, and people in the South were more likely to vote for Mr. McCain than were people in the Northeast (see Table 10.3).

Also as expected, many factors thought to influence turnout had significant effects in expected directions (see Harder & Krosnick, 2008; Holbrook et al., 2001). As compared to people who did vote, people who did not vote were

**TABLE 10.3** Study 1: Multinomial Logistic Regression Coefficients Predicting Voting Behavior

Predictor	City Block Measures			Euclidian Measures			Directional Measures		
	Voted for McCain	Voted for Other	Did Not Vote	Voted for McCain	Voted for Other	Did Not Vote	Voted for McCain	Voted for Other	Did Not Vote
Global Warming Issue Proximity	-0.39*** (0.09)	-0.30** (0.13)	-0.14* (0.09)	-0.07*** (0.02)	-0.06** (0.03)	-0.02 (0.02)	-0.15*** (0.03)	-0.12*** (0.04)	-0.06* (0.03)
Ideology Proximity	-0.34*** (0.06)	-0.18*** (0.07)	-0.15*** (0.06)	-0.06*** (0.01)	-0.03*** (0.03)	-0.02** (0.02)	-0.13*** (0.03)	-0.08** (0.03)	-0.04* (0.02)
Democrat	-0.90** (0.37)	-1.24** (0.59)	-0.74** (0.29)	-0.92** (0.37)	-1.17** (0.57)	-0.76*** (0.29)	-0.90** (0.36)	-1.16** (0.58)	-0.75*** (0.29)
Republican	1.64*** (0.44)	-0.79 (0.80)	0.32 (0.43)	1.66*** (0.43)	-0.82 (0.80)	0.38 (0.42)	1.62*** (0.45)	-0.84 (0.82)	0.34 (0.434)
Attitudes toward Big Government	-1.61*** (0.61)	-1.80** (0.82)	0.51 (0.61)	-1.73*** (0.61)	-1.78** (0.82)	0.46 (0.60)	-1.90*** (0.59)	-1.88** (0.84)	0.454 (0.60)
Bush Approval	2.06*** (0.60)	-0.09 (0.82)	1.69*** (0.49)	2.17*** (0.58)	-0.18 (0.85)	1.79*** (0.48)	2.19*** (0.58)	-0.11 (0.80)	1.83*** (0.483)
Perception of the Economy	-0.09 (0.85)	2.61** (1.02)	-0.14 (0.63)	-0.02 (0.86)	2.74*** (1.02)	-0.07 (0.63)	0.08 (0.83)	2.78*** (1.01)	-0.08 (0.63)
Interest in Politics	0.79 (0.67)	1.33* (0.78)	-1.93*** (0.51)	0.76 (0.65)	1.36* (0.78)	-1.95*** (0.50)	0.86 (0.65)	1.46* (0.77)	-1.91*** (0.50)
Female	0.15 (0.31)	-0.96* (0.52)	0.89*** (0.26)	0.20 (0.31)	-0.98* (0.53)	0.92*** (0.26)	0.19 (0.31)	-0.97* (0.52)	0.93*** (0.26)
Hispanic	-0.61 (0.55)	-0.42 (0.91)	0.13 (0.36)	-0.66 (0.57)	-0.41 (0.90)	0.14 (0.36)	-0.74 (0.56)	-0.45 (0.88)	0.10 (0.35)

Black	-2.68*** (0.70)	-1.61** (0.77)	-1.99*** (0.52)	-2.73*** (0.69)	-1.63** (0.79)	-2.00*** (0.52)	-2.67*** (0.69)	-1.53** (0.75)	-1.97*** (0.52)
Age	0.01 (0.01)	-0.01 (0.01)	-0.02** (0.010)	0.01 (0.01)	-0.01 (0.01)	-0.02** (0.01)	0.01 (0.01)	-0.01 (0.01)	-0.02** (0.01)
Midwest	0.75 (0.48)	0.27 (0.60)	0.43 (0.40)	0.72 (0.47)	0.28 (0.61)	0.41 (0.39)	0.67 (0.48)	0.21 (0.62)	0.36 (0.40)
South	1.18*** (0.41)	0.53 (0.59)	1.28*** (0.34)	1.19*** (0.41)	0.54 (0.59)	1.29*** (0.34)	1.14*** (0.42)	0.47 (0.59)	1.24*** (0.34)
West	0.46 (0.43)	-1.05 (0.80)	0.45 (0.34)	0.46 (0.42)	-1.03 (0.80)	0.45 (0.34)	0.45 (0.43)	-1.07 (0.82)	0.42 (0.34)
Education	1.95 (1.29)	4.58*** (1.61)	-0.78 (0.94)	1.70 (1.24)	4.42*** (1.61)	-0.93 (0.93)	2.01 (1.32)	4.70*** (1.64)	-0.87 (0.95)
Income	-0.39 (0.55)	-1.37 (1.06)	-1.22*** (0.44)	-0.37 (0.57)	-1.41 (1.08)	-1.20*** (0.44)	-0.25 (0.56)	-1.39 (1.06)	-1.18*** (0.44)
Constant	-2.67** (1.15)	-3.68** (1.72)	1.65* (0.87)	-2.54** (1.08)	-3.64** (1.70)	1.69* (0.87)	-2.54** (1.16)	-3.64** (1.74)	1.73** (0.88)

Note: N = 907. Standard errors are in parentheses.

\*\*\*p<0.01 \*\*p<0.05 \*p<0.10

more likely to female ( $b = .83, p < .01$ ) and more likely to be from the South and less likely to be from the Northeast ( $b = 1.31, p < .01$ ), were less interested in politics ( $b = -2.08, p < .01$ ), were younger ( $b = -.02, p = .02$ ) and had lower incomes ( $b = -1.21, p < .01$ ). Also, people who did not vote were less likely to be black than to be non-black ( $b = -1.99, p < .01$ ).

### *Moderation by Personal Importance*

As expected, when the interaction of high personal importance and global warming issue proximity was added as a predictor to the equations shown in Table 10.3, the impact of global warming issue proximity on candidate choice was strong and significant among respondents who attached high importance to the issue. The interaction of personal importance with global warming issue proximity was highly significant, and the main effect for global warming issue proximity was not. Thus, issue proximity only predicted voting behavior in the high importance group.

## **Study 2—An Observational Study about the 2012 Presidential Election**

As in Study 1, Study 2 employed traditional analytic methods to assess the impact on candidate choice in the 2012 U.S. presidential election of voter proximity to candidates on global warming policy.

### ***Data and Method***

#### *Data Collection*

A random digit dial telephone survey of a national probability sample of U.S. adults ages 18 and older was conducted by Abt SRBI between June 13 and June 21, 2012. 603 respondents were interviewed on a landline phone, and 201 were interviewed on a cellular phone. Interviews were administered in English only. Samples were drawn from both landline and cellular random digit dial (RDD) frames by Survey Sampling International. Numbers for the landline sample were drawn with equal probabilities from active blocks (area code + exchange + two-digit block number) that contained one or more residential directory listings. The cellular phone sample was drawn through a systematic sampling from 1000 blocks dedicated to cellular service according to the Telcordia database.

The data were weighted to ensure that the sample composition reflected the U.S. population in terms of demographics documented by figures from the U.S. Census Bureau. Weights were created to adjust for differential probabilities of selection due to the number of adults in the household, the number of voice-use landlines and cell phones, and the overlap of landline and cell phone RDD

frames, as well as non-coverage and nonresponse through post-stratification. Post-stratification matched the population proportions of age and sex, education and sex, ethnicity and race, and region using targets from the 2010 American Community Survey conducted by the U.S. Census Bureau. The AAPOR Response Rate 3 for the survey was 15%.

Table 10.4 displays distributions of unweighted and weighted demographics along with national benchmarks computed using the data from the 2010 American Community Survey. Before the weights were applied, the sample was similar to the American population, with a slight under-representation of younger (aged 18–29) males and females and of males and female with no college education, and a small over-representation of older (aged 65 and older) males and females, non-Hispanic whites, and males and females with bachelor’s degree or higher. After the weighs were applied, the sample was nearly identical to the population in these regards. All results reported below were computed using the weights, although unweighted data produced comparable findings.

**TABLE 10.4** Study 2: Demographics of the Sample and American Community Survey

	<i>GW National Survey 2012 (unweighted)</i>	<i>GW National Survey 2012 (weighted)</i>	<i>ACS 2010</i>	<i>Difference: GW National Survey (weighted) – ACS</i>
Age and Gender				
Male 18 to 29	6.9%	11.2%	11.2%	.0%
Male 30 to 49	11.0	17.5	17.7	-.2
Male 50 to 64	15.6	12.4	12.2	.2
Male 65 and older	11.6	7.5	7.4	.1
Female 18 to 29	5.1	10.2	10.8	-.7
Female 30 to 49	14.9	18.1	18.0	.1
Female 50 to 64	17.7	13.2	12.9	.2
Female 65 and older	17.2	10.0	9.8	.2
Total	100.0%	100.0%	100.0%	
	(N=799)	(N=799)	(N=2,369,395)	

continued...

Table 10.4 continued...

	<i>GW National Survey 2012 (unweighted)</i>	<i>GW National Survey 2012 (weighted)</i>	<i>ACS 2010</i>	<i>Difference: GW National Survey (weighted) – ACS</i>
Race and Ethnicity				
Non-Hispanic White only	77.5%	67.5%	66.9%	.6%
Non-Hispanic Black only	8.8	11.6	11.7	-.1
Hispanic	6.7	13.7	14.3	-.6
Other race	7.0	7.3	7.2	.1
Total	100.0%	100.0%	100.0%	
	(N=796)	(N=796)	(N=2,369,395)	
Education and Gender				
Male HS graduates or less	13.4%	21.7%	21.8%	-.1%
Male some college	12.0	14.4	14.3	.1
Male college graduates or more	19.9	12.7	12.4	.2
Female HS graduates or less	14.8	21.0	21.5	-.5
Female some college	17.3	16.8	16.7	.1
Female college graduates or more	22.7	13.6	13.3	.3
Total	100.0%	100.0%	100.0%	
	(N=799)	(N=799)	(N=2,369,395)	
Region				
Northeast	18.2%	18.5%	18.2%	.3%
Midwest	21.6	21.8	21.6	.2
South	36.6	36.6	37.0	-.4
West	23.6	23.1	23.2	.0
Total	100.0%	100.0%	100.0%	
	(N=804)	(N=804)	(N=2,369,395)	

## Measures

### CANDIDATE PREFERENCE

Respondents were asked: “If the presidential election were being held today and the candidates were Barack Obama, the Democrat, and Mitt Romney, the Republican, for whom would you vote?” The order of “Barack Obama, the Democrat” and “Mitt Romney, the Republican” was randomized across respondents. The dependent measure for our analyses was constructed to assign each respondent to one of the following categories: intent to vote for Mr. Obama, intent to vote for Mr. Romney, intent to vote for another candidate, and all other respondents, who were viewed as non-voters.

### GLOBAL WARMING ISSUE PROXIMITY

Respondents were asked: “How much do you think the U.S. government should do about global warming—a great deal, quite a bit, some, a little, or nothing?” And respondents were also asked: “How much do you think the U.S. government is doing now to deal with global warming—a great deal, quite a bit, some, a little, or nothing?” The respondent’s desired change in the government effort on global warming was constructed by assigning values of 1 through 5 to the responses to each question and then subtracting the amount of effort the government is doing from the amount of effort the government should do. The self-placement measure ranged from -4 to 4. The neutral point was 0, indicating that the respondent desired no change in government effort. Positive numbers indicated that the respondent wanted the government to do more; negative numbers indicated that the respondent wanted the government to do less.

Candidate placements were constructed similarly. Respondents were asked “In your opinion, how much government action does Barack Obama want on global warming—a great deal, quite a bit, some, a little, or nothing?” and the same question about Mitt Romney. The order in which the respondent was asked about the two candidates was determined randomly. The candidate placement measure was the candidate’s desired change in government effort on global warming, which was constructed as subtracting the respondent’s perceived amount of effort the government is doing from the respondent’s perception on the amount of effort the candidate thought the government should do.

Respondents who said they didn’t know or refused to answer any question of the three were excluded from the analysis.

Three methods were used to compute scores to represent respondent-candidate proximity on global warming: Euclidean distance, city block distance (Downs, 1957; Enelow & Hinich, 1984), and directional similarity (Rabinowitz,

1978; Rabinowitz & Macdonald, 1989). If  $V_i$  and  $C_j$  denote respondent  $i$ 's and candidate  $j$ 's placement on global warming belief, the calculation methods are as follows: (1) Euclidean distance:  $-(V_i - C_j)^2$ ; (2) City block distance:  $-|V_i - C_j|$ ; and (3) Directional similarity:  $V_i \star C_j$ .

#### ISSUE IMPORTANCE

Respondents were asked: "How important is the issue of global warming to you personally—extremely important, very important, somewhat important, not too important, or not at all important?" People who selected "extremely important" were assigned to the high importance group, and other respondents were assigned to the low importance group.

#### ATTENTION TO THE ELECTION

Respondents were asked: "How closely are you following the 2012 presidential race: very closely, somewhat closely, not so closely, or not closely at all?" People who selected the top two responses were assigned to high attention to election group and the other respondents were assigned to low attention to election group.

#### CONTROL VARIABLES

Control variables included political party affiliation, ideology, interest in the election campaign, sex, age, race, ethnicity, education, and region. All respondents were asked "Generally speaking, do you usually consider yourself as a Democrat, a Republican, an Independent, or what?" where the order of "a Democrat" and "a Republican" was randomized across respondents. Respondents who answered with "Democrat" and "Republican" were assigned to Democrats and Republicans, respectively, and all other respondents were assigned to Independents. Respondents were asked "Would you say your views on most political matters are liberal, moderate, or conservative?" Respondents who answered with "Liberal" and "Conservative" were assigned to liberals and conservatives, respectively, and all other respondents were assigned to moderates.

Respondents were asked "Are you of Hispanic origin or background?" People who answered positively were then asked "Are you White Hispanic or Black Hispanic?" People who said they were not of Hispanic origin or background were asked "Are you White, Black, or some other race." Using answers to these questions, respondents were coded as non-Hispanic white, non-Hispanic black, Hispanic, and other race for those who were white only and not Hispanic, black only and not Hispanic, Hispanic and the rest, respectively.

Respondents were asked "What was the last grade of school completed?" Respondents who did not graduate from high school were coded as "less than high

school,” those who graduated from high school were coded as high school graduates, those who attended some college or had associate degrees were coded as some college, and those who graduates from college were coded as college graduates.

Respondents were asked “Are you registered to vote at your present address, or not?” Respondents who answered affirmatively were coded as reregistered voters.

In the regressions, non-Hispanic whites, males, Independents, moderates, people who were ages 18–29, people who resided in the Northeast region, and people who had less than high school were the omitted base categories.

### *Analysis*

The parameters of multinomial logistic regression equations were estimated to predict the polychromous outcome variable. An alternative approach is multinomial probit, which makes the untestable assumption that the error terms in determining each category outcome are jointly normally distributed. Our results were identical whether conducted with multinomial logistic regression or multinomial probit. The analyses were only of people who said they were registered to vote.

## **Results**

### *Global Warming Issue Proximity and Candidate Preference*

Global warming issue proximity predicted candidate choice among registered voters in the expected way (see Table 10.5, which displays the coefficient estimates from multinomial logistic regressions using voting for Mr. Obama as the omitted base category). The coefficient for global warming issue proximity was significant and in the expected direction in all three analyses. Matching Mr. Obama’s position on global warming more closely than Mr. Romney’s was associated with a lower likelihood to vote for Mr. Romney than to vote for Mr. Obama ( $b = -.26, p = .01$  with the Euclidian measure; see row 1 in columns (1) in Table 10.5). This was equally apparent using all three analytic methods for representing proximity (see row 1 in columns (4) and (7) in Table 10.5 for the measures of city block and directional models, respectively).

Other factors thought to influence candidate choice also had significant effects in the expected directions among registered voters. Using the Euclidian measures (see column 1 in Table 10.5), Democrats were less likely than Independents to intend to vote for Mr. Romney than for Mr. Obama ( $b = -1.67, p = .01$ ). Republicans were more likely to do so ( $b = 1.93, p = .00$ ). Hispanics and people of other races were less likely than non-Hispanic whites to intend to vote for Mr. Romney than for Mr. Obama ( $b = -2.58, p = .02; b = -1.90, p = .03$ ). Females were less likely than males to intend to vote for Mr. Romney than for Mr. Obama ( $b = -.87, p = .02$ ), and people in South were more likely to do so ( $b = 1.26, p = .06$ ).

**TABLE 10.5** Study 2: Multinomial Regressions of the Impact of Global Warming Issue Congruence on Intention to Vote among Registered Voters

<i>Predictor</i>	<i>Euclidian Measure</i>			<i>City Block Measure</i>			<i>Directional Measure</i>		
	<i>Vote for Romney (1)</i>	<i>Vote for Another Candidate (2)</i>	<i>Not Vote (3)</i>	<i>Vote for Romney (4)</i>	<i>Vote for Another Candidate (5)</i>	<i>Not Vote (6)</i>	<i>Vote for Romney (7)</i>	<i>Vote for Another Candidate (8)</i>	<i>Not Vote (9)</i>
GW Issue Congruence	-0.26*** (0.09)	-0.13** (0.06)	-0.11 (0.07)	-0.89*** (0.26)	-0.34 (0.21)	-0.38* (0.21)	-0.49*** (0.09)	-0.27** (0.11)	-0.35*** (0.10)
Democrat	-1.67*** (0.61)	-2.27*** (0.76)	-2.21*** (0.82)	-1.60** (0.62)	-2.21*** (0.76)	-2.13*** (0.82)	-1.93*** (0.62)	-2.38*** (0.74)	-2.30*** (0.81)
Republican	1.93*** (0.62)	-0.28 (0.84)	-0.03 (0.84)	1.95*** (0.63)	-0.21 (0.85)	0.01 (0.85)	2.12*** (0.63)	-0.17 (0.82)	0.06 (0.83)
Liberal	-0.30 (0.64)	0.09 (0.71)	-0.86 (0.66)	-0.32 (0.63)	-0.01 (0.70)	-0.88 (0.64)	-0.22 (0.65)	0.13 (0.70)	-0.73 (0.65)
Conservative	0.83** (0.42)	0.99* (0.59)	-0.19 (0.60)	0.88** (0.43)	1.06* (0.60)	-0.17 (0.61)	1.12** (0.44)	1.16** (0.58)	-0.09 (0.60)
Female	-0.87** (0.38)	-1.14** (0.51)	-0.73 (0.48)	-0.87** (0.38)	-1.08** (0.50)	-0.71 (0.49)	-0.86** (0.39)	-1.10** (0.52)	-0.69 (0.52)
Age 30–39	0.02 (1.02)	-1.89* (1.05)	-0.23 (1.21)	-0.03 (1.00)	-1.81* (1.02)	-0.23 (1.21)	0.13 (1.05)	-1.83* (1.04)	-0.26 (1.27)
Age 40–49	-0.39 (0.96)	0.12 (0.75)	1.56 (1.04)	-0.48 (0.98)	0.07 (0.76)	1.49 (1.04)	-0.19 (0.87)	0.09 (0.76)	1.55 (1.05)
Age 50–64	-0.16 (0.67)	-0.99 (0.64)	0.45 (1.02)	-0.11 (0.68)	-0.95 (0.64)	0.46 (1.04)	0.03 (0.73)	-1.04 (0.68)	0.46 (1.04)

Age 65 and older	-0.10 (0.72)	-0.17 (0.69)	1.06 (1.01)	-0.16 (0.73)	-0.20 (0.69)	1.03 (1.05)	-0.03 (0.76)	-0.29 (0.71)	1.02 (1.03)
Non-Hispanic Black	-1.30 (0.82)	-33.31*** (0.70)	-33.82*** (0.77)	-1.29 (0.86)	-34.28*** (0.68)	-34.74*** (0.76)	-1.31 (0.93)	-34.21*** (0.73)	-34.62*** (0.79)
Hispanic	-2.58** (1.09)	0.40 (0.82)	-1.29 (0.83)	-2.63** (1.15)	0.51 (0.83)	-1.19 (0.85)	-2.76** (1.08)	0.22 (0.83)	-1.39 (0.88)
Other race	-1.90** (0.84)	-1.49 (1.00)	-1.36 (0.97)	-1.81** (0.86)	-1.49 (0.99)	-1.33 (0.97)	-1.79** (0.74)	-1.43 (1.01)	-1.33 (1.02)
Midwest	-0.16 (0.67)	0.83 (0.74)	-0.53 (0.74)	-0.15 (0.69)	0.87 (0.74)	-0.51 (0.74)	-0.03 (0.68)	0.87 (0.75)	-0.54 (0.74)
South	1.26* (0.67)	1.02 (0.66)	-0.28 (0.64)	1.26* (0.69)	1.06 (0.66)	-0.28 (0.62)	1.21* (0.65)	0.93 (0.66)	-0.54 (0.64)
West	0.72 (0.79)	0.07 (0.83)	-0.51 (0.85)	0.76 (0.82)	0.03 (0.83)	-0.53 (0.83)	0.85 (0.78)	0.10 (0.83)	-0.50 (0.81)
High school graduate	1.48** (0.73)	1.88* (1.03)	0.19 (1.06)	1.52** (0.74)	1.86* (1.05)	0.19 (1.06)	1.72** (0.85)	1.90* (1.00)	0.30 (1.09)
Some college	1.20 (0.74)	2.07** (0.99)	0.86 (1.06)	1.15 (0.74)	1.94* (1.01)	0.77 (1.05)	1.40* (0.84)	2.04** (0.98)	0.86 (1.10)
College graduate	0.74 (0.73)	1.38 (1.02)	0.07 (1.02)	0.75 (0.74)	1.35 (1.04)	0.03 (1.02)	0.92 (0.83)	1.33 (1.01)	0.05 (1.05)
N	528	528	528	528	528	528	528	528	528

Notes: Presented are the coefficients multinomial regression of intention to vote (with vote for Obama as the omitted base outcome) among registered voters. Standard errors are in parentheses. Omitted in the regressions are base categories of male, Independent, moderate, non-Hispanic white, age 18–29, Northeast, and less than high school.

\*\*\* p < 0.01, \*\* p < 0.05, \* p < 0.1

These effects were equally significant and in the expected directions when employing other measures of issue proximity (see columns 4 and 7 in Table 10.5 for measures of city block and directional models, respectively).

### *Moderation by Issue Importance and Election Engagement*

As expected, when the interaction of high personal importance and global warming issue proximity was added as a predictor to the equations shown in Table 10.5, the impact of global warming issue proximity on candidate choice was strong and significant among registered voters who attached high importance to the issue. The interaction of personal importance with global warming issue proximity was highly significant, and the main effect for global warming issue proximity was not. Thus, issue proximity only predicted voting behavior in the high importance group.

## **Study 3—Content Analysis**

Study 3 sought to assess the relation between what candidates in the 2010 Congressional elections said about global warming and their victory rates.

### **Data**

#### *Content Analysis*

A content analysis of text on candidates' campaign websites (and congressional websites of incumbents) assigned each candidate to one of the four categories: "green" (if he/she made one or more statements that acknowledged the existence or human cause of global warming or endorsed the need for government actions, and did not make any "not-green" statements), "not-green" (if he/she made not-green statements and no green statements), "mixed" (if he/she made green and not-green statements), or "silent" (if he/she made no statements on the issue).

The procedures for the content analysis follow. A list of the names and campaign website addresses of all the candidates from Democratic and Republican Party in the 50 states and District of Columbia in the 2010 House and Senate elections was obtained from a directory created by Project Vote Smart, where the candidates registered their campaign information ([www.votesmart.org](http://www.votesmart.org)). The campaign websites of incumbents were downloaded in October 2010. All the Congressional websites for the incumbent candidates were downloaded in December 2010.

All the webpages with text content were indexed, from which a list of webpages that contained any of four key terms ("climate," "global warming," "energy," or "cap") was generated for each candidate. Two coders (who were not aware of the research hypotheses being tested, and instructions to coders are available in Appendix C) independently read each website and answered a dozen

yes/no questions following a set of detailed coding instructions (see Appendix C). Coders were able to answer “ambiguous” as well. The 12 coding questions asked coders to decide whether the candidate said each of the following (“GW/CC” below means global warming or climate change).

**Q1.** GW/CC has been happening.

- Global warming or climate change has been happening or will happen.
- There is scientific evidence indicating that GW/CC has been happening or will happen.

**Q2.** GW/CC has not been happening.

- Global warming or climate change has not been happening or will not happen.
- The candidate is not sure whether GW/CC has been happening or will happen.
- There is no, or little, or insufficient amount of scientific evidence indicating that GW/CC has been happening or will happen.
- The candidate is not sure whether there is (sufficient) scientific evidence that GW/CC has been happening or will happen.

**Q3.** GW/CC is man-made.

- Human actions, such as burning fossil fuels, are a cause of GW/CC.

**Q4.** GW/CC is not man-made.

- Human actions are not a cause of GW/CC.
- The candidate is not sure whether human actions cause GW/CC.

**Q5.** GW/CC is bad.

- Global warming or climate change will have one or more undesirable consequences.
- GW/CC is a serious problem.
- GW/CC is an important issue.

**Q6.** GW/CC is not bad.

- Global warming or climate change will not have undesirable consequences.
- The candidate is not sure whether GW/CC will have any undesirable consequences.
- GW/CC is NOT a serious problem.
- The candidate is not sure whether GW/CC is a (serious) problem.
- GW/CC is NOT an important issue
- The candidate is not sure whether GW/CC is an important issue.

**Q7.** Producing energy by ‘green’ methods is good.

- Passing laws that would encourage producing more energy from “clean” sources, such as wind, solar power, water, or nuclear power plants, would be a good idea.

**Q8.** Producing energy by “green” methods is not good.

- Passing laws that would encourage producing more energy from “clean” sources, such as wind, solar power, water, or nuclear power plants, would NOT be a good idea.
- The candidate is not sure whether passing laws that would encourage producing more energy from “clean” sources, such as wind, solar power, water, or nuclear power plants, would be a good idea.

**Q9.** Actions should be taken.

- Actions should be taken to reduce climate change or the effects of climate change.
- We should limit the amount of greenhouse gasses (carbon dioxide, CO<sub>2</sub>) in the future.

**Q10.** NO actions should be taken.

- No actions should be taken about global warming or climate change.
- No actions should be taken to limit the amount of greenhouse gasses in the future.
- The candidate is not sure whether we should take actions about GW/CC.
- The candidate is not sure whether we should limit carbon emissions.

**Q11.** Support cap-and-trade.

- The candidate supports cap-and-trade or American Clean Energy and Security Act, or Waxman-Markey Bill, 2009.

**Q12.** Oppose cap-and-trade.

- The candidate opposes cap-and-trade.
- The candidate is not sure, where cap-and-trade is a good idea.

Agreement between the two coders was excellent: the coders agreed for 90% of candidates for question 1, 96% for question 2, 94% for question 3, 98% for questions 4, 92% for question 5, 98% for question 6, 76% for question 7, 97% for question 8, 85% for question 9, 96% for question 10, 96% for question 11, and 88% for question 12. When the first two coders disagreed when answering a question, a third coder performed another round of independent coding of the candidate’s entire website. The discrepancies in coding answers among the three coders were resolved by majority rule. The investigators resolved remaining discrepancies that arose when two coders answered a question with “ambiguous” and performed quality checks to confirm the accuracy of all final coding decisions.

A candidate was considered to have made “green statements” on climate change if he/she said any of the following: that global warming has been happening, that human activities are at least partly responsible for global warming, that global warming would be bad, that ameliorative actions about climate change should be taken; that he/she supported the cap and trade policy (i.e., a “yes” answer to questions 1, 3, 5, 9 or 11). A candidate was considered to have made “not-green statements”

on climate change if he/she said any of the following: that global warming has not been happening, that human activities are not responsible for global warming, that global warming would not be bad, and that no ameliorative actions about climate change should be taken (i.e., a “yes” answer to questions 2, 4, 6 or 10).

Each candidate was assigned to one of the four categories. A candidate was categorized as “green” if he/she made one or more “green” statements and did not make any “not-green” statements. A candidate was categorized as “not-green” if he/she made one or more “not-green” statements and did not make any “green” statements. A candidate was categorized as “mixed” if he/she made “green” statements and “not-green” statements. A candidate was categorized as “silent” if he/she did not make any “green” statements or “not-green” statements.

### *Predicting Electoral Victory*

One might imagine that a candidate’s decision about what to say, if anything, about global warming is influenced by his or her perception of his or her chances of electoral success. For example, if candidates perceived taking a position on climate to be electorally risky, perhaps only “safe” candidates took such a position publicly. We addressed this issue by controlling for what we call the “party margin.” For the House candidates, the party margin was the difference between the percent of votes cast for the Democratic candidate and the percent of votes cast for the Republican candidate in the same district during the 2008 elections. For the Senate candidates, party margin was the difference between the percent of votes cast for Barack Obama and the percent of votes cast for John McCain in the 2008 Presidential election in the State.

To explore whether a candidate’s electoral success depended on his/her own position on global warming and that of his or her opponent, we estimated the parameters of logistic regression equations predicting victory by the Democratic candidate. The following were among the predictors.

- Two dummy variables for taking a green position and taking a not-green position by the Democratic candidate; being silent or mixed was the omitted category.
- Two dummy variables for taking a green position and taking a not-green position by the Republicans candidate; being silent or mixed was again the omitted category.
- An interaction term, coded 1 when the Democrat took a green position and the Republican took a not-green position.
- Two dummy variables indicating whether the Democrat or the Republican was an incumbent running for reelection.
- The party margin in the 2008 Congressional elections.

## Results

### *Candidates' Positions on Climate Change*

**TABLE 10.6** Study 3: Congressional Candidates' Positions on Global Warming Expressed on Their 2010 Websites

<i>Position Expressed</i>	<i>Democratic Candidates</i>	<i>Republican Candidates</i>
Senate Races		
Green	57.14%	8.57%
Silent/Mixed	42.86%	82.86%
Not-Green	0.00%	8.57%
Total	100.00%	100.00%
	(N = 35)	(N = 35)
House Races		
Green	59.56%	6.13%
Silent/Mixed	39.71%	78.30%
Not-Green	0.74%	15.57%
Total	100.00%	100.00%
	(N = 408)	(N = 424)
Senate and House Races		
Green	59.37%	6.32%
Silent/Mixed	39.95%	78.65%
Not-Green	0.68%	15.03%
Total	100.00%	100.00%
	(N = 443)	(N = 459)

Notes: 35 Democratic Senate candidates and 35 Republican Senate candidates were included in the analysis. Two Senate races run in 2010 were excluded: Nevada, because the campaign website of Sharron Angle could not be downloaded prior to the Election Day due to technical problems; and South Dakota, because only one candidate ran there. We treated the Alaska race as having just two candidates, Scott McAdams and Lisa Murkowski, and excluded Joe Miller so that the race could be included in the analyses that presumed only two major party candidates competed. 408 Democratic and 424 Republican House candidates were included in the analysis. A total of 412 Democratic candidates and 431 Republican candidates ran in the 2010 House races. A total of 11 House candidates—4 Democratic candidates and 7 Republican candidates—were excluded from the analysis because their campaign websites could not be downloaded due to technical problems.

Among the Democratic Senate candidates, more than half (57%) took a green position on global warming, and the remainder (43%) were silent or mixed (see Table 10.6). Among the Republican Senate candidates, a large majority (83%) were silent/mixed; half of the remaining candidates took a green position (9%), and half took a not-green position (9%).

Majorities of House candidates were also silent/mixed. Among the Democratic House candidates, more than half (60%) took a green position on global warming, almost all of the remaining candidates (40%) were silent/mixed, and a tiny proportion (1%) took a not-green position. Among the Republican House candidates, a large majority (78%) were silent/mixed, 6% took a green position, and 16% took a not-green position.

*Combinations of Candidate Positions and Race Outcomes*

Among the 430 two-candidate House and Senate races (see Tables 10.7 and 10.8):

- in 31% of the races, both candidates were silent/mixed; Democrats won 17% of these races
- in 49%, the Democrat was green, and the Republican was silent/mixed; Democrats won 69% of these races
- in 7%, the Democrat was green, and the Republican was not-green; Democrats won 68% of these races
- in 3%, the Democrat and Republican were both green; Democrats won 18% of these races
- in 4%, the Democrat was silent/mixed, and the Republican was green; Democrats won none of these races
- in 6%, the Democrat was silent/mixed, and the Republican was not-green; Democrats won 4% of these races.

**TABLE 10.7** Study 3: Co-Occurrence of Positions on Global Warming Expressed by Democrats and Republicans

<i>Democrat's Position on Global Warming</i>	<i>Republican's Position on Global Warming</i>			
	<i>Green</i>	<i>Silent/Mixed</i>	<i>Not-Green</i>	<i>Total</i>
Green	2.56%	49.07%	7.21%	58.84%
Silent/Mixed	3.95%	30.70%	5.81%	40.47%
Not-Green	0.00%	0.47%	0.23%	0.70%
Total	6.51%	80.23%	13.26%	100.00%

Note: The total number of the races is 430.

**TABLE 10.8** Study 3: Victory Rates for Democratic Candidates According to the Positions Expressed on Global Warming by the Democratic Candidate and the Republican Candidate

<i>Democrat's Position on Global Warming</i>	<i>Republican's Position on Global Warming</i>		
	<i>Green</i>	<i>Silent/Mixed</i>	<i>Not-Green</i>
Green	18.18% (N=11)	69.19% (N=211)	67.74% (N=31)
Silent/Mixed	0.00% (N=17)	17.42% (N=132)	4.00% (N=25)
Not-Green	N/A	N/A	N/A

Note: N/A indicates that the number of races was 0, 1, or 2 and was therefore too small to yield reliable numbers.

Thus, when Republican opponents were silent/mixed or took a not-green position, Democrats were much more likely to win if they took a green position than if they were silent/mixed. When Democratic candidates were silent/mixed, Republicans were more likely to win if they took a green or not-green position than if they were silent/mixed.

As expected, in a logistic regression predicting victory by the Democrat, the more the 2008 party margin favored the Democratic candidate, the more likely the Democrat was to win in 2010 (see row 10 and column 2 of Table 10.9). Also as expected, Democrats were more likely to win if they were incumbents than if they were not (see row 8 and column 2 of Table 10.9). Surprisingly, Republican candidates were not more likely to win if they were incumbents than if they were not (see row 9 in column 2 of Table 10.9).

When the Republican was silent/mixed, the Democrat had a 17 percentage point greater probability of winning ( $p = .02$ ) when he/she took a green position rather than being silent/mixed (see row 1 in column 2 of Table 10.9). When the Republican was silent/mixed, the Democrat's probability of winning did not change depending upon whether he/she was silent/mixed or took a not-green position (row 2 in column 2 of Table 10.9). Thus, when the Republican was silent/mixed, going green apparently helped the Democratic candidate, and going not-green did not hurt.

When the Republican took a not-green position, the Democrat gained even more by taking a green position: he/she was 92 percentage points more likely to win ( $p = .03$ ) than when he/she was silent/mixed (see rows 1 and 7 in column 2 of Table 10.9).<sup>2</sup> When the Republican took a green position, the Democrat gained more votes when taking a green position than when being silent/mixed ( $b = .17, p = .02$ , see row 1 in column 2 of Table 10.9).

**TABLE 10.9** Study 3: Regression Predicting Victory by the Democratic Candidate and Regression Predicting the Democratic Candidate’s Margin of Victory in Races in which the Democrat’s or Republican’s Vote Share Was Between 40% and 60% in the 2010 House and Senate Races

<i>Predictor</i>	<i>DV = Democratic Victory</i>		<i>DV = Democratic Candidate’s Margin of Victory</i>
	<i>Coefficient (1)</i>	<i>Marginal Effect (2)</i>	<i>Coefficient (3)</i>
Democrat: green	1.03** (.45)	.17** (.08)	.03* (.02)
Democrat: not-green	-.46 (1.45)	-.07 (.20)	.01 (.06)
Democrat: silent/ mixed (Omitted)			
Republican: green	-.29 (1.36)	-.05 (.21)	-.03 (.04)
Republican: not-green	-4.27*** (1.58)	-.34*** (.07)	-.09** (.04)
Republican: silent/ mixed (Omitted)			
Democrat: green x Republican: not-green	4.08** (1.67)	.75*** (.13)	.10** (.05)
Democrat: Incumbent	2.60*** (.71)	.42*** (.11)	.10*** (.02)
Republican: Incumbent	.42 (1.09)	.08 (.21)	.00 (.03)
2008 Party Margin	.06*** (.01)	.01*** (.00)	.00*** (.00)
R <sup>2</sup>	.62		.47
N	430		195

Notes: Presented in column (1)-(2) are the coefficients and marginal probabilities (with standard errors in parentheses) of a logistic regression of predicting victory by the Democratic candidate. Two incumbency dummy variables were used, and one might imagine this occurred because the two incumbency predictors were nearly perfectly collinear, so their effects could not be separated. But in fact, 13% of the races we examined involved no incumbent at all, so statistical separation was possible. Presented in column (3) are the coefficients of (with standard errors in parentheses) of an OLS regression of predicting the margin of victory by the Democratic candidate. The margin of victory was subjected to a natural log transformation after adding 1 because a Box-Cox analysis rejected the linear form of the dependent variable (likelihood ratio test statistic  $\chi^2 = 94.76$ ,  $p = .00$ ) but failed to reject the natural log form—likelihood ratio test statistic  $\chi^2 = 0.79$ ,  $p = .37$ ). \*\*\* $p < .01$  \*\* $p < .05$

When the Democrat was silent/mixed, the Democrat's probability of winning was the same regardless of whether the Republican took a green position or was silent/mixed (see row 4 in column 2 of Table 10.9). In other words, taking a green position did not help the Republican candidate when the Democrat was silent/mixed. However, when the Democrat was silent/mixed, the Democrat was 34 percentage points less likely to win ( $p < .01$ ) when the Republican took a not-green position than when the Republican was silent/mixed (see row 5 and column 2 of Table 10.9). This is the one instance in which taking a not-green position apparently helped a candidate. That is, being silent in the face of a not-green Republican opponent was not wise for the Democrat. And by going green, the Democrat was able to eliminate the advantage that the Republican might have been gained by being not-green. That is, in the face of a green Democrat, the Republican gained no votes by shifting from being silent/mixed to being not-green (see rows 5 and 7 in column 2 of Table 10.9,  $b = .39, p = .76$ ).

### *Predictors of the Margin of Victory*

Similar conclusions were supported by an OLS regression predicting the Democrat's margin of victory in races in which at least one candidate's vote share was within 10 percentage points of 50% (which are races whose outcomes could easily have been changed). Margin of victory was defined as the share of the votes cast for the Democrat minus the share of votes cast for the Republican. As expected, the more the party margin in 2008 favored the Democrat, the larger was the margin of victory for the Democrat in 2010 (see row 10 in column 3 of Table 10.9). Also as expected, Democrats had a larger 2010 margin of victory if they were incumbents than if they were not (see row 8 in column 3 of Table 10.9). Again, Republicans did not manifest a larger margin of victory if they were incumbents than if they were not (see row 9 in column 3 of Table 10.9). After accounting for the influences of party margin and of incumbency, the directions and statistical significances of the coefficients in column 3 of Table 10.9 were the same as those of the comparable coefficients in columns 1 and 2 of Table 10.9.

### *Simulation*

To gauge the changes in the Democrats' electoral successes that might have occurred if the candidates had taken different positions on global warming, we conducted a simulation using the parameter estimates reported in column 3 of Table 10.9, focused on four types of races, as below.

- 1 Races in which the Democrat lost by a small margin, and both he/she and the Republican were silent/mixed. The positive coefficient for the Democrat taking a green position indicates that the Democrat's margin of

- victory would have increased if the Democrat had taken a green position instead of being silent/mixed. Therefore, the Democrats might have won seats if they had expressed green positions in these races.
- 2 Races in which the Democrat lost by a small margin, and he/she was silent/mixed while the Republican was not-green. The positive interaction between the Democrat expressing a green position and the Republican expressing a not-green position indicates that the Democrat's margin of victory would have increased if the Democrat had taken a green position instead of being silent/mixed. Therefore, the Democrats might have won seats if they had expressed green positions in these races.
  - 3 Races in which the Republican lost by a small margin, and both he/she and his/her Democratic opponent were silent/mixed. The negative coefficient for the Republican taking a not-green position indicates that the Republican's margin of victory would have increased if the Republican had taken a not-green position instead of being silent/mixed position. Therefore, the Republicans might have won seats if they had taken a not-green position in these races.
  - 4 Races in which the Republican lost by a small margin, and he/she took a not-green position while his/her Democratic opponent took a green position. The negative coefficient for the Republican taking a not-green position was smaller in magnitude than the positive coefficient of the interaction between the Democrat taking a green position and the Republican taking a not-green position. Therefore, the Republicans might have won seats if they had been silent/mixed in these races.

The mechanics of the simulation are as follows. For race type (1), the Democratic candidate was hypothetically switched from silent/mixed to green, holding the Republican's silent/mixed position unchanged. The margin of victory for the Democrat was increased by 3 percentage points. For race type 2, the Democratic candidate was hypothetically switched from silent/mixed to green, holding the Republican's not-green position unchanged. The margin of victory for the Democrat was increased by 10 percentage points. For race type 3, the Republican candidate was hypothetically switched from silent/mixed to not-green, holding the Democrat's silent/mixed position unchanged. The margin of victory for the Republican was increased by 9 percentage points. For race type 4, the Republican candidate was hypothetically switched from not-green to silent/mixed, holding the Democrat's green position unchanged. The margin of victory for the Republican was increased by 10 percentage points.

We estimated how many election outcomes might have changed in two ways. First, using the coefficients presented in column 3 in Table 10.9, Democrats would have won 6 additional House races if the Democrat had taken a green position instead of being silent/mixed. Republicans would have won 7 additional House seats if the Republican had taken a not-green position instead of being silent/mixed.

Second, because the coefficients in column 3 in Table 10.9 are all estimated with uncertainty, and they each have a standard error, it is possible to generate a second set of simulation results treating each effect as being at the end of its 95% confidence interval that would yield the maximum plausible number of seat changes. Using this methodology, Democrats would have won a maximum of 15 additional seats (14 in the House and 1 in the Senate) if the Democrat had taken a green position instead of being silent/mixed. Republicans would have won a maximum of 26 additional Congressional seats if the Republican had been silent/ mixed instead of being not-green or if the Republican had been not-green instead of being silent/ mixed. Among these 26 seat gains, 10 (all in House) would have been gained by the Republican taking a silent/mixed position instead of taking a not-green position, and 16 (2 in the Senate and 14 in the House) would have been gained if the Republican had taken a not-green position instead of being silent/mixed.

These simulations indicate that control of the House most likely would not have flipped to the Democrats even if the Democrats had all expressed strategically wise positions and the Republicans maintained the positions they expressed. Likewise, control of the Senate most likely would not have flipped to the Republicans if the Republicans had all expressed strategically wise positions while the Democrats maintained the positions they expressed.

#### **Study 4—Content Analysis and Experimental Evidence from a National Survey in 2011**

Study 4 employed a within-subject experiment embedded in a survey of a nationally representative sample of American adults (in September 2011) and content analysis of actual political candidates' stances on the issue of global warming. In the experiment, each respondent was asked the following five voting questions of hypothetical matchup between actual candidates where the order in which the five questions were asked was randomized. We used the standard method in political science to assess the potential impact of global warming beliefs and issue proximity on voting choice controlling for various other possible causes of vote choice. To construct the issue proximity between the actual candidates and respondents, we conducted a content analysis on the six candidates evaluated in the hypothetical matchup voting questions, and assigned each of them an index score on his/her stance on global warming.

Specifically, we set forth to explore the following two hypotheses. The first hypothesis concerns that Americans who believed in the existence and human cause of climate change preferred to vote for the Democratic candidate (President Obama) rather than to vote for any Republican candidate. Furthermore, among people who believed in the existence and human cause of climate change, their preference in the intent to vote toward President Obama was moderated by climate change beliefs strength and by political party identifications, with the preference being more pronounced among Democrats and people with high strength beliefs.

The second hypothesis probes further and directly tests for the presence of issue voting. It states that Americans would be more likely to vote for a candidate, Democratic or Republican, whose climate change belief matched their own than to vote for a candidate whose climate change belief differed from their own. Furthermore, evidence of climate change issue voting was moderated by climate change beliefs strength and by political party identifications, with the preference being more pronounced among Democrats and people with high strength beliefs.

## ***Data and Method***

### *Content Analysis*

A content analysis of text on the CNN.com website assigned each candidate an index score of his/her stance on the issue of global warming based on 12 coding questions on fundamental beliefs about global warming.

The procedures for the content analysis follow. For each of the six candidates considered in the study: Barak Obama, Mitt Romney, Jon Huntsman, Michelle Bachmann, Ron Paul and Rick Perry, a Google full-text search on the CNN.com website was conducted using search terms that indicate the candidate's last name and global warming or climate change, for example, "Obama AND ("global warming" OR "climate change") site://cnn.com." The search results were filtered for the time period between November 15, 2010 and September 12, 2011 (right before the survey used in this study was conducted) and then sorted by relevance; the resulting first 100 articles were used in the content analysis.

Three coders (who were not aware of the research hypotheses being tested, and instructions to coders are available in Appendix D) independently read each article for each candidate and answered a dozen yes/no questions following a set of detailed coding instructions. The 12 coding questions asked coders to decide whether the candidate said each of the following ("GW/CC" below means global warming or climate change).

#### **Q1.** GW/CC has been happening.

- Global warming or climate change has been happening or will happen.
- There is scientific evidence indicating that GW/CC has been happening or will happen.

#### **Q2.** GW/CC has not been happening.

- Global warming or climate change has not been happening or will not happen.
- The candidate is not sure whether GW/CC has been happening or will happen.
- There is no, or little, or insufficient amount of scientific evidence indicating that GW/CC has been happening or will happen.
- The candidate is not sure whether there is (sufficient) scientific evidence that GW/CC has been happening or will happen.

**Q3.** GW/CC is man-made.

- Human actions, such as burning fossil fuels, are a cause of GW/CC.

**Q4.** GW/CC is not man-made.

- Human actions are not a cause of GW/CC.
- The candidate is not sure whether human actions cause GW/CC.

**Q5.** GW/CC is bad.

- Global warming or climate change will have one or more undesirable consequences.
- GW/CC is a serious problem.
- GW/CC is an important issue.

**Q6.** GW/CC is not bad.

- Global warming or climate change will not have undesirable consequences.
- The candidate is not sure whether GW/CC will have any undesirable consequences.
- GW/CC is NOT a serious problem.
- The candidate is not sure whether GW/CC is a (serious) problem.
- GW/CC is NOT an important issue.
- The candidate is not sure whether GW/CC is an important issue.

**Q7.** Producing energy using “green” methods is good.

- Passing laws that would encourage producing more energy from “clean” sources, such as wind, solar power, water, or nuclear power plants, would be a good idea.

**Q8.** Producing energy using “green” methods is not good.

- Passing laws that would encourage producing more energy from “clean” sources, such as wind, solar power, water, or nuclear power plants, would NOT be a good idea.
- The candidate is not sure whether passing laws that would encourage producing more energy from “clean” sources, such as wind, solar power, water, or nuclear power plants, would be a good idea.

**Q9.** Actions about GW/CC should be taken.

- Actions should be taken to reduce climate change or the effects of climate change.
- We should limit the amount of greenhouse gasses (carbon dioxide, CO<sub>2</sub>) in the future.

**Q10.** No actions about GW/CC should be taken.

- No actions should be taken about global warming or climate change.

- No actions should be taken to limit the amount of greenhouse gasses in the future.
- The candidate is not sure whether we should take actions about GW/CC.
- The candidate is not sure whether we should limit carbon emissions.

**Q11.** The candidate supported cap-and-trade.

- The candidate supports cap-and-trade or American Clean Energy and Security Act, or Waxman-Markey Bill, 2009.

**Q12.** The candidate opposed cap-and-trade.

- The candidate opposes cap-and-trade.
- The candidate is not sure, where cap-and-trade is a good idea.

Agreement between the three coders was excellent: the agreement was 88%, 90% and 93% of all the 12 yes/no coding questions among the six candidates between any two of the three coders. Any discrepancies in coding answers among the three coders were resolved by majority rule.

The “yes”/”no” to the 12 coding questions were then converted to numerical values. A “no” to any of the 12 questions gave the candidate a value of 0, a “yes” to each of questions 1, 3, 5, 7, 9, and 11 gave the candidate a value of 1 each, and “yes” to each of questions 2, 4, 6, 8, 10, and 12 gave the candidate a value of -1. Summing up these numerical values across the 12 coding questions and scaled to range between 0 and 1 with a higher value indicating a more positive attitude toward global warming yielded an index score for each candidate. The index scores were 1 (Barack Obama), 0.63 (Mitt Romney), 0.63 (Jon Huntsman), 0.13 (Michelle Bachmann), 0.38 (Ron Paul) and 0 (Rick Perry).

### *Data Collection*

The data used in this study is a random digit dial telephone survey of a national probability sample of U.S. adults aged 18 and older conducted by Ipsos Public Affairs of Washington, DC, between September 8 and September 12, 2011. 890 respondents were interviewed on a landline phone and 244 were interviewed on a cell phone. Interviews were administrated in English and Spanish.

Samples were drawn from both landline and cellular random digit dial (RDD) frames to represent people with access to either a landline or cell phone. The landline and cell phone samples were provided by Survey Sampling International, LLC. Numbers for the landline sample were drawn with equal probabilities from active blocks (area code + exchange + two-digit block number) that contained one or more residential directory listings. The cell phone sample was drawn through a systematic sampling from 1000 blocks dedicated to cellular service according to the Telcordia database.

The data were weighted to ensure that the sample composition reflects the U.S. population as documented by figures from the U.S. Census Bureau. Weights were created to adjust for differential probabilities of selection due to the number of adults in the household, the number of voice-use landlines and cell phones, and the overlap of landline and cell phone RDD frames, as well as noncoverage and nonresponse through post-stratification. Post-stratification matched the population proportions of age and sex, education, ethnicity and race, and region using targets from the May 2011 Current Population Survey conducted by the U.S. Census Bureau. The AAPOR Response Rate 3 was 8%.

Table 10.10 displays distributions of unweighted and weighted demographics along with a national benchmark computed using the data from the Current Population Survey from the U.S. Census Bureau in May 2011. Before the weights were applied, the sample was overall similar to the American population with a slight under-representation of younger (aged 18–34) males and females and people with no college education, and a small over-representation of older (aged 55 or more) males and females, white, and college graduates. After the weights were applied, the sample was nearly identical to the population except for a slight over-representation of people without college education and a slight under-representation of people who had some college but without college degree. All results reported below are adjusted for sampling weights, though unweighted data produced comparable findings.

**TABLE 10.10** Study 4: Demographics of the Sample and Current Population Survey

	<i>Ipsos</i> Sept. 2011 (unweighted)	<i>Ipsos</i> Sept. 2011 (weighted)	<i>CPS</i> May 2011	<i>Difference:</i> <i>Ipsos (weighted)</i> – <i>CPS</i>
Gender and Age				
Male aged 18–34	9.3%	15.4%	15.5%	-.1%
Male aged 35–54	15.6	18.3	17.7	.6
Male aged 55 or more	24.7	14.7	15.2	-.5
Female aged 18–34	8.0	15.2	15.3	-.1
Female aged 35–54	14.3	18.8	18.4	.4
Female aged 55 or more	28.1	17.6	17.9	-.3
Total	100.0%	100.0%	100.0%	
	(N = 1134)	(N = 1134)	(N = 230,805,929)	

Race and Ethnicity				
Hispanic	10.1%	13.7%	14.0%	-.3%
White only	74.2	67.4	67.7	-.3
Black only	8.8	11.6	11.6	.0
Others	6.9	7.2	6.7	.5
Total	100.0%	100.0%	100.0%	
	(N = 1134)	(N = 1134)	(N = 230,805,929)	

  

Education				
No college	25.7%	48.8%	44.3%	4.5%
Some college	38.5	24.0	28.2	-4.2
College or higher	35.9	27.3	27.4	-.1
Total	100.0%	100.0%	100.0%	
	(N = 1134)	(N = 1134)	(N = 230,805,929)	

  

Region				
Northeast	19.3%	18.5%	18.4%	.1%
Midwest	21.8	21.9	21.8	.1
South	36.1	36.9	36.7	.2
West	22.8	22.6	23.1	-.5
Total	100.0%	100.0%	100.0%	
	(N = 1134)	(N = 1134)	(N = 230,805,929)	

EXPERIMENTAL CONDITIONS

In this experiment, all the respondents were asked of the following five questions where the order of the questions was randomized.

- 1 “If the 2012 presidential election were being held today and the candidates were Barack Obama, the Democrat, and Mitt Romney, the Republican, for whom would you vote?”
- 2 “If the 2012 presidential election were being held today and the candidates were Barack Obama, the Democrat, and Jon Huntsman, the Republican, for whom would you vote?”
- 3 “If the 2012 presidential election were being held today and the candidates were Barack Obama, the Democrat, and Michelle Bachmann, the Republican, for whom would you vote?”

- 4 “If the 2012 presidential election were being held today and the candidates were Barack Obama, the Democrat, and Ron Paul, the Republican, for whom would you vote?”
- 5 “If the 2012 presidential election were being held today and the candidates were Barack Obama, the Democrat, and Rick Perry, the Republican, for whom would you vote?”

### *Measures*

#### CANDIDATE PREFERENCES AS THE DEPENDENT MEASURES

Two dependent measures were used. First, in exploring whether the respondents who believed in global warming would vote for Barack Obama more often for vote for a Republican candidate, the dependent measure was the frequency of voting for Barack Obama, which is the number of times the respondent stated that he/she would vote for Barack Obama in the hypothetical 2012 presidential election when his Republican opponent was one of the five Republican candidates—Mitt Romney, Ron Paul, Rick Perry, Jon Huntsman, and Michele Bachmann. In each of the five questions, an indicator was constructed such that voting for Mr. Obama was coded 1 and 0 for all other answer. The sum of the five indicators was the dependent variable measure, an integer ranging from 0 to 5. Question wording and coding for all measures are described in Appendix D.

Second, in assessing the preference for candidates whose global warming belief matched respondent’s global warming belief, the dependent measure for each voting choice occasion was dichotomous with a value of 1 indicating the respondent said he/she would vote for the candidate presented in the voting choice occasion and 0 otherwise. Six named candidates (Barack Obama, Mitt Romney, Ron Paul, Rick Perry, Jon Huntsman, and Michele Bachmann) plus the responses of voting for an unnamed candidate or “don’t know” or refusal, all of which were voluntary responses, were measured in a numerical variable ranging from a value of 1 to 7. For each alternative/candidate in each voting choice occasion, one attribute was measured: a global warming belief proximity measure between the respondent and the candidate, the details of which are described below.

#### GLOBAL WARMING BELIEF AND BELIEF PROXIMITY AS INDEPENDENT MEASURES

Several independent measures were employed. First, the respondent’ global warming belief—believing the existence and the human cause of global warming—was an indicator with a value of 1 indicating the respondent said that world’s temperature has been probably going up in the past 100 years and that the warming is caused mostly or partly by things people do, and 0 otherwise.

Second, the respondent-candidate proximity in global warming belief was measured using three methods: Euclidean distance and city block distance (Downs, 1957; Enelow & Hinich, 1984), and directional similarity (Rabinowitz, 1978; Rabinowitz & Macdonald, 1989). Let  $V_i$  and  $C_j$  denote respondent  $i$ 's and candidate  $j$ 's placement on global warming belief,  $-(V_i - C_j)^2$ ,  $-|V_i - C_j|$ ,  $V_i * C_j$  are the Euclidean distance, city block, and directional measures of respondent-candidate belief congruence, respectively. Each of the seven (potential) candidates mentioned in the survey questions was assigned to a number between 0 and 1,  $C_j$ , where 1 indicates most accepting of global warming and 0 most skeptical of global warming.  $C_j$  took the values of the index score generated from the content analysis above, specifically, they were 1 (Barack Obama), 0.63 (Mitt Romney), 0.63 (Jon Huntsman), 0.13 (Michelle Bachmann), 0.38 (Ron Paul) and 0 (Rick Perry), respectively (Other/DFRF was assigned to be 0). Respondents' global warming belief,  $V_i$ , refers to respondent' global warming belief—believing the existence and the human cause of global warming measure that is described above.

#### CERTAINTY OF GLOBAL WARMING BELIEF AS MODERATOR MEASURE

People who said they were “extremely sure” about their belief on whether world' temperature has been going up in the past 100 years was coded as high certainty people, and the rest are coded as low certainty people. Other moderators such as personal importance of the issue of global warming were unfortunately not asked in the survey.

#### CONTROL VARIABLES

Two sets of control variables were constructed: political variables and demographics. Three political variables were employed: respondents' political party affiliation, overall job approval of President Obama, and the perception of the country going in the right direction. A standard set of demographics included sex, race, Hispanic ethnicity, age, marital status, education, income, and region.

### *Analysis*

#### GLOBAL WARMING BELIEF AND CANDIDATE PREFERENCE FOR BARACK OBAMA

Two sets of analysis were conducted to explore the two research questions. The first addressed the following question: in a hypothetical presidential election that consisted of Mr. Obama and a Republican candidate, would respondents who believed global warming has been happening and believed the warming has been caused in part by human vote for Mr. Obama more often than vote for

a Republican contender? To account for political party identification and other variables that are the usual suspects of modeling the voting behavior, ordered logistic regression, which is commonly used in predicting ordinal outcomes, was used to control for the influences of these variables. Our results were identical whether conducted in ordered logistic or ordered probit regressions.

Ordered logistic or ordered probit regression predicting ordinal outcomes is based on the proportional odds assumption where the odds have the same ratio for all independent variables. Upon the finding by the diagnostic procedures (Brant, 1990) that proportional odds assumption did not hold in our data, a generalized ordered logistic regression was employed to relax the proportional odds assumption. Our results were very similar whether conducted in ordered logistic regression or generalized ordered logistic regression.

#### GLOBAL WARMING BELIEF PROXIMITY AND CANDIDATE PREFERENCE

The second analysis examined the following question: in a hypothetical presidential election that consisted of Mr. Obama and a Republican candidate, would respondents prefer a candidate whose global warming belief was at a closer proximity to the respondent's own global warming belief? To test the statistical significance of the preference for the candidate to whom the respondent was closer in global warming belief, the data were analyzed using McFadden's conditional logit model for discrete choice data (McFadden, 1974). The conditional logit model, or alternative-specific conditional logit model, is designed for applications when a respondent is presented with two (or more) alternatives and selects one (or more) of them in each choice occasion. Selections are modeled as a linear function of alternative-specific characteristics and a random variable.

In the experiment embedded in the survey, a respondent encountered five voting choices occasions, and in each voting choice occasion, he/she was presented with two stated alternatives (two named candidates) and one implicit alternative (some other unnamed candidate or no response) and selected one of them. Characteristics potentially affecting selection of an alternative include respondent-candidate proximity on global warming belief, and respondents' demographics and political attitudes that are described in the control variables above.

Another analytic approach we could take is modeling an individual fixed effect to capture all the factors that may have impacted each citizen's behavior, including variables that are observable and measured in the survey (e.g., the voter's political party affiliation), variables that are observable but were not measured in the survey (e.g., the citizen's beliefs and attitudes on many other policy issues), and unobservable attributes of individuals. All these factors could have influenced voter's beliefs on global warming, so an appropriate estimation method would be conditional or individual fixed effect logistic regression, with

a first-difference estimator. When we carried this out, we observed the same results as shown below.

## Results

### *Global Warming Belief and Candidate Preference for Mr. Obama*

#### GLOBAL WARMING EXISTENCE/HUMAN CAUSE BELIEF AND CANDIDATE PREFERENCE

Americans were nearly equally divided on never or always voting for Mr. Obama: a plurality (38%) of Americans stated that they would not vote for Mr. Obama in any of the five hypothetical elections, and another plurality (40%) of Americans stated that they would vote for Mr. Obama in all five hypothetical elections; the remaining said they would vote for Mr. Obama in one to four times out of the five questions: 5% one time, 4% two times, 5% three times, and 8% four times. Respondents who believed global warming has been happening would vote for Mr. Obama for an average of 2.88 times, while respondents who believed global warming has not been happening would vote for Mr. Obama for an average of 1.23 times, and the difference was significant ( $d = 1.75, p = .00$ ). This estimate clearly showed that global warming believers preferred Mr. Obama to any Republican contender, but the estimate was unadjusted and to account for the influence of other political attitudes and demographics, we turned to regression analysis.

In the full sample, believing that global warming has been happening and that it is caused by human actions influenced voting behavior in the expected way after controlling for party identification, perception of country going in the right direction, approval of President Obama, and demographics, and the influence was significant and in the expected direction (see Table 10.11, which displays the coefficient estimates from ordered logistic regressions). Believing in GW existence and human cause led people to vote for Mr. Obama more often than vote for a Republican candidate ( $b = 0.74, p < .01$ ; see row 1 in column 1 in Table 10.11).

Other factors thought to influence candidate choice also had significant effects in the expected directions. Democrats voted more often for Mr. Obama than vote for a Republican candidate ( $b = 1.52, p < .01$ ), and Republicans voted less often for Mr. Obama than vote for a Republican candidate ( $b = -0.76, p = .01$ ). People who approved of President Obama's performance would vote more often for Mr. Obama than vote for a Republican candidate ( $b = 5.46, p < .01$ ). Additionally, people who thought the country is going in the right direction would vote for Mr. Obama less often than vote for a Republican candidate ( $b = -0.65, p = .01$ ); whites would vote for Mr. Obama less often ( $b = -0.83, p < .01$ ).

**TABLE 10.11** Study 4: The Impact of Global Warming Belief on Candidate Preference for Barack Obama

<i>Predictor</i>	<i>By Party Identification</i>					<i>By Belief Certainty</i>	
	<i>All Sample</i> (1)	<i>Voters (2)</i>	<i>Democrats</i> (3)	<i>Republicans</i> (4)	<i>Independents</i> (5)	<i>High certainty</i> (6)	<i>Low certainty</i> (7)
GW existence/human cause	0.74*** (0.22)	0.58** (0.25)	1.16** (0.51)	0.14 (0.56)	0.95*** (0.30)	1.87*** (0.62)	0.50* (0.26)
Democrat	1.52*** (0.25)	1.32*** (0.28)				1.28** (0.51)	1.69*** (0.31)
Republican	-0.76*** (0.27)	-0.86*** (0.29)				-1.84* (1.07)	-0.43 (0.32)
Country in right direction	-0.65** (0.26)	-0.37 (0.29)	-0.17 (0.48)	-1.57* (0.90)	-0.81** (0.38)	0.54 (0.61)	-0.86*** (0.31)
Approval of President Obama	5.46*** (0.38)	5.64*** (0.45)	5.76*** (0.83)	6.27*** (1.32)	6.00*** (0.54)	6.17*** (0.99)	6.04*** (0.49)
Male	0.12 (0.19)	0.14 (0.21)	-0.68* (0.40)	-0.13 (0.49)	0.51* (0.27)	0.39 (0.50)	0.12 (0.22)
White	-0.83*** (0.26)	-0.92*** (0.34)	-0.17 (0.63)	-0.75 (0.68)	-1.16*** (0.33)	-1.17 (0.94)	-0.78*** (0.30)
Hispanic	-0.48 (0.36)	-0.73 (0.49)	0.52 (0.81)	-1.39 (1.03)	-0.52 (0.54)	0.54 (1.02)	-0.61 (0.41)
Married	-0.26 (0.23)	-0.29 (0.26)	-0.30 (0.50)	-0.81 (0.79)	-0.25 (0.29)	-0.71 (0.67)	-0.33 (0.27)
Age: 25–34	-0.59 (0.39)	-0.33 (0.53)	0.24 (0.76)	-0.66 (1.11)	-0.86* (0.51)	0.90 (0.77)	-0.92* (0.53)
Age: 35–44	-0.28 (0.36)	-0.12 (0.50)	0.93 (0.71)	-1.92 (1.21)	-0.33 (0.47)	0.56 (0.80)	-0.17 (0.43)

Age: 45–54	-0.63 (0.40)	-0.31 (0.54)	0.55 (0.82)	-0.52 (1.21)	-0.96* (0.54)	0.37 (0.74)	-0.62 (0.45)
Age: 55–64	-0.19 (0.38)	0.09 (0.53)	0.78 (0.74)	-0.90 (1.27)	-0.31 (0.50)	0.83 (0.72)	-0.37 (0.48)
Age: 65+	-0.01 (0.38)	0.34 (0.51)	0.93 (0.91)	-1.71 (1.04)	0.36 (0.54)	0.24 (0.88)	-0.02 (0.44)
High school graduate	-0.16 (0.39)	-0.64 (0.52)	-1.01 (0.75)	-1.46 (1.18)	0.33 (0.62)	-0.29 (0.84)	-0.03 (0.49)
Some college	0.11 (0.38)	-0.04 (0.51)	-0.81 (0.75)	-0.71 (0.83)	0.48 (0.64)	-0.29 (0.80)	0.35 (0.51)
College graduate	0.39 (0.41)	0.07 (0.56)	-0.95 (0.83)	-0.50 (0.96)	1.05 (0.67)	0.92 (0.80)	0.29 (0.56)
Region—Midwest	0.12 (0.30)	-0.26 (0.30)	-0.98 (0.64)	0.94 (0.81)	0.38 (0.44)	-1.25 (0.78)	0.47 (0.37)
Region—South	-0.31 (0.26)	-0.51* (0.27)	-1.03* (0.57)	0.79 (0.75)	-0.13 (0.42)	-1.18** (0.54)	0.00 (0.34)
Region—West	0.12 (0.28)	0.10 (0.36)	-1.18* (0.71)	0.82 (0.91)	0.30 (0.43)	0.13 (0.61)	0.49 (0.34)
Income: \$15K–\$25K	0.65 (0.43)	0.38 (0.49)	0.34 (0.64)	-0.02 (2.24)	0.86 (0.67)	0.53 (0.88)	0.55 (0.53)
Income: \$25K–\$40K	1.02** (0.47)	0.93* (0.48)	0.26 (0.55)	1.28 (2.49)	0.68 (0.68)	-0.76 (0.89)	1.30** (0.56)
Income: \$40K–\$50K	0.96** (0.49)	0.77 (0.50)	1.49 (1.13)	-0.98 (2.43)	1.15* (0.66)	1.10 (0.93)	0.66 (0.56)

continued...

Table 10.11 continued...

Predictor	By Party Identification					By Belief Certainty	
	All Sample (1)	Voters (2)	Democrats (3)	Republicans (4)	Independents (5)	High certainty (6)	Low certainty (7)
Income: \$50K-\$75K	0.54 (0.44)	0.52 (0.49)	0.75 (0.72)	0.63 (2.14)	0.20 (0.62)	0.26 (0.77)	0.70 (0.59)
Income: \$75K-\$100K	1.29*** (0.48)	1.32** (0.54)	1.50* (0.87)	-0.13 (2.69)	1.22* (0.62)	1.46 (1.05)	1.28** (0.58)
Income: \$100K or higher	0.88* (0.45)	0.87* (0.49)	1.82 (1.11)	0.36 (2.50)	0.58 (0.57)	0.01 (1.07)	1.17** (0.53)
Constant (cutoff 1)	1.71*** (0.62)	1.35** (0.67)	0.21 (1.00)	0.18 (2.47)	2.53** (1.10)	1.98* (1.19)	2.29*** (0.85)
Constant (cutoff 2)	2.22*** (0.61)	1.90*** (0.66)	0.55 (0.99)	1.01 (2.56)	3.02*** (1.10)	2.52** (1.21)	2.84*** (0.84)
Constant (cutoff 3)	2.70*** (0.61)	2.30*** (0.66)	0.98 (0.96)	1.65 (2.62)	3.53*** (1.09)	3.14** (1.23)	3.35*** (0.84)
Constant (cutoff 4)	3.25*** (0.61)	2.95*** (0.67)	1.92* (0.98)	2.05 (2.68)	4.03*** (1.10)	4.00*** (1.23)	3.84*** (0.85)
Constant (cutoff 5)	4.20*** (0.64)	3.89*** (0.71)	2.70*** (1.03)	2.90 (2.79)	5.20*** (1.15)	5.02*** (1.31)	4.87*** (0.87)
N	1,071	893	341	278	452	275	771

Notes: Presented are the coefficients of ordered logistic regressions and standard errors in parentheses. Each column is a separate regression. Dependent variable in all columns is the number of times the respondent said he/she would vote for Mr. Obama against a Republican candidate in a hypothetical 2012 presidential election, an integer ranging from 0 to 5. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

These results held true when we ran the regression analysis among registered voters only. Among registered voters, believing in GW existence/human cause led them to vote for Mr. Obama more often than voting for a Republican candidate ( $b = 0.58, p = .02$ ; see row 1 in column 2 in Table 10.11).

#### MODERATION BY POLITICAL PARTY

The positive relationship between global warming belief (on existence and human cause) and candidate preference for Barack Obama was apparent among Democrats and among Independents. Believing that global warming has been happening and that it is caused by human was associated with voting for Mr. Obama more often than voting for a Republican candidate ( $b = 1.16, p = .03$  among Democrats, see row 1 in column 3 of Table 10.11;  $b = 0.95, p < .01$  among Independents, see row 1 in column 5 of Table 10.11). However, the relationship between global warming existence/human cause belief and candidate preference was not significant among Republicans ( $b = .14, p = .81$ ; see row 1 in column 4 of Table 10.11).

#### MODERATION BY BELIEF CERTAINTY

The positive relationship between GW existence/human cause belief and candidate preference was stronger among people with high certainty than among people with low certainty about their beliefs. Among low certainty people, believing in GW has been happening and that it is caused by human led them to vote for Mr. Obama more often than vote for a Republican candidate ( $b = 0.50, p = .06$ ; see row 1 in column 7 of Table 10.11). But among high certainty people, believing in GW has been happening and that it is caused by human led them to vote for Mr. Obama more often than vote for a Republican candidate by a larger magnitude ( $b = 1.87, p < .00$ ; see row 1 in column 6 of Table 10.11). In an alternative regression when the interaction term of GW existence/human cause belief and high certainty was included, this interaction was positive and significant ( $b = 1.00, p = .06$ ) and the main effect of GW existence/human cause belief was also positive and significant ( $b = 0.44, p = .07$ ).

### *Proximity on Global Warming Belief and Candidate Preference*

#### GLOBAL WARMING BELIEF PROXIMITY AND CANDIDATE PREFERENCE

Global warming belief proximity influenced candidate preference in the expected way after controlling for party identification, perception of country going in the right direction, approval of President Obama, and demographics, and the influence was significant and in the expected direction (see Table 10.12,

which displays the coefficient estimates from alternative specific conditional logistic regression with voting for Barack Obama as the omitted base category). Matching the candidate's global warming belief closely with own global warming belief led people to be more likely to vote for the candidate ( $b = .71$ ,  $p < .01$ ; see row 1 in Table 10.12). The marginal effect of the global warming belief proximity on candidate preference was positive and significant (see row 2 in Table 10.12); the largest effect was in intent to vote for Barack Obama ( $m = .14$  or 14 percentage points,  $p < .01$ ), followed by intent to vote for Mitt Romney and Ron Paul ( $m = .10$ ,  $p < .01$  for both), then intent to vote for Rick Perry ( $m = .08$ ,  $p < .01$ ), and the smallest effect was intent to vote for Michelle Bachmann and Jon Huntsman ( $m = .07$ ,  $p < .01$  for both).

Other factors thought to influence candidate choice also had significant effects in the expected directions. Democrats were less likely and Republicans were more likely to vote for any of the Republican candidates than for Mr. Obama (see rows 3–4 in Table 10.12). People who approved of President Obama's performance were less likely to vote for any of the Republican candidate than to vote for Mr. Obama (see row 6 in Table 10.12). Whites were more likely to vote for each of the Republican candidates than for Mr. Obama (see row 8 in Table 10.12).

The findings on the influence of global warming belief proximity on candidate preference were robust to alternative construction of proximity measures. In the city block or the Euclidian distance measure, matching the candidate's global warming belief closely with own global warming belief led people to be more likely to vote for the candidate ( $b = .35$ ,  $p < .00$  for both the city block and the Euclidian distance measure).

#### MODERATION BY POLITICAL PARTY

The positive relationship between global warming belief proximity and candidate preference in the full sample was apparent among Democrats and among Independents. Matching the candidate's global warming belief closely with own global warming belief led people to be more likely to vote for the candidate ( $b = 1.07$ ,  $p < .01$  among Democrats;  $b = .99$ ,  $p < .01$  among Independents). However, the relationship between global warming belief proximity and candidate preference was small among Republicans ( $b = .19$ ,  $p$ -value was not available because of the failure to calculate the standard errors due to non-symmetry or high singularity of variance matrix).

#### MODERATION BY BELIEF CERTAINTY

The positive relationship between global warming belief proximity and candidate preference was stronger among people with high certainty than

**TABLE 10.12** Study 4: The Impact of Global Warming Belief Proximity on Candidate Preference

<i>Predictor</i>	<i>Vote for Barack Obama</i>	<i>Vote for Mitt Romney</i>	<i>Vote for Jon Huntsman</i>	<i>Vote for Michelle Bachmann</i>	<i>Vote for Ron Paul</i>	<i>Vote for Rick Perry</i>	<i>Vote for Other/ DKRF</i>
GW belief proximity	0.71*** (0.15)	0.71*** (0.15)	0.71*** (0.15)	0.71*** (0.15)	0.71*** (0.15)	0.71*** (0.15)	0.71*** (0.15)
(marginal effect of GW belief proximity)	0.14*** (0.03)	0.10*** (0.02)	0.07*** (0.02)	0.07*** (0.02)	0.10*** (0.02)	0.08*** (0.02)	0.04*** (0.01)
Democrat	-1.01*** (0.32)	-1.34*** (0.36)	-1.46*** (0.38)	-1.81*** (0.29)	-1.75*** (0.37)	-1.29*** (0.18)	-1.29*** (0.18)
Republican	1.62*** (0.34)	0.99*** (0.28)	0.62** (0.28)	0.78*** (0.30)	1.58*** (0.33)	-0.36* (0.20)	-0.36* (0.20)
Country in right direction	0.63 (0.40)	0.64 (0.44)	0.47 (0.41)	0.38 (0.36)	0.96** (0.40)	0.83*** (0.21)	0.83*** (0.21)
Approval of President Obama	-6.11*** (0.49)	-5.85*** (0.51)	-5.38*** (0.47)	-4.96*** (0.40)	-6.49*** (0.51)	-4.28*** (0.26)	-4.28*** (0.26)
Male	0.17 (0.25)	-0.38 (0.25)	-0.11 (0.24)	-0.22 (0.22)	-0.11 (0.25)	-0.35** (0.15)	-0.35** (0.15)
White	1.20*** (0.41)	0.93** (0.43)	1.33*** (0.49)	0.78** (0.34)	0.43 (0.44)	0.43* (0.23)	0.43* (0.23)
Hispanic	0.01 (0.50)	0.03 (0.58)	0.82 (0.63)	0.13 (0.45)	-0.37 (0.55)	0.87*** (0.25)	0.87*** (0.25)
Married	0.85 (0.54)	1.02* (0.53)	-0.04 (0.56)	0.63 (0.50)	1.55*** (0.54)	1.31*** (0.27)	1.31*** (0.27)

continued...

Table 10.12 continued...

<i>Predictor</i>	<i>Vote for Barack Obama</i>	<i>Vote for Mitt Romney</i>	<i>Vote for Jon Huntsman</i>	<i>Vote for Michelle Bachmann</i>	<i>Vote for Ron Paul</i>	<i>Vote for Rick Perry</i>	<i>Vote for Other/DKRF</i>
Age: 25–34	0.39 (0.53)	0.94* (0.54)	0.65 (0.53)	0.30 (0.48)	1.12** (0.57)	0.27 (0.28)	
Age: 35–44	0.65 (0.52)	0.63 (0.51)	0.44 (0.44)	0.31 (0.43)	1.14** (0.54)	1.39*** (0.27)	
Age: 45–54	0.62 (0.58)	0.60 (0.51)	0.10 (0.45)	0.10 (0.46)	0.56 (0.58)	0.39 (0.27)	
Age: 55–64	0.43 (0.50)	0.39 (0.49)	0.06 (0.45)	-0.02 (0.43)	0.29 (0.56)	0.37 (0.26)	
Age: 65+	-1.01*** (0.32)	-1.34*** (0.36)	-1.46*** (0.38)	-1.81*** (0.29)	-1.75*** (0.37)	-1.29*** (0.18)	
High school graduate	1.30* (0.69)	-0.24 (0.59)	-0.26 (0.59)	-0.18 (0.49)	0.71 (0.55)	0.69** (0.29)	
Some college	1.25* (0.70)	-0.61 (0.57)	-0.33 (0.57)	-0.41 (0.50)	0.01 (0.53)	0.41 (0.29)	
College graduate	1.08 (0.71)	-0.73 (0.58)	-0.89 (0.59)	-0.79 (0.51)	-0.18 (0.56)	0.09 (0.30)	
Region—Midwest	0.52 (0.36)	0.13 (0.33)	-0.06 (0.37)	-0.20 (0.35)	0.57 (0.40)	-0.39* (0.24)	
Region—South	0.58* (0.32)	0.19 (0.28)	0.17 (0.29)	0.31 (0.30)	0.96*** (0.35)	-0.02 (0.18)	
Region—West	0.45 (0.37)	0.41 (0.36)	0.02 (0.34)	-0.30 (0.33)	0.08 (0.40)	-0.14 (0.20)	

Income: \$15K-\$25K	0.27 (0.63)	-0.34 (0.55)	-0.50 (0.58)	0.53 (0.48)	0.22 (0.60)	-1.64*** (0.29)
Income: \$25K-\$40K	-0.01 (0.57)	-1.08* (0.58)	-0.65 (0.60)	0.02 (0.50)	0.36 (0.61)	-1.19*** (0.32)
Income: \$40K-\$50K	-0.61 (0.57)	-0.15 (0.65)	-0.33 (0.58)	0.23 (0.52)	-0.06 (0.63)	-1.20*** (0.31)
Income: \$50K-\$75K	0.02 (0.54)	-0.31 (0.55)	-0.13 (0.57)	0.92* (0.53)	0.55 (0.58)	-0.91*** (0.28)
Income: \$75K-\$100K	-0.03 (0.60)	-0.85 (0.54)	-0.66 (0.58)	0.58 (0.47)	-0.14 (0.75)	-1.82*** (0.31)
Income: \$100K or higher	0.35 (0.57)	-0.44 (0.54)	-0.76 (0.60)	0.82 (0.51)	0.49 (0.65)	-1.50*** (0.28)
Constant	-0.51 (0.96)	1.89* (1.02)	1.95* (1.12)	1.81** (0.73)	1.04 (0.92)	1.05** (0.50)
N	16,065	16,065	16,065	16,065	16,065	16,065

Notes: Presented are the coefficients (marginal probabilities of row 1 in row 2) of alternative specific conditional logistic regressions (standard errors in parentheses) of all respondents in the sample with Barack Obama as the base alternative. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

among people with low certainty about their beliefs ( $b = .96, p = .02$  among high certainty people;  $b = .65, p < .01$  among low certainty people). The marginal effect of global warming belief proximity on intent to vote for Barack Obama was an increase of 24 percentage points ( $p = .02$ ) among high certainty people compared to half of the amount, an increase of 12 percentage points ( $p < .01$ ), among low certainty people. There was a less consistent moderating effect by belief certainty in intent to vote for any of the Republican candidates. For example, the marginal effect of global warming belief proximity on intent to vote for Mitt Romney was an increase of 11 and 9 percentage points ( $p = .04; p < .01$ ) among high and low certainty people, respectively; the marginal effect of global warming belief proximity on intent to vote for Rick Perry was an increase of 6 and 9 percentage points ( $p = .09; p < .01$ ) among high and low certainty people, respectively.

### **Study 5—Experimental Evidence from a National Survey in 2015**

Study 5 employed within-subject experiments with hypothetical elections in which a respondent heard three candidates in randomized order, one of whom took a green position, one took a not-green position, and one took a not-committal position. Our experiments explored the impact of taking green, not-green, and not-committal positions on voting and assessed whether this impact varied across Democrats, Independents, and Republicans.

#### ***Data***

##### *Data Collection*

SSRS interviewed a representative national sample of 1,006 U.S. adults by telephone, 483 respondents were interviewed on a landline telephone, and 523 were interviewed on a cell phone. Interviews were conducted between January 7 and January 22, 2015, and were administrated in English and Spanish. The AAPOR Response Rate 3 was 12%.

Samples were drawn from both landline and cellular random digit dial (RDD) frames, with an overlapping frame design. The RDD landline sample was generated through Marketing Systems Group's GENESYS sampling system. The GENESYS RDD procedure produces an Equal Probability Selection Method sample of telephone numbers from all working. The sample was generated shortly before the beginning of data collection to provide the most up-to-date sample possible, maximizing the number of valid telephone extensions. Cell phone numbers were generated using the Telecordia database, which identifies 1,000-series telephone blocks dedicated to cellular devices. From the identified

1,000 series telephone blocks dedicated to cellular devices, MSG generates a random sample of possible telephone numbers.

For the landline sample, in households with two adults, one adult was randomly selected. In households with three or more adults, a first random selection was made to choose between the adult who answered the phone and the rest of the adults, and if the remaining adults were selected, one was randomly chosen using the last or next birthday method (whereby the adult with the most recent or the upcoming birthday was selected for interviewing; the use of next vs. last birthday for each household was determined randomly). For the cell phone sample, interviews were conducted with the person who answered the phone. Interviewers verified that the person was an adult and in a safe place before administering the survey. Cell phone sample respondents were offered a post-paid reimbursement of \$10 for their participation.

Base weights were created to adjust for differential probabilities of selection due to the number of adults in the household, the number of voice-use landlines, and the number of cell phones. Final weights were computed through post-stratification to population proportions of age-by-gender, education, race, ethnicity, marital, phone status, Census region, a variable dividing U.S. counties into three based on the 2012 presidential election outcomes: Democratic-leaning counties; Republican-leaning counties; all other counties, using targets from the 2014 March Supplement of the Current Population Survey and telephone status parameters from the National Health Interview Survey for the time period between January and June 2014.

Table 10.13 displays distributions of unweighted and weighted demographics from the survey and national benchmarks from the 2014 March supplement of the Current Population Survey. These distributions show that the sample was similar to the American population before the weights were applied and, as expected, was more similar after the data were weighted. We report weighted results of the experiment, though unweighted data produced comparable findings.

### *Experimental Conditions*

Each respondent heard statements from three hypothetical candidates purportedly running for Senate in their state or President of the United States; the three candidates expressed a green position, a not-green position and a not-committal position. The order in which respondents heard the candidate with green, not-green, or not-committal position was randomized. After hearing the statement, respondents were asked: “If a candidate says this, would this make you more likely to vote for this candidate, less likely to vote for this candidate, or would it not affect how likely you would be to vote for this candidate?”

**TABLE 10.13** Study 5: Distributions of Demographics of the Sample and the Current Population Survey

<i>Demographic</i>	<i>GW National Survey—2015 (unweighted)</i>	<i>GW National Survey—2015 (weighted)</i>	<i>CPS— March 2014</i>	<i>Difference: GW Survey (weighted)—CPS</i>
Age by Gender				
18-29 Male	7.4%	11.0%	10.9%	.1%
30-44 Male	11.5	12.6	12.5	.1
45-64 Male	20.5	16.8	16.7	.1
65 or older Male	12.8	8.5	8.3	.2
18-29 Female	5.7	10.4	10.6	-.2
30-44 Female	7.5	12.2	12.9	-.7
45-64 Female	21.0	17.9	17.8	.1
65 or older Female	13.7	10.5	10.3	.2
Total	100.0%	100.0%	100.0%	
	(N = 1006)	(N = 1006)	(N = 100,633)	
Ethnicity				
Non-Hispanic	89.7%	85.3%	84.8%	.5%
Hispanic – U.S. born	7.0	7.2	7.2	.0
Hispanic – foreign born	3.4	7.5	8.0	-.5
Total	100.0%	100.0%	100.0%	
	(N = 1006)	(N = 1006)	(N = 100,633)	
Race				
Non-Black	91.7%	87.9%	87.7%	.2
Black only	8.4	12.1	12.3	-.2
Total	100.0%	100.0%	100.0%	
	(N = 1006)	(N = 1006)	(N = 100,633)	
Education				
Less than HS	5.3%	11.7%	12.3%	-.6%
HS graduate	25.3	30.0	29.6	.4

<i>Demographic</i>	<i>GW National Survey—2015 (unweighted)</i>	<i>GW National Survey—2015 (weighted)</i>	<i>CPS— March 2014</i>	<i>Difference: GW Survey (weighted)—CPS</i>
Some college	27.9	28.9	28.8	.1
College graduate	21.2	19.0	18.9	.1
Post college graduate	20.4	10.4	10.4	.0
Total	100.0%	100.0%	100.0%	
	(N = 1006)	(N = 1006)	(N = 100,633)	
Region				
Northeast	18.9%	18.1%	18.2%	-.1%
Midwest	23.9	21.6	21.3	.3
South	35.4	37.3	37.1	.2
West	21.9	23.2	23.4	-.2
Total	100.0%	100.0%	100.0%	
	(N = 1006)	(N = 1006)	(N = 100,633)	

The green statement was:

“I believe that global warming has been happening for the past 100% years, mainly because we have been burning fossil fuels and putting out greenhouse gasses. Now is the time for us to be using new forms of energy that are made in America and will be renewable forever. We can manufacture better cars that use less gasoline and build better appliances that use less electricity. We need to transform the outdated ways of generating energy into new ones that create jobs and entire industries, and stop the damage we’ve been doing to the environment.”

The not-green statement was:

“The science on global warming is a hoax and is an attempt to perpetrate a fraud on the American people. I don’t buy into the whole man-caused global warming mantra. We must spend no effort to deal with something that is not a problem at all. We should not invest in windmills and solar panels as alternative energy sources. Instead we should continue to focus on our traditional sources of energy: coal, oil, and natural gas. We should expand energy production in our country, including continuing to mine our coal and doing more drilling for oil here at home.”

The not-committal statement was:

“When people ask me if I believe global warming has been happening, I’m not qualified to debate the science over climate change, because I am not a scientist. When people ask me if I believe human activity causes global warming, I don’t know. There is significant scientific dispute about that. We can debate this forever. I am not qualified to make this decision. But I am astute enough to understand that every proposal to deal with climate change involves hurting our economy and killing American jobs.”

## Results

### *The Full Sample*

In the full sample, taking a green position on global warming won votes for the candidate and taking not-green or not-committal position lost votes (see panel 1 of Table 10.14). 66% of respondents said hearing the green statement from the candidate would make them more likely to vote for the candidate, 12% said less likely to vote for the candidate and 21% said it had no effect, whereas 67% of respondents said hearing the not-green statement from the candidate would make them less likely to vote for the candidate, 13% said more likely to vote for the candidate and 19% said it had no effect.

**TABLE 10.14** Study 5: Effects of Green, Not-Green and Not-Committal Statements on Voting Outcome for the Candidate in the 2015 Global Warming National Survey

<i>Response</i>	<i>Respondents who heard the green statement on global warming (1)</i>	<i>Respondents who heard the not-green statement (2)</i>	<i>Respondents who heard the not-committal statement (3)</i>
Among full sample			
More likely to vote for the candidate	66%	13%	27%
Less likely to vote for the candidate	12	67	44
Has no effect	21	19	27
Don't know/Refused	1	1	2
Total	100%	100%	100%
N	1006	1006	1006

<i>Response</i>	<i>Respondents who heard the green statement on global warming (1)</i>	<i>Respondents who heard the not-green statement (2)</i>	<i>Respondents who heard the not-committal statement (3)</i>
Among Democrats			
More likely to vote for the candidate	81%	8%	16%
Less likely to vote for the candidate	3	78	58
Has no effect	15	13	22
Don't know/Refused	1	1	3
Total	100%	100%	100%
N	307	307	307
Among Republicans			
More likely to vote for the candidate	48%	24%	37%
Less likely to vote for the candidate	24	48	27
Has no effect	26	26	33
Don't know/Refused	2	1	3
Total	100%	100%	100%
N	222	222	222
Among Independents			
More likely to vote for the candidate	64%	10%	30%
Less likely to vote for the candidate	13	69	43
Has no effect	22	20	27
Don't know/Refused	1	1	0
Total	100%	100%	100%
N	477	477	477

continued...

Table 10.14 continued...

<i>Response</i>	<i>Respondents who heard the green statement on global warming (1)</i>	<i>Respondents who heard the not-green statement (2)</i>	<i>Respondents who heard the not-committal statement (3)</i>
Among respondents attaching high personal importance to global warming			
More likely to vote for the candidate	85%	4%	18%
Less likely to vote for the candidate	2	86	64
Has no effect	12	9	18
Don't know/Refused	1	1	0
Total	100%	100%	100%
N	425	425	425
Among respondents attaching low personal importance to global warming			
More likely to vote for the candidate	51%	19%	35%
Less likely to vote for the candidate	20	53	29
Has no effect	28	26	34
Don't know/Refused	1	1	3
Total	100%	100%	100%
N	581	581	581
Among respondents who believe in man-made warming			
More likely to vote for the candidate	79%	5%	21%
Less likely to vote for the candidate	4	81	54
Has no effect	17	14	24
Don't know/Refused	1	0	1
Total	100%	100%	100%
N	631	631	631

<i>Response</i>	<i>Respondents who heard the green statement on global warming (1)</i>	<i>Respondents who heard the not-green statement (2)</i>	<i>Respondents who heard the not-committal statement (3)</i>
Among respondents who don't believe in in man-made warming			
More likely to vote for the candidate	45%	26%	37%
Less likely to vote for the candidate	27	45	27
Has no effect	27	28	33
Don't know/Refused	2	2	3
Total	100%	100%	100%
N	375	375	375
Among respondents who heard the question first			
More likely to vote for the candidate	61%	17%	30%
Less likely to vote for the candidate	11	64	44
Has no effect	29	18	25
Don't know/Refused	0	1	1
Total	100%	100%	100%
N	368	323	315
Among respondents who heard the question second or third			
More likely to vote for the candidate	69%	11%	26%
Less likely to vote for the candidate	14	69	44
Has no effect	17	20	28
Don't know/Refused	1	1	2
Total	100%	100%	100%
N	636	682	691

The same impact of the green statement was apparent among Democratic respondents and Independents (see panels 2 and 4 of Table 10.14). 81% of Democrats said the green statement would make them more likely to vote for the candidate, and 64% Independents said so. The change brought about by the green statement in the intentions to vote was significantly different between Democrats and Independents ( $p < .01$ ). The same impact of the not-green statement was also apparent among Democratic respondents and Independents (see panels 2 and 4 of Table 10.14). 78% of Democrats said the not-green statement would make them less likely to vote for the candidate, and 69% Independents said so. The change brought about by the green statement in the intentions to vote was marginally significantly different between Democrats and Independents ( $p = .06$ ). Among Republicans, taking a green or a not-green position caused a plurality of changes in intentions to vote for the candidate (see panel 3 of Table 10.14). 48% of Republicans said the green statement would make them more likely to vote for the candidate, while 48% of Republicans said the not-green statement would make them less likely to vote for the candidate.

Among respondents who heard the not-committal statement from the candidate, 44% of respondents said hearing that statement would make them less likely to vote for the candidate, 26% said more likely to vote for the candidate and 27% said it had no effect (see panel 1 of Table 10.14). A majority, 58%, of Democratic respondents reported the not-committal statement would cause them less likely to vote for the candidate, compared to a plurality, 43%, of Independents said so, and a minority, 27%, of Republicans did (see panels 2–4 of Table 10.14).

### *The Moderators of the Green, Not-Green, Not-Committal Statements*

As expected, the finding among the full sample that taking green position gained votes and taking not-green or not-committal position lost votes was greater among respondents who attached high personal importance than respondents who did not (see panels 5–6 of Table 10.14). Hearing the green statement invoked different reactions between respondents who did and who didn't consider global warming highly important personally ( $p < .01$ ). For example, the green statement caused an increased likelihood to vote for the candidate among 85% of people who attached high personal importance to global warming, compared to 51% people who did not. Hearing the not-green statement also caused different responses between respondents who did and who didn't attach high personal importance to global warming ( $p < .01$ ). For instance, the not-green statement caused a decreased likelihood to vote for the candidate among 86% of people who attached high personal importance to global warming, compared to 53% people who did not. Likewise, hearing the not-committal statement induced different reactions between respondents who

did and who didn't consider global warming highly important personally ( $p < .01$ ). For example, the not-committal statement caused a decreased likelihood to vote for the candidate among 64% of people who considered global warming highly important personally, compared to 29% people who did not.

As expected, the finding among the full sample that taking green position gained votes and taking not-green or not-committal position lost votes was stronger among respondents who believed in anthropogenic warming than respondents who did not (see panels 7–8 of Table 10.14). Hearing the green statement invoked different reactions between respondents who did and didn't believe in anthropogenic warming ( $p < .01$ ). For example, the green statement caused an increased likelihood to vote for the candidate among 79% of believers in anthropogenic warming, compared to 45% non-believers in anthropogenic warming. Hearing the not-green statement also caused different responses between believers and non-believers in anthropogenic warming ( $p < .01$ ). For instance, the not-green statement caused a decreased likelihood to vote for the candidate among 81% of people believed in anthropogenic warming, compared to 45% people who did not. Likewise, hearing the not-committal statement induced different reactions between believers and non-believers in anthropogenic warming ( $p < .01$ ). For example, the not-committal statement caused a decreased likelihood to vote for the candidate among 54% of believers in anthropogenic warming, compared to 27% of non-believers in anthropogenic warming.

### *Contrast Effect*

In this experiment, each respondent was exposed to three hypothetical candidates making a green statement, a not-green statement, and a not-committal statement, respectively, and the order in which the three hypothetical candidates a respondent listened to was randomized. This design was referred to as a within-subject design. A within-subject design could induce a contrast effect, for example, the positive effect in intention to vote of the green statement might be greater among respondents who heard the not-green or not-committal statement first than respondents who heard the green statement first. There was a contrast effect, the direction of which was as predicted, for the green statement ( $p < .01$ ) (see panels 9–10 of Table 10.14). For instance, 61% of respondents who heard the green statement first said it would make them more likely to vote for the candidate, whereas 69% of respondents who heard the green statement second or third said so. There was a contrast effect, the direction of which was as predicted but marginally significant, for the not-green statement ( $p = .08$ ). For instance, 64% of respondents who heard the not-green statement first said it would make them less likely to vote for the candidate, whereas 69% of respondents who heard the not-green statement second or third said so. However, there was no contrast effect

for the not-committal statement ( $p = .53$ ). For instance, 44% of respondents who heard the not-committal statement first said it would make them less likely to vote for the candidate, and the same percent, 44%, of respondents who heard the not-committal statement second or third said so.

## **Study 6—Experimental Evidence from a National Survey in 2010**

Study 6 assembled the experimental evidence on the impact of candidates' taking green or not-green position on electoral outcome in hypothetical elections, and experiments were based on between-subject design under which a respondent was randomly chosen to hear about a single candidate taking green, not-green, or silent position. Our experiments explored the impact of taking green and not-green positions on voting and assessed whether this impact varied across Democrats, Independents, and Republicans.

### ***Data***

#### *Data Collection*

Abt SRBI interviewed a representative national sample of 1,001 U.S. adults by telephone, 671 respondents were interviewed on a landline telephone, and 330 were interviewed on a cell phone. Interviews were conducted between November 1 and November 14, 2010, and were administrated in English and Spanish. The AAPOR Response Rate 3 was 17%.

Samples were drawn from both landline and cellular random digit dial (RDD) frames. Both samples were provided by Survey Sampling International, LLC, according to specifications from Abt SRBI. Landline telephone numbers were drawn with equal probabilities from active blocks (area code + exchange + two-digit block number) that contained one or more residential directory listings. The cell phone sample was generated through systematic sampling from 1,000-blocks dedicated to cellular service according to the Telcordia database.

A maximum of seven call attempts were made to each sampled telephone number. Refusal conversion was attempted with soft refusal cases in the landline sample. Calls were staggered over times of day and days of the week to maximize the chance of making contact with potential respondents. The sample was released for interviewing in replicates, which are representative subsamples of the full sample.

For the landline sample, in households with two adults, one adult was randomly selected. In households with three or more adults, a first random selection was made to choose between the adult who answered the phone and the rest of the adults, and if the remaining adults were selected, one was randomly chosen using the last or next birthday method (whereby the adult with the most recent or the upcoming birthday was selected for interviewing;

the use of next vs. last birthday for each household was determined randomly). For the cell phone sample, interviews were conducted with the person who answered the phone. Interviewers verified that the person was an adult and in a safe place before administering the survey. Cell phone sample respondents were offered a post-paid reimbursement of \$10 for their participation.

Abt SRBI created a base weight that adjusts for differential probabilities of selection due to the number of adults in the household, the number of voice-use landlines, and the number of cell phones. The base weight also adjusts for overlap of the landline and cell phone RDD frames. Final weights were computed using a raking algorithm (DeBell & Krosnick, 2009; Pasek, 2010) that accounted for unequal probabilities of selection and post-stratified to population proportions of age, sex, education, ethnicity, race, and Census region, using targets from the September 2010 Current Population Survey conducted by the U.S. Census Bureau. The weighting combined the interviews done on landlines and cell phones taking into account the rates of landline and cell phone usage documented by the 2009 National Health Interview Survey.

**TABLE 10.15** Study 6: Distributions of Demographics of the Sample and the Current Population Survey

<i>Demographic</i>	<i>Global Warming National Survey—Nov 2010 (unweighted)</i>	<i>Global Warming National Survey—Nov 2010 (weighted)</i>	<i>Current Population Survey (CPS) —March 2010</i>	<i>Difference: Global Warming National Survey (weighted)—CPS</i>
Gender				
Male	45.9%	46.7%	48.5%	-1.8%
Female	54.1	53.3	51.5	1.8
Total	100.0%	100.0%	100.0%	
	(N = 808)	(N = 808)	(N = 149,071)	
Age				
18–24	9.9%	11.9%	12.8%	-0.9%
25–34	11.3	18.7	17.9	0.8
35–44	13.4	17.4	17.6	-0.2
45–54	21.2	19.0	19.4	-0.4
55–64	18.0	16.0	15.4	0.6
65+	26.3	16.9	16.8	0.1
Total	100.0%	100.0%	100.0%	
	(N = 769)	(N = 769)	(N = 149,071)	

continued...

Table 10.15 continued...

Ethnicity				
Hispanic	11.0%	12.6%	13.9%	-1.3%
Non-Hispanic	89.0	87.4	86.1	1.3
Total	100.0%	100.0%	100.0%	
	(N = 779)	(N = 779)	(N = 149,071)	
Race				
White only	74.0%	81.6%	81.0%	0.6%
Black only	9.9	12.1	11.9	0.2
Other race	16.1	6.3	7.1	-0.8
Total	100.0%	100.0%	100.0%	
	(N = 808)	(N = 808)	(N = 149,071)	
Education				
Less than HS	6.9%	10.5%	13.7%	-3.2%
HS graduates	25.9	29.8	31.1	-1.7
Some college	24.9	30.2	27.9	2.3
College or higher	42.4	29.5	27.3	2.2
Total	100.0%	100.0%	100.0%	
	(N = 788)	(N = 788)	(N = 149,071)	
Region				
Northeast	18.3%	17.8%	18.4%	-0.6%
Midwest	23.9	22.8	21.8	1.0
South	36.5	35.2	36.7	-1.5
West	21.3	24.2	23.1	0.8
Total	100.0%	100.0%	100.0%	
	(N = 808)	(N = 808)	(N = 149,071)	

Table 10.15 displays distributions of unweighted and weighted demographics from the survey and national benchmarks from the 2010 March supplement of the Current Population Survey. These distributions show that the sample was similar to the American population before the weights were applied and, as expected, was more similar after the data were weighted. The weighted sample slightly over-represented females and people with some college or college

graduates or more education and slightly under-represented Hispanics and people with some high school education but no high school degree, as well as high school graduates. We report weighted results of the experiment, though unweighted data produced comparable findings.

### *Experimental Conditions*

After hearing each of a series of quotes from a hypothetical candidate purportedly running for Senate in their state, respondents reported whether they agreed or disagreed with the position expressed in the quote. After hearing all the quotes, respondents reported how likely they were to vote for or against the candidate. All respondents heard the candidate make statements on two issues other than global warming. For each respondent, these two statements were randomly selected from a set of six such statements (see Appendix E for the description of these issue statements). Respondents were randomly assigned also to hear the candidate express a green position on global warming, a not-green position on global warming, or no position on global warming (we refer to the latter individuals as the “control group” below). For a randomly selected half of the respondents who heard a global warming statement, it preceded the statements on other issues. For the remaining respondents who heard a global warming statement, it followed the statements on other issues.

The green statement was:

“Like most Americans and most of the residents of our great State, I believe that global warming has been happening for the last 100 years, mainly because we have been burning fossil fuels and putting out greenhouse gasses. Now is the time for us to stop this by ending our dependence on imported oil and coal to run our cars and heat our houses. We need to begin using new forms of energy that are made in America and will be renewable forever. We can build better cars that use less gasoline. We can build better appliances that use less electricity. And we can make power from the sun and from wind. We don’t have to change our lifestyles, but we do need to reshape the way our country does business. We need to end our long-term addiction to polluting the environment and instead let American genius do what it does best—transform our outdated ways of generating energy into new ones that create jobs and entire industries, and stop the damage we’ve been doing to the environment.”

The not-green statement was:

“There **isn’t any real science** to say we are changing the climate of the earth. The science on global warming is a **hoax** and is an attempt

to perpetrate a fraud on the American people. Climate science is junk science, and global warming is a manufactured controversy. I don't buy into the whole man-caused global warming, **man-caused climate change mantra**, and I believe that there's not sound science to back that up. We must spend no effort to deal with something that is not a problem at all. Yet that's exactly what's happening with the cap and trade bill that Congress has considered. I oppose the cap and trade bill. Cap and trade is a job killer and damages our economy. We should not invest in windmills and solar panels as alternative energy sources. Instead we should continue to focus on our traditional sources of energy: coal, oil, and natural gas. We should expand energy production in our country, including by continuing to mine our coal, doing more drilling for oil here at home."

## Results

As expected, the three experimental groups did not differ significantly from one another in terms of the distributions of demographic characteristics (see Table 10.16). Thus, it seems that random assignment to groups was done properly.

**TABLE 10.16** Study 6: Distributions of Demographics of Experimental Conditions in the National Survey

<i>Demographic</i>	<i>Green Condition</i>	<i>Control Condition</i>	<i>Not-Green Condition</i>	<i>p-value</i>
<i>Gender</i>				
Male	42.9%	47.2%	50.1%	
Female	57.1	52.8	49.9	
Total	100.0%	100.0%	100.0%	p = .45
	(N = 266)	(N = 266)	(N = 276)	
<i>Age</i>				
18–24	14.2%	11.0%	10.4%	
25–34	14.4	25.9	16.0	
35–44	19.6	14.3	18.3	
45–54	19.6	16.6	20.9	
55–64	15.4	16.9	15.7	
65+	16.7	15.4	18.7	p = .45
Total	100.0%	100.0%	100.0%	
	(N = 259)	(N = 247)	(N = 263)	

<i>Demographic</i>	<i>Green Condition</i>	<i>Control Condition</i>	<i>Not-Green Condition</i>	<i>p-value</i>
Ethnicity				
Hispanic	17.4%	8.3%	11.5%	
Non-Hispanic	82.7	91.7	88.5	
Total	100.0%	100.0%	100.0%	p = .07
	(N = 266)	(N = 266)	(N = 276)	
Race				
White only	81.9%	82.9%	80.1%	
Black only	11.4	11.5	13.3	
Other race	6.7	5.6	6.6	
Total	100.0%	100.0%	100.0%	p = .55
	(N = 266)	(N = 266)	(N = 276)	
Education				
Less than HS	10.5%	5.7%	15.4%	
HS graduates	34.9	30.5	27.9	
Some college	26.4	30.8	29.4	
College or higher	28.1	33.0	27.3	
Total	100.0%	100.0%	100.0%	p = .77
	(N = 262)	(N = 258)	(N = 268)	
Region				
Northeast	16.2%	19.8%	17.4%	
Midwest	19.9	23.6	24.7	
South	41.3	31.1	33.5	
West	22.6	25.6	24.4	
Total	100.0%	100.0%	100.0%	p = .77
	(N = 266)	(N = 266)	(N = 276)	

In the full sample, taking a green position on global warming won votes for the candidate, and taking a not-green position lost votes (see row 1 of Table 10.17). 65% of respondents said they would vote for the candidate who was silent on global warming, whereas 77% said they would vote for the candidate

**TABLE 10.17 Study 6:** Effects of Green and Not-Green Statements on Predicted Voting for the Candidate in the National Survey

<i>Respondents</i>	<i>Percent of Respondents Who Would Vote for the Candidate</i>				
	<i>Respondents who heard no statement on global warming (1)</i>	<i>Respondents who heard the green statement (2)</i>	<i>Respondents who heard the not-green statement (3)</i>	<i>Effect of the green statement (2)–(1)</i>	<i>Effect of the not-green statement (3)–(1)</i>
Full sample	65.2% (N=266)	77.4% (N=266)	47.9% (N=276)	12.2%**	-17.4%***
Democrats	53.0% (N=77)	74.3% (N=76)	37.4% (N=97)	21.3%**	-15.5%*
Republicans	83.4% (N=71)	77.8% (N=68)	76.4% (N=59)	-5.6%	-7.1%
Independents	63.3% (N=118)	78.8% (N=122)	43.9% (N=120)	15.4%**	-19.5%**

Notes: One-tailed tests are reported for Democrats and Independents given strong a priori expectations of the directions of effects given the results in Table 10.1. Two-tailed tests are reported for Republicans because we had no such expectations.

\*\*\* $p < .01$  \*\* $p < .05$ , \* $p < .10$

who took a green position on global warming, a significant 12 percentage point increase ( $p = .01$ ). Among respondents who heard the candidate take a not-green position, only 48% said they would vote for him/her. The 17 percentage point difference between this group and the control group was also statistically significant ( $p < .01$ ).

The same impact of the green statement was apparent among Democratic respondents and Independents (see rows 2 and 4 of Table 10.17). 53% of Democrats said they would vote for the candidate who was silent on global warming, whereas 74% said so when the candidate took a green position, a 21 percentage point increase ( $p = .03$ ). Among Independents, 63% said they would vote for the candidate who was silent on global warming, and 79% said so about the candidate who took a green position, an increase of 15 percentage points ( $p = .02$ ). The changes brought about by the green statement in intentions to vote were not significantly different between Democrats and Independents ( $p = .65$ ).

Democrats and Independent were also similar to one another and to the full sample in terms of the impact of the not-green statement (see rows 2 and 4 of Table 10.16). 37% of Democrats said they would vote for the candidate who took a not-green position, a decline of 16 percentage points from the silent candidate ( $p = .07$ ). 44% of Independents said they would vote for the candidate who took a not-green position, a decrease of 19 percentage points from the silent

candidate ( $p = .01$ ). The changes brought about by the not-green statement in intentions to vote were not significantly different between Democrats and Independents ( $p = .77$ ).

Among Republicans, taking a green or a not-green position caused no significant change in intentions to vote for the candidate (see row 3 of Table 10.16). 83% of Republicans said they would vote for the silent candidate vs. 78% for the candidate who took a green position ( $\Delta = 6\%$ ,  $p = .43$ ). 76% of Republicans said they would vote for the not green candidate ( $\Delta = 7\%$ ,  $p = .38$ ). The impact of the green statement among Democrats and Independents combined was significantly greater than its impact among Republicans (the interaction of Democrats/Independents and the green statement was positive and significant,  $b = .23$ ,  $p = .01$ ). However, the impact of the not-green statement among Democrats/Independents was not significantly different from its impact among Republicans (the interaction was negative and insignificant,  $b = -.12$ ,  $p = .26$ ).

This last finding poses a small dilemma for interpretation. The most parsimonious conclusion to reach is that the not-green statement significantly decreased intention to vote for the candidate equally among Democrats, Independent, and Republicans. However, the observed magnitude of the effect among Republicans (7 percentage points, see the last column of Table 10.17) is smaller (though not significantly so) than the effects among Democrats and Independents (17 percentage points and 16 percentage points, respectively) and is also not significantly different from zero. Thus, one might be inclined to conclude that the not-green statement did not significantly alter voting intentions among Republicans. We are inclined instead to pay heed to the interaction test and to conclude that not-green statement did indeed decrease voting intentions among Republicans.

### **Study 7—Experimental Evidence from Surveys in Florida, Maine and Massachusetts in 2010**

Study 7 used the same experimental approach as in Study 6 to assess the impact of green statements among residents of Florida, Maine, and Massachusetts.

#### ***Data***

##### *Data Collection*

The interviews were conducted by Abt SRBI between July 9 and July 18, 2010. In each state, approximately 400 respondents were interviewed on a landline telephone, and approximately 200 were interviewed on a cell phone. Interviews were conducted in English and Spanish.

The target population for the study is non-institutionalized persons age 18 and over, living in Florida, Massachusetts, and Maine. Samples were drawn from both the landline and cellular random digit dial (RDD) frames provided by Survey Sampling International. Numbers for the landline sample were drawn with equal probabilities from active blocks (area code + exchange + two-digit block number) that contained one or more residential directory listings. The cellular sample was drawn through a systematic sampling from 1,000-blocks dedicated to cellular service according to the Telcordia database.

A maximum of seven call attempts were made to numbers in the landline and cell phone samples. Refusal conversion was attempted on soft refusal cases in the landline sample. Calls were staggered over times of day and days of the week to maximize the chance of making contact with potential respondents. The sample was released for interviewing in replicates.

For the landline sample, the respondent was randomly selected from all of the adults in the household. For the cell phone sample, interviews were conducted with the person who answered the phone. Interviewers verified that the person was an adult and in a safe place before administering the survey. Cell sample respondents were offered a post-paid reimbursement of \$5 for their participation.

Weights for the July 2010 surveys done in Florida, Maine, and Massachusetts account for unequal probabilities of selection, and post-stratify to population proportions of age, sex, education, ethnicity and race, using targets from the 2006–2008 American Community Survey for Florida, Maine, and Massachusetts. The weighting was also designed to combine interviews done on landlines and cell phones taking into account the rates of landline and cell phone usage from the NHIS.

AAPOR Response Rate 3 was 14%, 14% and 19% for the landline samples in Florida, Massachusetts, and Maine, respectively, and 10%, 9% and 12% for the cellphone samples in Florida, Massachusetts, and Maine, respectively.

Tables 10.18–10.20 display distributions of unweighted and weighted demographics of each of the three states' survey samples along with state-level benchmarks computed using data from the 2006–2008 American Community Survey for the three states. The unweighted samples under-represented younger adults, under-represented whites, and under-represented people with relatively little formal education. After weighting, the three samples closely resembled their corresponding populations.

**TABLE 10.18** Study 7: Demographics of the Florida Global Warming State Survey and the American Community Survey

<i>Demographic</i>	<i>Florida Survey July 2010 (unweighted)</i>	<i>Florida Survey July 2010 (weighted)</i>	<i>Florida American Community Survey (ACS) 2006–2008</i>	<i>Difference: Florida State Survey (weighted)—ACS</i>
Gender				
Male	48.8%	49.4%	48.5%	0.9%
Female	51.2	50.6	51.5	-0.9
Total	100.0%	100.0%	100.0%	
	(N=600)	(N=600)	(N=442,524)	
Age				
18–24	6.8%	11.3%	11.3%	0.0%
25–34	10.0	15.9	15.9	0.0
35–44	13.0	17.9	17.9	0.0
45–54	20.7	18.2	18.2	0.0
55–64	20.8	14.9	14.9	0.0
65+	28.7	21.9	21.9	0.0
Total	100.0%	100.0%	100.0%	
	(N=571)	(N=571)	(N=442,524)	
Ethnicity				
Hispanic	13.3%	19.4%	19.4%	0.0%
Non-Hispanic	86.7	80.6	80.6	0.0
Total	100.0%	100.0%	100.0%	
	(N=579)	(N=579)	(N=442,524)	
Race				
White only	77.2%	80.2%	80.2%	0.0%
Black only	11.2	14.3	14.3	0.0
Other race	11.7	5.5	5.5	0.0
Total	100.0%	100.0%	100.0%	
	(N=574)	(N=574)	(N=442,524)	

continued...

Table 10.18 continued...

<i>Demographic</i>	<i>Florida Survey July 2010 (unweighted)</i>	<i>Florida Survey July 2010 (weighted)</i>	<i>Florida American Community Survey (ACS) 2006–2008</i>	<i>Difference: Florida State Survey (weighted)—ACS</i>
Education				
Less than HS	5.5%	15.5%	15.5%	0.0%
HS graduates	28.0	31.3	31.3	0.0
Some college	21.2	29.6	29.6	0.0
College or higher	45.3	23.6	23.6	0.0
Total	100.0%	100.0%	100.0%	
	(N=579)	(N=579)	(N=442,524)	

**TABLE 10.19** Study 7: Demographics of the Massachusetts Global Warming State Survey and the American Community Survey

<i>Demographic</i>	<i>Massachusetts Survey July 2010 (unweighted)</i>	<i>Massachusetts Survey July 2010 (weighted)</i>	<i>Massachusetts American Community Survey (ACS) 2006–2008</i>	<i>Difference: Massachusetts State Survey (weighted) —ACS</i>
Gender				
Male	48.3%	49.5%	47.7%	1.7%
Female	51.7	50.6	52.3	-1.7
Total	100.0%	100.0%	100.0%	
	(N = 600)	(N=600)	(N=150,777)	
Age				
18–24	8.2%	13.1%	13.1%	0.0%
25–34	10.3	16.3	16.3	0.0
35–44	14.3	19.4	19.4	0.0
45–54	22.4	19.7	19.7	0.0
55–64	22.8	14.4	14.4	0.0
65+	22.1	17.1	17.1	0.0
Total	100.0%	100.0%	100.0%	
	(N = 575)	(N=575)	(N=150,777)	

<i>Demographic</i>	<i>Massachusetts Survey July 2010 (unweighted)</i>	<i>Massachusetts Survey July 2010 (weighted)</i>	<i>Massachusetts American Community Survey (ACS) 2006–2008</i>	<i>Difference: Massachusetts State Survey (weighted) —ACS</i>
Ethnicity				
Hispanic	6.2%	7.1%	7.1%	0.0%
Non-Hispanic	93.8	92.9	92.9	0.0
Total	100.0%	100.0%	100.0%	
	(N = 579)	(N=579)	(N=150,777)	
Race				
White only	85.4%	85.4%	85.4%	0.0%
Black only	6.2	6.6	6.3	0.3
Other race	8.4	8.0	8.3	-0.3
Total	100.0%	100.0%	100.0%	
	(N = 577)	(N=577)	(N=150,777)	
Education				
Less than HS	4.6%	11.7%	11.7%	0.0%
HS graduates	22.6	27.8	27.8	0.0
Some college	18.1	25.7	25.7	0.0
College or higher	54.7	34.8	34.8	0.0
Total	100.0%	100.0%	100.0%	
	(N = 592)	(N=592)	(N=150,777)	

**TABLE 10.20** Study 7: Demographics of the Maine Global Warming State Survey and the American Community Survey

<i>Demographic</i>	<i>Maine Survey July 2010 (unweighted)</i>	<i>Maine Survey July 2010 (weighted)</i>	<i>Maine American Community Survey 2006–2008</i>	<i>Difference: Maine State Survey (weighted)—ACS</i>
Gender				
Male	45.2%	47.8%	47.8%	0.0%
Female	54.8	52.2	52.2	0.0
Total	100.0%	100.0%	100.0%	
	(N=600)	(N=600)	(N=30,153)	

continued...

Table 10.20 continued...

<i>Demographic</i>	<i>Maine Survey July 2010 (unweighted)</i>	<i>Maine Survey July 2010 (weighted)</i>	<i>Maine American Community Survey 2006–2008</i>	<i>Difference: Maine State Survey (weighted)—ACS</i>
<i>Age</i>				
18–24	6.4%	10.7%	10.7%	0.0%
25–34	9.5	14.5	14.5	0.0
35–44	13.9	18.1	18.1	0.0
45–54	22.5	21.2	21.2	0.0
55–64	24.2	16.7	16.7	0.0
65+	23.5	18.9	18.9	0.0
Total	100.0%	100.0%	100.0%	
	(N=582)	(N=582)	(N=30,153)	
<i>Ethnicity</i>				
Hispanic	1.4%	2.0%	1.0%	1.0%
Non-Hispanic	98.6	98.0	99.0	-1.0
Total	100.0%	100.0%	100.0%	
	(N = 583)	(N=583)	(N=30,153)	
<i>Race</i>				
White only	94.9%	97.5%	97.5%	0.0%
Black only	1.0	.7	.9	-0.2
Other race	4.1	1.8	1.6	0.2
Total	100.0%	100.0%	100.0%	
	(N=582)	(N=582)	(N=30,153)	
<i>Education</i>				
Less than HS	6.7%	11.1%	11.1%	0.0%
HS graduates	26.3	36.1	36.1	0.0
Some college	21.0	29.2	29.2	0.0
College or higher	46.1	23.7	23.7	0.0
Total	100.0%	100.0%	100.0%	
	(N=586)	(N=586)	(N=30,153)	

*Experimental Conditions*

After hearing each of a series of quotes from a hypothetical candidate purportedly running for Senate in their state, respondents reported whether they agreed or disagreed with the position expressed in the quote. After hearing all the quotes, respondents reported how likely they were to vote for or against the candidate. All respondents heard the candidate make statements on two issues other than global warming (see Appendix E for the description of these issue statements). Respondents were randomly assigned to hear the candidate express a green position on global warming, or no position on global warming (we refer to the latter individuals as the “control group” below). The green statement was identical to that used in Study 6.

**Results**

Taking a green position won votes for the candidate (see Table 10.21). In Florida, 49% of respondents said they would vote for the candidate who was silent on global warming, whereas 73% said they would vote for the candidate who took a green position. This 24 percentage point increase was statistically significant ( $p < .01$ ). In Maine, 64% of respondents said they would vote for the candidate who was silent on global warming, and 71% said so about the

**TABLE 10.21** Study 7: Estimations of the Green Effects and the Moderation of Party Affiliation in the States Survey

<i>Respondents</i>	<i>Percent of Respondents Who Would Vote for the Candidate</i>		
	<i>Respondents who heard no statement on global warming</i>	<i>Respondents who heard the green statement</i>	<i>Difference</i>
Florida	49.1% (N=297)	72.7% (N=302)	23.6%***
Maine	63.8% (N=278)	70.5% (N=318)	6.8%*
Massachusetts	67.2% (N=288)	76.9% (N=306)	9.7%**
Democrats	58.18% (N=257)	83.03% (N=283)	24.9%***
Republicans	70.9% (N=157)	62.7% (N=162)	-8.1%
Independents	57.0% (N=449)	71.2% (N=481)	14.2%***

\*\*\*p < .01 \*\*p < .05 \*p < .10

candidate who took a green position, an increase of 7 percentage points ( $p = .08$ ). In Massachusetts, the effect was about 10 percentage points ( $p = .02$ ); 67% and 77% of respondents said they would vote for the candidate who was silent and the candidate who took a green position, respectively.

The impact of the green statement was apparent among Democratic respondents (see row 4 of Table 10.21). 58% of Democrats said they would vote for the candidate who was silent on global warming, whereas 83% said so about the candidate who took a green position, a 25 percentage point increase ( $p < .01$ ). Likewise, 57% of Independents said they would vote for a candidate who was silent on global warming, whereas 71% said so about the candidate who took a green position, an increase of 14 percentage points ( $p < .01$ ). Among Republicans, taking a green position did not significantly alter intentions to vote for the candidate (71% for the candidate silent on climate vs. 63% for the candidate who took a green position,  $\Delta=8\%$ ,  $p = .34$ ). The impact of the green statement on voting intentions was different between Democrats/Independents and Republicans; the interaction of Democrats/Independents and the green statement was positive and significant ( $b = .28$ ,  $p < .01$ ).

### **Studies 6 and 7—Moderation by Belief in Anthropogenic Warming and by Personal Importance**

According to reigning theories of voting, the effects seen so far should be particularly pronounced among individuals who themselves take a green position on global warming and who attached personal importance to the issue (e.g., Visser, Bizer, & Krosnick, 2006). To test these hypotheses, we pooled the data from the national survey and the state surveys to yield sufficiently large samples (see Appendix E for a description of the measures).

#### ***Moderators of the Green and Not-Green Statement Effects***

As expected, the impacts of the green and not-green statements were much larger among respondents who believed that the Earth's temperature has been rising and that the temperature increase has been due to things people did than among respondents who did not hold these beliefs (see rows 1–2 of Table 10.22). 63% of respondents who believed in anthropogenic warming said they would vote for the candidate who was silent on global warming, whereas 80% said so about the candidate who took a green position, a 17 percentage point increase ( $p < .01$ ). Among respondents who did not believe in anthropogenic warming, taking a green position did not significantly change intentions to vote for the candidate (57% for the silent candidate vs. 64% for the candidate who took a green position,  $\Delta=7\%$ ,  $p = .11$ ). The impact of the green statement was marginally significantly larger among respondents who believed in anthropogenic warming than among respondents who did not ( $b = .09$ ,  $p = .08$ ).

**TABLE 10.22** Studies 6 and 7: Moderation of the Effects of Green and Not-Green Statements on Predicted Voting for the Candidate by Belief in Anthropogenic Warming and by Personal Importance

<i>Respondents</i>	<i>Percent of Respondents Who Would Vote for the Candidate</i>				
	<i>Respondents who heard no statement on climate (1)</i>	<i>Respondents who heard the green statement on climate (2)</i>	<i>Respondents who heard the not-green statement on climate (3)</i>	<i>Effect of the green statement (2)–(1)</i>	<i>Effect of the not-green statement (3)–(1)</i>
Believed in Anthropogenic Warming	63.1% (N=778)	79.7% (N=775)	39.6% (N=176)	16.6%***	-23.5%***
Did not Believe in Anthropogenic Warming	57.1% (N=369)	64.3% (N=410)	61.9% (N=100)	7.2%	4.8%
High Personal Importance	60.0% (N=559)	78.3% (N=528)	37.7% (N=125)	18.3%***	-22.3%***
Low Personal Importance	62.2% (N=588)	71.2% (N=657)	57.9% (N=151)	9.0%***	-4.3%

\*\*\*p < .01

40% of respondents who believed in anthropogenic warming said they would vote for the candidate who made a not-green statement, a 24 percentage point decline as compared to the silent candidate ( $p < .01$ ), whereas making a not-green statement did not significantly change intentions to vote for the candidate among respondents who did not believe in anthropogenic warming (62% for the candidate who took a not-green position,  $\Delta=5\%$ ,  $p = .53$ ). The impact of the not-green statements was significantly larger among respondents who believed in anthropogenic warming than among respondents who did not ( $b = -.28$ ,  $p < .01$ ).

Also as expected, the impact of the green and not-green statements was greater among respondents who attached more personal importance to the issue (see rows 3–4 of Table 10.22). 60% of high importance respondents said they would vote for the candidate who was silent on global warming, whereas 78% said so about the candidate who took a green position, an 18 percentage point increase ( $p < .01$ ). Among respondents low in personal importance, taking a green position caused a much smaller increase in intentions to vote for the candidate (62% for the candidate silent on climate vs. 71% for the candidate who took a green position,  $\Delta = 9\%$ ,  $p < .01$ ). The impact of the green statement was marginally significantly stronger among respondents who attached more personal importance to the issue ( $b = .09$ ,  $p = .06$ ).

38% of the high personal importance group said they would vote for the candidate who made a not-green statement, a 22 percentage point decline as compared to the candidate who was silent ( $p < .01$ ). In contrast, making a not-green statement did not significantly alter intentions to vote for the candidate among respondents who were low in personal importance (58% for the candidate who took a not-green position,  $\Delta = -4\%$ ,  $p = .45$ ). The impact of the not-green statement was significantly larger among respondents who attached more personal importance to the issue ( $b = -.18$ ,  $p < .01$ ).

### ***Evaluations of the Candidate's Green and Not-Green Statements***

Consistent with the finding that a large majority of Americans believed in anthropogenic warming and supported ameliorative government action, 78% of respondents said they mostly agreed with the candidate's green statement, and this proportion varied significant by party identification ( $p < .01$ ): it was 86% among Democrats, 79% among Independents, and 64% among Republicans. Only a small minority of respondents, 22%, said that they mostly agreed with the candidate's not-green statement, and this proportion also varied by party identification: 44% among Republicans, 23% among Independents, and only 10% of Democrats said so ( $p < .01$ ).

### **Study 8—Experimental Evidence From a National Survey in 2012**

Study 8 employed an experiment embedded in an Internet survey of Americans from a non-probability sample to assess the electoral impact of candidates' taking different stances on the issue of global warming. Study 8 used a similar study design from Studies 6–7 but differed in three important ways: (1) Study 8 used real candidates' real speeches in video as experiment stimuli; (2) Study 8 evaluated the electoral impact of a (real) candidate's taking different stances on the issue of global warming when that candidate was presented alone as if in a single candidate election, as well as when that candidate was presented with the opponent as in a two-candidates election; and (3) Study 8 explored the impact of a (real) candidate's taking different stances on the issue of global warming on measures of electoral outcomes, as well as others, such as affect and personality traits perception.

Observational studies, particularly Study 3 which correlated Congressional candidates' electoral successes with their stances on global warming through content analysis of candidates' campaign (and government) websites (see Table 10.8), yielded the following four hypotheses that were to be tested in Study 8.

Hypothesis 1a: When Democratic candidate (Mr. Obama) is silent (i.e., does not take a stance) on global warming, Republican candidate (Mr. Romney) may gain votes by going green from being silent on the issue.

- Hypothesis 1b: When Democratic candidate (Mr. Obama) is silent on global warming, Republican candidate (Mr. Romney) may win votes by going not-green from being silent on the issue.
- Hypothesis 2a: When Democratic candidate (Mr. Obama) takes a green stance on global warming, Republican candidate (Mr. Romney) may gain votes by taking a green stance from being silent on the issue.
- Hypothesis 2b: When Democratic candidate (Mr. Obama) takes a green stance on global warming, Republican candidate (Mr. Romney) may not change votes by taking a not-green stance from being silent on the issue.
- Hypothesis 3a: When Republican candidate (Mr. Romney) is silent on global warming, Democratic candidate (Mr. Obama) may win votes by going green from being silent on the issue.
- Hypothesis 3b: When Republican candidate (Mr. Romney) takes a green stance on global warming, Democratic candidate (Mr. Obama) may win votes by going green from being silent on the issue.
- Hypothesis 3c: When Republican candidate (Mr. Romney) takes a not-green stance on global warming, Democratic candidate (Mr. Obama) may win votes by going green from being silent on the issue.

## ***Data and Method***

### *Data Collection*

Interviews were conducted with a national sample of 1492 American adults via the Internet by Toluna Corporate between November 2 and 4, 2012. The questionnaire was administered in English only.

Participants for this study were drawn randomly from Toluna's panel members. Most panel members were recruited from Toluna's social media space referenced as Toluna.com, and other panel members were recruited from multiple potential sample sources. When people joined the panel, Toluna collected demographic information such as sex, age, race/ethnicity, education, and income. Occasional e-mails inviting panel members to complete questionnaires were sent.

For this study, four respondent recruitment techniques were employed. (It is really three but one has two ways of notifying the respondent that a survey is waiting for them.) While a small proportion of participants entered the survey through the route, by far the most popular technique employed was via a direct invitation to the survey. Once a survey invitation was sent to a respondent, a notification was uploaded to an area of Toluna.com known as MySurveyCenter. The respondent entered the survey in two different ways: clicking on the link in the email invite or clicking on the link on their website notification.

The data for the survey were weighted to post-stratify in terms of age by gender, education, income, region, race, ethnicity and smoking status. Table 10.23 displays distributions of unweighted and weighted demographics of

**TABLE 10.23** Study 8: Distributions of Demographics of the Sample and the Current Population Survey

<i>Demographic</i>	<i>Global Warming Survey—2012 (unweighted)</i>	<i>Global Warming Survey—2012 (weighted)</i>	<i>Current Population Survey (CPS) —Oct. 2012</i>	<i>Difference: Global Warming Survey (weighted)—CPS</i>
Gender				
Male	48.7%	48.7%	48.1%	.6%
Female	51.4	51.3	51.9	-.6
Total	100.0%	100.0%	100.0%	
	(N = 2,000)	(N = 2,000)	(N = 101,289)	
Age				
18–24	12.1%	11.8%	12.8%	-1.0%
25–34	19.0	18.3	17.5	.8
35–44	22.5	18.0	16.9	1.1
45–54	16.1	19.2	18.5	.7
55–64	13.1	15.7	16.4	-.7
65+	17.3	17.0	18.0	-1.0
Total	100.0%	100.0%	100.0%	
	(N = 2,000)	(N = 2,000)	(N = 101,289)	
Race and ethnicity				
Non-Hispanic White	78.7%	70.0%	66.2%	3.8%
Non-Hispanic Black	7.5	11.0%	11.5	-.5%
Hispanic	7.5	13.3%	15.0	-1.7%
Other race(s)	6.4	5.7	7.4	-1.7
Total	100.0%	100.0%	100.0%	
	(N = 2,000)	(N = 2,000)	(N = 101,289)	
Education				
High school graduate or less	28.1%	44.7%	42.3%	2.4%
Some college	30.1	27.5	28.9	-1.4
College graduate	27.1	17.2	18.8	-1.6
Post-college graduate	14.9	10.7	10.0	.7
Total	100.0%	100.0%	100.0%	
	(N = 2,000)	(N = 2,000)	(N = 101,289)	

the survey sample and national benchmarks from the October 2012, Current Population Survey. These distributions show that the survey sample was similar to the American population before the weights were applied and was more similar after the data were weighted. Results reported in this paper were computed using weighted data.

#### EXPERIMENTAL CONDITIONS

The experiment employed a 2x3 between-subjects design. Participants were randomly assigned to one of the two conditions: watching no Mr. Obama's video and watching a Mr. Obama's video. Participants were also independently and randomly assigned to one of the three conditions: watching none of Mr. Romney's videos, watching a Mr. Romney's green video and watching a Mr. Romney's not-green video). In sum, participants were randomly assigned to one of the following six experimental conditions and to watch 0, 1 or 2 short videos.

- 1 Control 1 (N = 228): Participants watched no video. This condition is the case when both Republican and Democratic candidates were silent on the issue of global warming.
- 2 Romney Green (N = 257): Participants watched a video whereby Mr. Romney expressed a green attitude toward global warming. This condition is the case when Democratic candidate (Mr. Obama) was silent on the issue of global warming and Republican candidate (Mr. Romney) took a green stance.
- 3 Romney Not-Green (N = 247): Participants watched a video whereby Mr. Romney expressed a not-green attitude toward global warming. This condition is the case when Democratic candidate (Mr. Obama) was silent on the issue of global warming and Republican candidate (Mr. Romney) took a not-green stance.
- 4 Control 2 (Obama Green) (N = 255): Participants watched a video whereby President Obama expressed a green attitude toward global warming. This condition is the case when Democratic candidate (Mr. Obama) took a green stance on global warming and Republican candidate (Mr. Romney) was silent on the issue.
- 5 Obama Green & Romney Green (N = 252): 4, plus participants watched a video whereby Mr. Romney expressed a green attitude toward global warming. This condition is the case when both Republican and Democratic candidates took a green stance on global warming.
- 6 Obama Green & Romney Not-Green (N = 253): 4, plus participants watched a video whereby Mr. Romney expressed a not-green attitude toward global warming. This condition is the case when Democratic candidate (Mr. Obama) took a green stance on global warming and Republican candidate (Mr. Romney) took a not-green stance.

After watching each of the assigned videos, participants reported three manipulation checks: how interesting the video was, how difficult the video was to understand, participants' agreement with what was said in the video.

### Measures

Participants reported their intent to vote for the two presidential candidates, affect measures towards each candidate and perception of the personality traits of each candidate. The dependent measure, *electoral attitude favoring Mr. Romney index*, was an index of the following four measures or measure indices: intention to vote for Mr. Romney, like Mr. Romney relative to Mr. Obama, positive affect index distance, and personality perception index distance. A higher value of the dependent measure indicates more likely to vote for Mr. Romney and more favorable attitudes toward Mr. Romney than toward Mr. Obama. This dependent measure was used in assessing the electoral impact of Mr. Romney's taking a green or not-green stance on global warming.

#### INTENT TO VOTE FOR MR. ROMNEY

A randomly selected half of the respondents were asked: "If the 2012 presidential election were being held today and the candidates are Barack Obama, the Democrat, and Mitt Romney, the Republican, for whom would you vote if you were to vote?" And the other half of the respondents were asked: "If the 2012 presidential election were being held today and the candidates are Mitt Romney, the Republican, and Barack Obama, the Democrat, for whom would you vote if you were to vote?" Mitt Romney, the Republican = 1; Barack Obama, the Democrat = 0; refusal to answer = 0. Similarly, measure *intent to vote for Mr. Obama* was constructed as: Mitt Romney, the Republican = 0, Barack Obama, the Democrat = 1; refusal to answer = 0.

#### LIKE MR. ROMNEY DISTANCE

A distance between respondents' "like Mr. Romney" responses and those respondents' "like Mr. Obama" responses was constructed as: *like Mr. Romney distance* = *like Mr. Romney*—*like Mr. Obama*.

#### Like Mr. Romney

Respondents were asked "Do you like Mitt Romney, dislike him, or neither like nor dislike him?", and followed up with "Do you like Mitt Romney a great deal, a moderate amount, or a little?" or "Do you dislike Mitt Romney a great deal, a moderate amount, or a little?" like a great deal = 1, like a moderate amount

=.83, like a little = .67, neither like or dislike = .5, dislike a little = .33, dislike a moderately amount = .17, dislike a great deal = 0; refusal to answer = 0.

### Like Mr. Obama

Respondents were asked “Do you like Barack Obama, dislike him, or neither like nor dislike him?”, and followed up with “Do you like Barack Obama a great deal, a moderate amount, or a little?” or “Do you dislike Barack Obama a great deal, a moderate amount, or a little?” like a great deal = 1, like a moderate amount = .83, like a little = .67, neither like or dislike = .5, dislike a little = .33, dislike a moderately amount = .17, dislike a great deal = 0; refusal to answer = 0.

Similarly, a distance between respondents’ “like Mr. Obama” responses and those respondents’ “like Mr. Romney” responses was constructed as: *like Mr. Obama distance* = *like Mr. Obama*—*like Mr. Romney*.

### AFFECT FOR MR. ROMNEY INDEX DISTANCE

A distance between respondents’ affective responses to Mr. Romney and those to Mr. Obama was constructed as: *affect for Mr. Romney index distance* = *affect index for Mr. Romney*—*affect index for Mr. Obama*; each was an index of affective reactions to the candidate: how much respondents liked or disliked each candidate, and how hopeful, how proud, how afraid, and how angry respondents felt when thinking of each candidate. A participant’s score on the index for each candidate, *affect index for Mr. Romney*, and *affect index for Mr. Obama*, was computed by averaging answers to the following questions coded as follows and therefore ranged from 0 (meaning the most negative affect) to 1 (meaning the most positive affect). Variables below were respondents’ affective responses to Mr. Romney, and variables of respondents’ affective responses to Mr. Obama were identically constructed.

### Mr. Romney—hopeful

Respondents were asked “When you think of Mitt Romney, how hopeful does he make you feel—extremely hopeful, very hopeful, moderately hopeful, slightly hopeful, or not hopeful at all?” extremely hopeful = 1; very hopeful = .75; moderately hopeful = .5; slightly hopeful = .25; not hopeful at all = 0; refusal to answer = 0.

### Mr. Romney—proud

Respondents were asked “When you think of Mitt Romney, how proud does he make you feel—extremely proud, very proud, moderately proud, slightly

proud, or not proud at all?” extremely proud = 1; very proud = .75; moderately proud = .5; slightly proud = .25; not proud at all = 0; refusal to answer = 0.

#### Mr. Romney—angry

Respondents were asked “When you think of Mitt Romney, how angry does he make you feel—extremely angry, very angry, moderately angry, slightly angry, or not angry at all?” It was reversely coded; not angry at all = 1; slightly proud = .75; moderately proud = .5; very proud = .25; extremely angry = 0; refusal to answer = 0.

#### Mr. Romney—afraid

Respondents were asked “When you think of Mitt Romney, how afraid does he make you feel—extremely afraid, very afraid, moderately afraid, slightly afraid, or not afraid at all?” It was reversely coded; not afraid at all = 1; slightly afraid = .75; moderately afraid = .5; very afraid = .25; extremely afraid = 0; refusal to answer = 0.

Similarly, a distance between respondents’ affective responses to Mr. Obama and those to Mr. Romney was constructed as: *affect for Mr. Obama index distance* = *affect index for Mr. Obama*—*affect index for Mr. Romney*.

#### PERSONALITY PERCEPTION FAVORING MR. ROMNEY INDEX DISTANCE

Related, a distance between respondents’ personality traits perception of Mr. Romney and that to Mr. Obama was constructed as: *personality perception favoring Mr. Romney index distance* = *personality perception favoring Mr. Romney index*—*personality perception favoring Mr. Obama index*, each was an index of perception of personality traits about the candidate: how well did the word “moral,” the word “intelligent,” the phrase “really cares about people like you,” and the phrase “strong leader” described each candidate. A participant’s score on the index for each candidate, *personality perception favoring Mr. Romney index*, and *personality perception favoring Mr. Obama index*, was computed by averaging answers to the following questions coded as follows and therefore ranged from 0 (meaning the most negative perception of personality traits) to 1 (meaning the most positive perception of personality traits). Variables below were respondents’ personality traits perception of Mr. Romney, and variables of respondents’ personality traits perception of Mr. Obama were identically constructed.

#### Mr. Romney—moral

Respondents were asked “How well does the word “moral” describe Barack Obama—extremely well, very well, moderately well, slightly well, or not at all?” extremely well = 1; very well = .75; moderately well = .5; slightly well = .25; not well at all = 0; refusal to answer = 0.

#### Mr. Romney—intelligent

Respondents were asked “How well does the word “intelligent” describe Barack Obama—extremely well, very well, moderately well, slightly well, or not at all?” extremely well = 1; very well = .75; moderately well = .5; slightly well = .25; not well at all = 0; refusal to answer = 0.

#### Mr. Romney—strong leader

Respondents were asked “How well does the phrase “strong leader” describe Barack Obama—extremely well, very well, moderately well, slightly well, or not at all?” extremely well = 1; very well = .75; moderately well = .5; slightly well = .25; not well at all = 0; refusal to answer = 0.

#### Mr. Romney—care

Respondents were asked “How well does the phrase “really cares about people like you” describe Barack Obama—extremely well, very well, moderately well, slightly well, or not at all?” extremely well = 1; very well = .75; moderately well = .5; slightly well = .25; not well at all = 0; refusal to answer = 0.

Similarly, a distance between respondents’ personality traits perception of Mr. Obama and that to Mr. Romney was constructed as: *personality perception favoring Mr. Obama index distance* = *personality perception favoring Mr. Obama index*—*personality perception favoring Mr. Romney index*.

To summarize, two dependent measures were constructed. The dependent measure, *electoral attitude favoring Mr. Romney index*, which was used in assessing the electoral impact of Mr. Romney’s taking a green or not-green stance on global warming, was constructed similarly as the average of these four indices: *intent to vote for Mr. Romney*, *like Mr. Romney distance*, *affect for Mr. Romney index distance*, and *personality perception favoring Mr. Romney index distance*. Similarly, the dependent measure, *electoral attitude favoring Mr. Obama index*, which was used in assessing the electoral impact of Mr. Obama’s taking a green stance on global warming, was constructed as the average of these four indices: *intent to vote for Mr. Obama*, *like Mr. Obama distance*, *affect for Mr. Obama index distance*, and *personality perception favoring Mr. Obama index distance*.

### *Moderators*

Two measures may moderate the electoral impact of candidates' taking a green or not-green stance on global warming.

#### PERSONAL IMPORTANCE

Participants were asked "How important is the issue of global warming to you personally? Extremely important, very important, somewhat important, not too important, or not at all important?" extremely important = 1; very important = 1; somewhat important = 0; not too important = 0; not at all important = 0; refusal to answer = 0.

#### REGISTERED VOTER

Participants were asked "Are you currently registered to vote, or not?" registered to vote = 1; not registered to vote = 0; refusal to answer = 0.

#### LIKELY VOTER

Participants were asked seven questions that are used to assess the likely voter based on the Gallup model (Perry, 1960). Measure *likely voter* = 1 if the participant scored 1 on six or seven out of the following seven questions and *likely voter* = 0 if the participant scored 1 on five or fewer out of the following seven questions.

"How much have you thought about the upcoming election for President? Quite a lot or only a little?" quite a lot = 1; only a bit = 0; refusal to answer = 0.

"Do you happen to know where you who live in your neighborhood go to vote?" know where = 1; don't know where = 0; refusal to answer = 0.

"Have you ever voted in your precinct or election district?" have voted = 1; have not = 0; refusal to answer = 0.

"How often would you say you vote? Always, nearly always, part of time, or seldom?" always = 1; nearly always = 1; part of time = 0; seldom = 0; refusal to answer = 0.

"Do you plan to vote in the presidential election this November?" plan to vote = 1; not plan to = 0; refusal to answer = 0.

"In the last presidential election, did you vote for Barack Obama, John McCain, or someone else, or did things come up to keep you from voting?" voted for Barack Obama = 1; voted for John McCain = 1; voted for someone else = 1; things came up to keep me from voting = 0; refusal to answer = 0.

"If '1' represents someone who will definitely not vote and '10' represents someone who definitely will vote, where on this scale would you place yourself?" '1', '2', '3', '4', '5' or '6' = 0, '7', '8', '9' or '10' = 1, refusal to answer = 0.

*Control variables*

Participants reported their perceptions of the progress in the nation's economy, foreign relations and pollution, as well as job approval of President Obama as President, on handling the nation's economy, foreign relations and the environment. A randomly selected half of the respondents answered the job approval questions before the manipulation (watching the videos) and the other half did so after the manipulation. A dummy variable of question order was constructed and controlled for in the regressions testing the hypothesis.

## PROGRESS ON ECONOMY

"Compared to two years ago, would you say that the nation's economy now is better, worse, or about the same?" IF BETTER, "Would you say much better or somewhat better?" IF WORSE, "Would you say much worse or somewhat worse?" much better = 1, somewhat better = .75, about the same = .5, somewhat worse = .25, much worst = 0; refusal to answer = 0.

## PROGRESS ON FOREIGN RELATIONS

"Compared to two years ago, would you say U.S. relations with foreign countries are better, worse, or about the same?" IF BETTER, "Would you say much better or somewhat better?" IF WORSE, "Would you say much worse or somewhat worse?" much better = 1, somewhat better = .75, about the same = .5, somewhat worse = .25, much worst = 0; refusal to answer = 0.

## PROGRESS ON POLLUTION

Compared to two years ago, would you say the amount of pollution in America is better, worse, or about the same?" IF BETTER, "Would you say much better or somewhat better?" IF WORSE, "Would you say much worse or somewhat worse?" much better = 1, somewhat better = .75, about the same = .5, somewhat worse = .25, much worst = 0; refusal to answer = 0.

## APPROVAL OF PRESIDENT OBAMA

"Do you approve, disapprove, or neither approve nor disapprove, of the way Barack Obama has handled his job as President?" IF APPROVE, "Do you approve strongly or not strongly?" IF DISAPPROVE, "Do you disapprove strongly or not strongly?" approve strongly = 1, approve not strongly = .75, neither approve nor disapprove = .5, disapprove not strongly = .25, disapprove strongly = 0; refusal to answer = 0.

#### APPROVAL OF PRESIDENT OBAMA ON HANDLING THE ECONOMY

“Do you approve, disapprove, or neither approve nor disapprove, of the way Barack Obama has handled the U.S. economy?” IF APPROVE, “Do you approve strongly or not strongly?” IF DISAPPROVE, “Do you disapprove strongly or not strongly?” approve strongly = 1, approve not strongly = .75, neither approve nor disapprove = .5, disapprove not strongly = .25, disapprove strongly = 0; refusal to answer = 0.

#### APPROVAL OF PRESIDENT OBAMA ON HANDLING FOREIGN RELATIONS

“Do you approve, disapprove, or neither approve nor disapprove, of the way Barack Obama has handled U.S. relations with foreign countries?” IF APPROVE, “Do you approve strongly or not strongly?” IF DISAPPROVE, “Do you disapprove strongly or not strongly?” approve strongly = 1, approve not strongly = .75, neither approve nor disapprove = .5, disapprove not strongly = .25, disapprove strongly = 0; refusal to answer = 0.

#### APPROVAL OF PRESIDENT OBAMA ON HANDLING THE ENVIRONMENT

“Do you approve, disapprove, or neither approve nor disapprove, of the way Barack Obama has handled the environment?” IF APPROVE, “Do you approve strongly or not strongly?” IF DISAPPROVE, “Do you disapprove strongly or not strongly?” approve strongly = 1, approve not strongly = .75, neither approve nor disapprove = .5, disapprove not strongly = .25, disapprove strongly = 0; refusal to answer = 0.

#### PARTY IDENTIFICATION, IDEOLOGY AND DEMOGRAPHICS

Participants reported their political party identification, liberal/conservative ideology, sex, age, race, Hispanic ethnicity, education, income, and region of residence (see Appendix F for question wording and coding of control variables).

#### *Mr. Romney's stance on global warming*

Participants reported their perceptions of Mr. Obama's and Mr. Romney's stance on global warming. A stance index, *Mr. Romney's global warming stance index*, was constructed for Mr. Romney as an average over the following global warming belief measures, scaled from 0 to 1 with greater values indicating green stances and lower values indicating not-green stances. Variables below were respondents' perceptions of Mr. Romney's stance on global warming, and variables of respondents' perceptions of Mr. Romney's stance on global

warming were identically measured and constructed. An index, *Mr. Obama's global warming stance index*, was similarly constructed.

#### MR. ROMNEY'S STANCE ON GLOBAL WARMING EXISTENCE

"If you had to guess, would you guess that Mitt Romney believes that the world's temperature has been going up over the past 100 years or that this probably has not happening?" has been happening = 1; probably has not been happening = 0; refusal to answer = 0.

#### MR. ROMNEY'S STANCE ON GLOBAL WARMING CAUSE

"If you had to guess, would you guess that Mitt Romney believes that if the world's temperature has been going up over the past 100 years, that was caused by [ROTATE THE ORDER: mostly by things people did, mostly by natural causes], or about equally by things people did and by natural causes?" mostly by things people did = 1; about equally by things people did and by natural causes = 1; mostly by natural causes = 0; refusal to answer = 0.

#### MR. ROMNEY'S STANCE ON THE GOVERNMENT EFFORT ON GLOBAL WARMING

"If you were to guess, how much would you guess Mitt Romney thinks the U.S. government should do about global warming? A great deal, quite a bit, some, a little, or none?" a great deal = 1; quite a bit = 1; some = 1; a little = 0; none = 0; refusal to answer = 0.

### *Analysis*

OLS regressions were conducted to test the hypotheses by regressing the dependent measure, *electoral attitude favoring Mr. Romney index* in testing Hypothesis 1a, 1b, 2a and 2b, or *electoral attitude favoring Mr. Obama index* in testing Hypothesis 3a, 3b and 3c on the experiment condition that is pertinent to the hypothesis adjusting for sampling weights controlling for *progress on economy, progress on foreign relations, progress on pollution, approval of President Obama, approval of President Obama on handling the economy, approval of President Obama on handling foreign relations, approval of President Obama on handling the environment, political party identification, liberal/conservative ideology and demographics*. Additional analyses were conducted among subgroups of the sample: among Democrats, Republicans and Independents; among respondents who attached high personal importance to the issue of global warming and those who did not; among registered voters as well as among likely voters.

## Results

### *The Impact of Mr. Romney's Taking a Green Stance In Absence of Mr. Obama*

In the absence of Mr. Obama, Mr. Romney's taking a green stance on global warming, compared to being silent, yielded a higher score of respondents' *electoral attitude favoring Mr. Romney index* ( $b = .04, p = .07$ ; see row 1 and column 1 in Table 10.24), lending evidence to Hypothesis 1a: when Democratic candidate is silent, Republican candidate may gain votes (favorable electoral attitudes) by taking a green stance on global warming compared to silence. This positive impact was concentrated among respondents who attached high personal importance to the issue of global warming ( $b = .05, p = .09$ ; see row 1 and column 5 in Table 10.24) and among likely voters ( $b = .05, p = .05$ ; see row 1 and column 1 in Table 10.24). Hypothesis 1a was supported.

### *The Impact of Mr. Romney's Taking a Not-Green Stance In Absence of Mr. Obama*

In the absence of Mr. Obama, Mr. Romney's taking a not-green stance on global warming, compared to being silent, yielded a lower score of respondents' *electoral attitude favoring Mr. Romney index* ( $b = -.04, p = .10$ ; see row 2 and column 1 in Table 10.24). With an exception of a negative impact among Independents ( $b = -.10, p < .01$ ; see row 2 and column 5 in Table 10.24), there was no impact of Mr. Romney's taking a not-green stance among any of the subpopulations (see row 2 and columns 2–4 and 6–8 in Table 10.24), inconsistent with the prediction of Hypothesis 1b. The failure to support Hypothesis 1b was likely to be a result of the failure of the manipulation. If the manipulation had worked, respondents in the treatment condition (Condition 3: Romney Not-Green) would have had been more likely than respondents in the control condition (Condition 1: Control 1) to perceive Mr. Romney to take a not-green stance on the issue of global warming, however, perception of Romney's stance on global warming did not differ between the conditions ( $m = .51, m = .57$  for the treatment and control condition respectively,  $p = .14$ ), thus the treatment failed. The failure of the manipulation could be caused by the fact that Mr. Romney was well known for his not-green stance on global warming during his campaign and this study was conducted just days before the election, thus most people would be aware of Mr. Romney's not-green stance. To sum, Hypothesis 1b was not supported, possibly because of the failure of the manipulation.

**TABLE 10.24** Study 8: Impact of Mr. Romney's Taking a Green or a Not-Green Stance In Absence of Mr. Obama

<i>Predictor</i>	<i>All respondents</i>							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	<i>Democrats</i>	<i>Republicans</i>	<i>Independents</i>	<i>High personal importance</i>	<i>Low personal importance</i>	<i>Registered to vote</i>	<i>Likely voters</i>	
Romney green = 1 (Romney silence = 0)	0.04* (0.02)	0.02 (0.03)	0.01 (0.03)	0.02 (0.03)	0.05* (0.03)	0.04 (0.03)	0.03 (0.02)	0.05* (0.02)
Romney not-green = 1 (Romney silence = 0)	-0.04* (0.02)	-0.01 (0.03)	-0.01 (0.04)	-0.10*** (0.03)	-0.05 (0.03)	-0.03 (0.03)	-0.04 (0.02)	-0.02 (0.02)
Progress economy	-0.11*** (0.04)	-0.17*** (0.06)	-0.14* (0.08)	-0.05 (0.06)	-0.09* (0.05)	-0.13** (0.05)	-0.13*** (0.04)	-0.12*** (0.04)
Progress foreign rel.	0.01 (0.04)	0.02 (0.05)	0.12 (0.08)	-0.01 (0.07)	0.06 (0.05)	-0.06 (0.05)	-0.00 (0.04)	0.01 (0.04)
Progress pollution	0.20*** (0.05)	0.10* (0.06)	0.12 (0.08)	0.21*** (0.08)	0.17*** (0.06)	0.14** (0.07)	0.19*** (0.06)	0.22*** (0.05)
Approval of Obama	-0.29*** (0.05)	-0.30*** (0.07)	-0.23** (0.11)	-0.33*** (0.07)	-0.26*** (0.06)	-0.36*** (0.09)	-0.28*** (0.05)	-0.31*** (0.06)
Approval on economy	-0.09* (0.05)	-0.13*** (0.05)	0.23 (0.15)	-0.13 (0.08)	-0.10* (0.05)	-0.09 (0.09)	-0.10** (0.05)	-0.06 (0.06)
Approval foreign rel.	-0.25*** (0.04)	-0.15*** (0.06)	-0.36*** (0.09)	-0.31*** (0.07)	-0.22*** (0.05)	-0.22*** (0.06)	-0.24*** (0.04)	-0.27*** (0.05)
Approval environ.	-0.02 (0.04)	-0.00 (0.05)	-0.12** (0.06)	-0.01 (0.07)	0.02 (0.05)	-0.04 (0.05)	-0.02 (0.04)	-0.03 (0.04)
Approval asked first	-0.00 (0.02)	-0.00 (0.02)	-0.04 (0.04)	0.00 (0.03)	-0.02 (0.03)	0.02 (0.02)	-0.00 (0.02)	-0.02 (0.02)

continued...

Table 10.24 continued...

Predictor	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	<i>All respondents</i>	<i>Democrats</i>	<i>Republicans</i>	<i>Independents</i>	<i>High personal importance</i>	<i>Low personal importance</i>	<i>Registered to vote</i>	<i>Likely voters</i>
Democrat	-0.09*** (0.03)				-0.05 (0.03)	-0.09** (0.04)	-0.10*** (0.03)	-0.10*** (0.03)
Republican	0.16*** (0.03)				0.33*** (0.07)	0.09*** (0.02)	0.14*** (0.04)	0.14*** (0.04)
Liberal	-0.03 (0.03)	0.01 (0.02)	-0.25** (0.11)	-0.08* (0.04)	-0.03 (0.03)	-0.07* (0.04)	-0.03 (0.03)	-0.04 (0.03)
Conservative	0.09*** (0.02)	0.11*** (0.04)	0.12*** (0.04)	0.07** (0.03)	0.07 (0.04)	0.07*** (0.02)	0.10*** (0.02)	0.10*** (0.02)
Female	-0.04** (0.02)	-0.09*** (0.02)	-0.01 (0.03)	-0.03 (0.03)	-0.06*** (0.02)	-0.03 (0.02)	-0.04** (0.02)	-0.03 (0.02)
Married	0.00 (0.02)	-0.01 (0.03)	-0.05 (0.04)	0.06** (0.03)	-0.03 (0.03)	0.05** (0.02)	-0.00 (0.02)	-0.01 (0.02)
Some college	-0.03 (0.02)	0.03 (0.03)	-0.06 (0.04)	-0.05 (0.03)	0.02 (0.03)	-0.04 (0.03)	-0.04* (0.02)	-0.05** (0.02)
College graduate	-0.02 (0.02)	-0.00 (0.03)	-0.06 (0.04)	-0.01 (0.03)	0.02 (0.03)	-0.03 (0.02)	-0.04* (0.02)	-0.03 (0.02)
Post college graduate	-0.01 (0.03)	0.05 (0.03)	-0.02 (0.05)	-0.00 (0.04)	0.03 (0.04)	-0.02 (0.03)	-0.02 (0.03)	-0.03 (0.03)
Age 18 to 24	0.01 (0.03)	-0.02 (0.05)	0.11* (0.06)	-0.01 (0.05)	0.02 (0.05)	0.00 (0.04)	0.04 (0.03)	0.01 (0.04)
Age 25 to 34	0.05 (0.03)	-0.00 (0.04)	0.16** (0.07)	-0.04 (0.05)	0.07 (0.05)	0.02 (0.04)	0.06* (0.04)	0.06 (0.04)

Age 35 to 44	0.04 (0.03)	-0.01 (0.04)	0.06 (0.05)	0.01 (0.04)	0.06 (0.04)	-0.02 (0.04)	0.04 (0.03)	0.05 (0.03)
Age 45 to 54	-0.04 (0.02)	-0.07** (0.03)	-0.00 (0.05)	-0.06 (0.04)	-0.03 (0.04)	-0.03 (0.03)	-0.03 (0.02)	-0.02 (0.03)
Age 55 to 64	0.00 (0.03)	-0.10*** (0.04)	0.04 (0.05)	0.03 (0.04)	-0.09** (0.04)	0.02 (0.03)	0.01 (0.03)	0.01 (0.03)
Having child <18	0.01 (0.02)	0.05* (0.03)	0.00 (0.04)	-0.00 (0.03)	0.03 (0.03)	-0.00 (0.02)	0.01 (0.02)	0.03 (0.02)
Having child 18+	0.09*** (0.02)	0.11*** (0.03)	0.07** (0.03)	0.08*** (0.03)	0.12*** (0.03)	0.04* (0.02)	0.09*** (0.02)	0.09*** (0.02)
Hispanic	-0.04 (0.04)	-0.02 (0.04)	-0.12** (0.05)	-0.05 (0.06)	-0.02 (0.04)	-0.08* (0.04)	-0.05 (0.04)	-0.02 (0.04)
White	0.02 (0.03)	0.05 (0.04)	0.17** (0.08)	-0.09* (0.05)	0.03 (0.04)	0.02 (0.05)	-0.01 (0.03)	0.04 (0.04)
Black	-0.00 (0.03)	0.01 (0.04)	0.02 (0.17)	-0.00 (0.06)	-0.04 (0.04)	0.05 (0.07)	-0.04 (0.04)	-0.01 (0.04)
Working	0.01 (0.02)	0.02 (0.02)	0.02 (0.04)	-0.01 (0.03)	0.02 (0.03)	0.01 (0.02)	0.00 (0.02)	0.01 (0.02)
Constant	0.55*** (0.06)	0.45*** (0.08)	0.60*** (0.11)	0.71*** (0.09)	0.38*** (0.10)	0.66*** (0.08)	0.61*** (0.07)	0.56*** (0.07)
N	732	288	184	260	347	385	646	584
R <sup>2</sup>	0.796	0.641	0.575	0.744	0.730	0.826	0.808	0.823

Notes: Presented are OLS coefficient estimates of electoral attitudes favoring Mr. Romney index (standard errors in parentheses) adjusting for sampling weights. Each column is a separate regression.

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

### *The Impact of Mr. Romney's Taking a Green Stance In Presence of Mr. Obama*

In the presence of Mr. Obama's taking a green stance, Mr. Romney's taking a green stance on global warming, compared to being silent, yielded a higher score of respondents' *electoral attitude favoring Mr. Romney index* ( $b = .04, p < .05$ ; see row 1 and column 1 in Table 10.25), supporting Hypothesis 2a: when Democratic candidate takes a green stance on global warming, Republican candidate may gain votes (favorable electoral attitudes) by taking a green stance compared to silence. This positive impact was concentrated among respondents who did not attach high personal importance to the issue of global warming ( $b = .07, p < .01$ ; see row 1 and column 6 in Table 10.25) as well as among likely voters ( $b = .03, p = .06$ ; see row 1 and column 8 in Table 10.25). Hypothesis 2a was supported.

### *The Impact of Mr. Romney's Taking a Not-Green Stance In Presence of Mr. Obama*

In the presence of Mr. Obama's taking a green stance, Mr. Romney's taking a not-green stance on global warming, compared to being silent, did not alter respondents' score on *electoral attitude favoring Mr. Romney index* (favorable electoral attitude) (see row 2 and column 1 in Table 10.25), lending evidence to Hypothesis 2b: when Democratic candidate takes a green stance, Republican candidate may not change votes by taking a not-green stance on global warming compared to silence. Except among Independents ( $b = .06, p = .06$ ; see row 2 and column 4 in Table 10.25) and respondents who did not attach high importance to the issue ( $b = .06, p = .01$ ; see row 2 and column 4 in Table 10.25), there was no impact of Mr. Romney's taking a not-green stance with Mr. Obama's green stance among any other subpopulations (see row 2 and columns 2–3 and 5, 7–8 in Table 10.25). Hypothesis 2b was thus supported.

### *The Impact of Mr. Obama Taking a Green Stance In Absence of Mr. Romney*

In the absence of Mr. Romney (i.e. Mr. Romney took a silence stance on the issue), Mr. Obama's taking a green stance on global warming, compared to being silent, led to an increase in respondents' scores on *electoral attitude favoring Mr. Obama index* (favorable electoral attitude) ( $b = .04, p = .02$ ; see row 1 and column 1 in Table 10.26), lending evidence to Hypothesis 3a: when Republican candidate takes a silence stance, Democratic candidate may gain votes (favorable electoral attitudes) by taking a green stance on global warming compared to silence. The positive impact of Mr. Obama's taking a green stance with Mr.

**TABLE 10.25** Study 8: Impact of Mr. Romney's Taking a Green or a Not-Green Stance In Presence of Mr. Obama's Green Stance

<i>Predictor</i>	<i>All respondents</i>							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Romney green = 1 (Romney silence = 0)	0.04** (0.02)	0.02 (0.02)	0.01 (0.03)	0.05 (0.03)	0.02 (0.02)	0.07*** (0.02)	0.02 (0.02)	0.03* (0.02)
Romney not-green = 1 (Romney silence = 0)	0.01 (0.02)	0.01 (0.02)	-0.02 (0.03)	0.06* (0.03)	-0.02 (0.02)	0.06** (0.02)	0.02 (0.02)	0.03 (0.02)
Obama presented first	-0.04*** (0.01)	-0.04* (0.02)	-0.04 (0.02)	-0.05* (0.03)	-0.05** (0.02)	-0.03 (0.02)	-0.04** (0.02)	-0.03** (0.02)
Progress economy	-0.11*** (0.04)	-0.02 (0.05)	-0.10 (0.06)	-0.25*** (0.06)	-0.06 (0.05)	-0.19*** (0.05)	-0.11*** (0.04)	-0.11*** (0.04)
Progress foreign rel.	-0.07** (0.03)	-0.08* (0.05)	-0.13** (0.06)	-0.08 (0.07)	-0.02 (0.04)	-0.15** (0.06)	-0.07* (0.04)	-0.05 (0.04)
Progress pollution	0.15*** (0.04)	0.17*** (0.05)	-0.07 (0.06)	0.18*** (0.07)	0.14*** (0.04)	0.14*** (0.05)	0.13*** (0.04)	0.12*** (0.04)
Approval of Obama	-0.33*** (0.05)	-0.38*** (0.06)	-0.19** (0.09)	-0.21*** (0.08)	-0.31*** (0.06)	-0.38*** (0.08)	-0.36*** (0.05)	-0.39*** (0.05)
Approval on economy	-0.12*** (0.04)	-0.05 (0.04)	-0.27*** (0.09)	-0.19** (0.07)	-0.17*** (0.05)	-0.05 (0.06)	-0.11*** (0.04)	-0.10** (0.04)
Approval foreign rel.	-0.14*** (0.04)	-0.16*** (0.05)	-0.02 (0.05)	-0.15** (0.06)	-0.06 (0.05)	-0.16*** (0.05)	-0.14*** (0.04)	-0.14*** (0.04)
Approval environ.	-0.08** (0.03)	-0.02 (0.04)	-0.12** (0.05)	-0.18*** (0.05)	-0.04 (0.04)	-0.10** (0.04)	-0.07** (0.03)	-0.08*** (0.03)

continued...

Table 10.25 continued...

<i>Predictor</i>	<i>All respondents</i>			<i>Independents</i>	<i>High personal importance</i>	<i>Low personal importance</i>	<i>Registered to vote</i>	<i>Likely voters</i>
	<i>(1)</i>	<i>(2)</i>	<i>(3)</i>					
Approval asked first	-0.02 (0.01)	-0.02 (0.02)	-0.01 (0.03)	-0.00 (0.02)	-0.04* (0.02)	0.01 (0.02)	-0.02 (0.02)	-0.02 (0.02)
Democrat	-0.08*** (0.02)				-0.07*** (0.03)	-0.08** (0.03)	-0.07*** (0.02)	-0.08*** (0.02)
Republican	0.18*** (0.02)				0.23*** (0.04)	0.14*** (0.03)	0.17*** (0.03)	0.14*** (0.03)
Liberal	-0.04** (0.02)	-0.04** (0.02)	-0.10 (0.07)	-0.01 (0.04)	-0.04* (0.02)	-0.02 (0.03)	-0.03 (0.02)	-0.02 (0.02)
Conservative	0.05** (0.02)	0.03 (0.04)	0.04* (0.03)	0.06* (0.03)	0.03 (0.03)	0.05** (0.02)	0.04** (0.02)	0.07*** (0.02)
Female	-0.03** (0.01)	-0.06*** (0.02)	0.03 (0.03)	-0.03 (0.03)	-0.05** (0.02)	-0.02 (0.02)	-0.04** (0.02)	-0.03** (0.02)
Married	0.00 (0.02)	0.01 (0.02)	-0.04 (0.02)	0.01 (0.03)	0.00 (0.02)	0.01 (0.02)	0.00 (0.02)	-0.00 (0.02)
Some college	0.02 (0.02)	0.03 (0.02)	0.03 (0.03)	0.00 (0.03)	0.04* (0.02)	-0.00 (0.02)	0.03* (0.02)	0.03 (0.02)
College graduate	0.06*** (0.02)	0.09*** (0.03)	-0.01 (0.03)	0.10*** (0.03)	0.06** (0.02)	0.04* (0.02)	0.07*** (0.02)	0.06*** (0.02)
Post college graduate	0.03 (0.02)	0.02 (0.03)	-0.06 (0.04)	0.09** (0.04)	0.03 (0.03)	0.02 (0.03)	0.03 (0.02)	0.02 (0.02)
Age 18 to 24	-0.03 (0.03)	0.00 (0.03)	-0.03 (0.05)	-0.04 (0.06)	0.03 (0.04)	-0.06 (0.04)	-0.03 (0.03)	-0.03 (0.03)

Age 25 to 34	0.02 (0.03)	-0.01 (0.03)	0.05 (0.04)	0.05 (0.06)	0.05 (0.04)	-0.01 (0.04)	0.03 (0.03)	0.04 (0.03)
Age 35 to 44	0.00 (0.02)	0.00 (0.03)	-0.07 (0.05)	0.01 (0.05)	0.02 (0.04)	-0.01 (0.03)	-0.00 (0.03)	-0.01 (0.03)
Age 45 to 54	-0.04 (0.03)	-0.05 (0.03)	-0.10*** (0.04)	-0.02 (0.06)	-0.03 (0.04)	-0.01 (0.03)	-0.05** (0.03)	-0.05* (0.03)
Age 55 to 64	0.03 (0.02)	0.06 (0.04)	-0.04 (0.04)	0.03 (0.06)	0.04 (0.03)	0.04 (0.03)	0.02 (0.03)	0.02 (0.03)
Having child <18	0.00 (0.02)	0.02 (0.02)	0.00 (0.03)	0.01 (0.03)	0.01 (0.03)	0.01 (0.03)	0.01 (0.02)	0.01 (0.02)
Having child 18+	-0.01 (0.02)	0.02 (0.02)	0.03 (0.03)	-0.09*** (0.03)	0.02 (0.02)	-0.03 (0.02)	0.00 (0.02)	0.01 (0.02)
Hispanic	0.03 (0.02)	0.07** (0.03)	0.04 (0.05)	-0.02 (0.04)	0.00 (0.03)	0.03 (0.03)	0.04 (0.03)	0.04 (0.03)
White	-0.05* (0.03)	-0.03 (0.03)	-0.10** (0.05)	0.08* (0.04)	-0.04 (0.03)	-0.06 (0.04)	-0.06** (0.03)	-0.06** (0.03)
Black	-0.05* (0.03)	-0.03 (0.03)	-0.26** (0.11)	-0.03 (0.05)	-0.06* (0.03)	-0.03 (0.05)	-0.06* (0.03)	-0.05 (0.03)
Working	0.02 (0.02)	0.01 (0.02)	0.04 (0.03)	-0.01 (0.03)	0.02 (0.02)	0.02 (0.02)	0.02 (0.02)	0.01 (0.02)
Constant	0.66*** (0.04)	0.47*** (0.06)	1.04*** (0.07)	0.62*** (0.08)	0.54*** (0.06)	0.73*** (0.06)	0.68*** (0.05)	0.70*** (0.05)
N	759	328	194	237	373	386	687	620
R2	0.829	0.627	0.655	0.779	0.778	0.856	0.841	0.855

Notes: Presented are OLS coefficient estimates of electoral attitudes favoring Mr. Romney index (standard errors in parentheses) adjusting for sampling weights. Each column is a separate regression.

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**TABLE 10.26** Study 8: Impact of Mr. Obama's Taking a Green Stance In Absence of Mr. Romney

<i>Predictor</i>	<i>All respondents</i>							
	<i>(1)</i>	<i>(2)</i>	<i>(3)</i>	<i>(4)</i>	<i>(5)</i>	<i>(6)</i>	<i>(7)</i>	<i>(8)</i>
		<i>Democrats</i>	<i>Republicans</i>	<i>Independents</i>	<i>High personal importance</i>	<i>Low personal importance</i>	<i>Registered to vote</i>	<i>Likely voters</i>
Obama green = 1 (Obama silence = 0)	0.04** (0.02)	0.03 (0.02)	-0.03 (0.03)	0.11*** (0.03)	0.02 (0.03)	0.06*** (0.02)	0.06*** (0.02)	0.05*** (0.02)
Progress economy	0.16*** (0.05)	0.17*** (0.06)	0.16** (0.08)	0.09 (0.08)	0.05 (0.06)	0.23*** (0.05)	0.15*** (0.05)	0.17*** (0.05)
Progress foreign rel.	0.05 (0.05)	0.00 (0.06)	0.08 (0.07)	0.01 (0.09)	0.08 (0.06)	0.01 (0.07)	0.05 (0.05)	-0.01 (0.05)
Progress pollution	-0.16*** (0.05)	-0.10* (0.05)	-0.06 (0.07)	-0.28*** (0.09)	-0.14*** (0.05)	-0.11* (0.06)	-0.13*** (0.05)	-0.14*** (0.05)
Approval of Obama	0.31*** (0.06)	0.29*** (0.08)	0.09 (0.12)	0.44*** (0.09)	0.31*** (0.07)	0.33*** (0.08)	0.31*** (0.06)	0.36*** (0.06)
Approval on economy	0.14*** (0.05)	0.07 (0.06)	0.28*** (0.09)	0.17 (0.11)	0.15** (0.07)	0.09 (0.07)	0.14*** (0.05)	0.13** (0.05)
Approval foreign rel.	0.20*** (0.04)	0.24*** (0.07)	0.15*** (0.05)	0.23*** (0.08)	0.17*** (0.05)	0.24*** (0.06)	0.21*** (0.05)	0.21*** (0.05)
Approval environ.	-0.00 (0.04)	-0.02 (0.06)	-0.02 (0.06)	0.07 (0.07)	-0.08* (0.05)	0.08* (0.05)	-0.01 (0.04)	0.03 (0.04)
Approval asked first	0.01 (0.02)	0.00 (0.02)	-0.03 (0.03)	0.04 (0.03)	0.01 (0.02)	-0.01 (0.02)	0.00 (0.02)	0.01 (0.02)
Democrat	0.05** (0.02)				0.00 (0.03)	0.10*** (0.03)	0.06** (0.03)	0.05* (0.03)

Republican	-0.18*** (0.03)				-0.28*** (0.06)	-0.13*** (0.03)	-0.18*** (0.03)	-0.16*** (0.03)
Liberal	0.04 (0.02)	0.02 (0.03)	0.18** (0.07)	0.02 (0.05)	0.02 (0.03)	0.07** (0.03)	0.03 (0.02)	0.03 (0.02)
Conservative	-0.06** (0.02)	-0.06 (0.04)	-0.05 (0.03)	-0.05 (0.04)	-0.09** (0.04)	-0.02 (0.03)	-0.05* (0.03)	-0.06** (0.03)
Female	0.04** (0.02)	0.06** (0.03)	-0.00 (0.03)	-0.00 (0.03)	0.08*** (0.03)	0.00 (0.02)	0.02 (0.02)	0.02 (0.02)
Married	-0.01 (0.02)	0.01 (0.03)	-0.04 (0.03)	-0.02 (0.03)	0.02 (0.03)	-0.09*** (0.03)	-0.02 (0.02)	0.01 (0.02)
Some college	-0.01 (0.02)	0.01 (0.03)	-0.02 (0.03)	-0.05 (0.04)	0.03 (0.03)	-0.02 (0.03)	0.00 (0.02)	-0.00 (0.02)
College graduate	-0.03 (0.02)	-0.02 (0.03)	-0.02 (0.04)	-0.06* (0.03)	0.01 (0.03)	-0.04 (0.03)	-0.02 (0.02)	-0.03 (0.02)
Post college graduate	-0.01 (0.03)	-0.01 (0.03)	0.04 (0.04)	-0.08 (0.06)	0.06 (0.05)	-0.03 (0.03)	-0.00 (0.03)	-0.00 (0.03)
Age 18 to 24	0.03 (0.04)	-0.01 (0.04)	-0.04 (0.06)	0.03 (0.08)	0.08 (0.05)	-0.05 (0.04)	0.02 (0.04)	0.06 (0.04)
Age 25 to 34	-0.06* (0.03)	-0.02 (0.04)	-0.16** (0.06)	0.02 (0.06)	0.01 (0.04)	-0.08** (0.04)	-0.07** (0.03)	-0.07** (0.03)
Age 35 to 44	0.01 (0.03)	0.04 (0.04)	-0.07 (0.05)	0.02 (0.06)	0.03 (0.04)	-0.01 (0.03)	0.01 (0.03)	-0.00 (0.03)
Age 45 to 54	0.05* (0.03)	0.05 (0.04)	0.04 (0.05)	0.06 (0.06)	0.04 (0.04)	0.03 (0.03)	0.05* (0.03)	0.04 (0.03)

continued...

Table 10.26 continued...

<i>Predictor</i>	<i>All respondents</i>	<i>Democrats</i>	<i>Republicans</i>	<i>Independents</i>	<i>High personal importance</i>	<i>Low personal importance</i>	<i>Registered to vote</i>	<i>Likely voters</i>
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Age 55 to 64	-0.02 (0.03)	0.06 (0.04)	-0.10*** (0.04)	-0.03 (0.06)	0.08** (0.04)	-0.06* (0.03)	-0.01 (0.03)	-0.01 (0.03)
Having child <18	0.01 (0.02)	-0.03 (0.03)	0.07* (0.04)	0.05 (0.03)	-0.03 (0.03)	0.03 (0.02)	0.02 (0.02)	0.02 (0.02)
Having child 18+	-0.05*** (0.02)	-0.07*** (0.02)	-0.07** (0.03)	-0.03 (0.03)	-0.05* (0.03)	-0.05* (0.02)	-0.05*** (0.02)	-0.07*** (0.02)
Hispanic	-0.00 (0.04)	-0.10*** (0.04)	0.20* (0.12)	0.13 (0.08)	0.02 (0.04)	0.02 (0.05)	-0.05 (0.05)	-0.06 (0.05)
White	0.00 (0.04)	-0.07 (0.05)	-0.07 (0.07)	0.04 (0.06)	0.02 (0.05)	-0.08 (0.06)	0.03 (0.04)	-0.06 (0.05)
Black	-0.02 (0.04)	-0.11** (0.05)	0.00 (0.00)	0.00 (0.07)	0.04 (0.05)	-0.16** (0.07)	-0.00 (0.05)	-0.07 (0.06)
Working	-0.01 (0.02)	0.02 (0.03)	-0.02 (0.04)	-0.00 (0.03)	0.01 (0.02)	-0.04* (0.02)	-0.01 (0.02)	-0.01 (0.02)
Constant	-0.36*** (0.06)	-0.22** (0.09)	-0.38*** (0.11)	-0.46*** (0.10)	-0.32*** (0.08)	-0.29*** (0.08)	-0.40*** (0.07)	-0.34*** (0.06)
N	482	222	120	140	236	246	439	398
R <sup>2</sup>	0.845	0.651	0.750	0.828	0.779	0.887	0.853	0.871

Notes: Presented are OLS coefficient estimates of electoral attitudes favoring Mr. Obama index standard errors in parentheses) adjusting for sampling weights. Each column is a separate regression.

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Romney's silence stance was present among many subpopulations, including among Independents ( $b = .11, p < .01$ ; see row 1 and column 4 in Table 10.26), among respondents who did not attach high personal importance to the issue ( $b = .06, p < .01$ ; see row 1 and column 6 in Table 10.26), among registered voters ( $b = .06, p < .01$ ; see row 1 and column 7 in Table 10.26) as well as among likely voters ( $b = .05, p < .01$ ; see row 1 and column 8 in Table 10.26). Hypothesis 3a was supported.

### *The Impact of Mr. Obama Taking a Green Stance In Presence of Mr. Romney's Green Stance*

In the presence of Mr. Romney's taking a green stance on the issue, Mr. Obama's taking a green stance on global warming, compared to being silent, led to no change in respondents' scores on *electoral attitude favoring Mr. Obama index* (favorable electoral attitude) (see row 1 and column 1 in Table 10.27), inconsistent with the prediction of Hypothesis 3b: when Republican candidate takes a green stance, Democratic candidate may gain votes (favorable electoral attitudes) by taking a green stance on global warming compared to silence. However, among registered voters and importantly, among likely voters, Mr. Obama's taking a green stance on global warming, compared to being silent, increased respondents' scores on *electoral attitude favoring Mr. Obama index* ( $b = .05, p = .03$ ;  $b = .04, p = .06$  among respondents registered to vote and likely voters, respectively; see row and columns 7–8 in Table 10.27). Since Hypothesis 3a (and all other hypotheses in this study) was formulated based on the actual voting outcomes in Study 3, evidence among likely voters (which was a good approximation of actual voters) would be the most pertinent to testing this hypothesis, thus the evidence of positive electoral impact among likely voters led to the conclusion that Hypothesis 3b was supported.

### *The Impact of Mr. Obama Taking a Green Stance In Presence of Mr. Romney's Not-Green Stance*

In the presence of Mr. Romney's taking a not-green stance on the issue, Mr. Obama's taking a green stance on global warming, compared to being silent, led to no change in respondents' scores on *electoral attitude favoring Mr. Obama index* (favorable electoral attitude) (see row 1 and column 1 in Table 10.28), inconsistent with the prediction of Hypothesis 3c: when Republican candidate takes a not-green stance, Democratic candidate may gain votes (favorable electoral attitudes) by taking a green stance on global warming compared to silence. There was no impact or no positive impact of Mr. Obama's taking a green stance among any of the subpopulations (see row 1 and columns 2–8 in Table 10.28), not supporting Hypothesis 3c. As in the case of Hypothesis

**TABLE 10.27** Study 8: Impact of Mr. Obama's Taking a Green Stance In Presence of Mr. Romney's Green Stance

<i>Predictor</i>	<i>All respondents</i>							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Obama green =1 (Obama silence = 0)	0.03 (0.02)	0.03 (0.03)	0.03 (0.03)	0.05 (0.03)	0.04 (0.03)	0.01 (0.03)	0.05** (0.02)	0.04* (0.02)
Obama presented first	-0.02 (0.02)	0.05** (0.02)	-0.06** (0.03)	-0.02 (0.03)	-0.04 (0.03)	0.01 (0.02)	-0.03 (0.03)	-0.05 (0.03)
Progress economy	0.08* (0.04)	0.00 (0.06)	0.02 (0.08)	0.20*** (0.08)	0.05 (0.05)	0.12* (0.06)	0.10** (0.04)	0.09* (0.05)
Progress foreign rel.	-0.02 (0.05)	-0.05 (0.06)	-0.08 (0.09)	0.09 (0.08)	-0.08 (0.05)	0.12 (0.08)	-0.03 (0.05)	-0.06 (0.05)
Progress pollution	-0.24*** (0.05)	-0.18*** (0.07)	-0.11 (0.09)	-0.35*** (0.07)	-0.24*** (0.06)	-0.14* (0.07)	-0.24*** (0.06)	-0.23*** (0.06)
Approval of Obama	0.30*** (0.06)	0.42*** (0.07)	0.16 (0.10)	0.20* (0.11)	0.25*** (0.07)	0.41*** (0.10)	0.28*** (0.06)	0.33*** (0.07)
Approval on economy	0.13** (0.06)	0.15** (0.07)	0.04 (0.13)	0.18* (0.09)	0.19*** (0.07)	0.09 (0.09)	0.15** (0.06)	0.10 (0.07)
Approval foreign rel.	0.19*** (0.05)	0.18*** (0.06)	0.25*** (0.08)	0.18** (0.09)	0.17*** (0.06)	0.10 (0.07)	0.19*** (0.05)	0.22*** (0.05)
Approval environ.	0.09** (0.04)	0.01 (0.07)	0.15** (0.07)	0.19** (0.08)	0.08 (0.05)	0.10 (0.06)	0.10** (0.04)	0.09** (0.04)
Approval asked first	0.05** (0.02)	0.07*** (0.02)	0.11*** (0.04)	0.00 (0.04)	0.09*** (0.03)	0.00 (0.03)	0.06** (0.02)	0.07** (0.03)

Democrat	0.12*** (0.03)		0.05 (0.03)	0.13*** (0.04)	0.11*** (0.03)	0.12*** (0.04)
Republican	-0.19*** (0.04)		-0.31*** (0.06)	-0.10*** (0.03)	-0.20*** (0.04)	-0.17*** (0.04)
Liberal	0.07** (0.03)	0.04 (0.02)	0.11* (0.06)	0.08** (0.03)	0.05* (0.03)	0.06** (0.03)
Conservative	-0.03 (0.03)	0.02 (0.05)	-0.04 (0.04)	0.01 (0.04)	-0.03 (0.03)	-0.05* (0.03)
Female	0.01 (0.02)	0.08*** (0.03)	0.03 (0.04)	-0.00 (0.03)	0.02 (0.02)	0.01 (0.02)
Married	0.00 (0.02)	-0.00 (0.03)	-0.02 (0.04)	0.03 (0.03)	0.00 (0.02)	0.01 (0.02)
Some college	0.01 (0.02)	-0.01 (0.03)	0.00 (0.04)	-0.04 (0.03)	-0.01 (0.02)	0.00 (0.03)
College graduate	-0.02 (0.03)	-0.03 (0.03)	-0.01 (0.05)	-0.05 (0.03)	-0.03 (0.03)	-0.02 (0.03)
Post college graduate	0.00 (0.03)	-0.03 (0.03)	0.01 (0.06)	-0.03 (0.04)	0.00 (0.03)	0.01 (0.03)
Age 18 to 24	0.05 (0.04)	0.07 (0.05)	0.10 (0.06)	-0.02 (0.05)	0.05 (0.04)	0.02 (0.04)
Age 25 to 34	0.02 (0.04)	0.11** (0.05)	0.01 (0.07)	-0.01 (0.05)	0.02 (0.04)	-0.02 (0.04)
Age 35 to 44	0.01 (0.03)	0.04 (0.05)	-0.05 (0.06)	0.02 (0.05)	0.02 (0.03)	0.01 (0.04)

continued...

Table 10.27 continued...

<i>Predictor</i>	<i>All respondents</i>			<i>Independents</i>	<i>High personal importance</i>	<i>Low personal importance</i>	<i>Registered to vote</i>	<i>Likely voters</i>
	(1)	(2)	(3)					
Age 45 to 54	0.07** (0.03)	0.08* (0.04)	0.03 (0.06)	0.05 (0.06)	0.06 (0.05)	0.06 (0.04)	0.09*** (0.03)	0.06** (0.03)
Age 55 to 64	0.05 (0.03)	-0.04 (0.06)	0.09** (0.04)	0.04 (0.05)	0.07 (0.06)	0.04 (0.04)	0.05 (0.04)	0.04 (0.04)
Having child <18	-0.02 (0.03)	-0.01 (0.03)	-0.08** (0.03)	-0.05 (0.04)	-0.03 (0.03)	-0.02 (0.04)	-0.03 (0.03)	-0.03 (0.03)
Having child 18+	-0.01 (0.02)	-0.02 (0.03)	-0.05 (0.04)	0.02 (0.04)	-0.04 (0.03)	0.03 (0.03)	-0.02 (0.02)	-0.02 (0.02)
Hispanic	-0.02 (0.03)	0.03 (0.04)	-0.01 (0.06)	-0.08 (0.06)	-0.02 (0.04)	-0.01 (0.06)	-0.02 (0.04)	-0.01 (0.04)
White	0.03 (0.03)	0.00 (0.03)	0.37*** (0.07)	0.06 (0.07)	0.01 (0.04)	0.05 (0.04)	0.04 (0.03)	0.03 (0.04)
Black	0.05 (0.04)	0.02 (0.04)	0.38*** (0.10)	0.06 (0.08)	0.08* (0.05)	-0.06 (0.05)	0.05 (0.04)	0.01 (0.04)
Working	-0.01 (0.03)	-0.07*** (0.03)	0.02 (0.04)	0.03 (0.04)	-0.04 (0.03)	0.02 (0.03)	-0.02 (0.02)	-0.00 (0.03)
Constant	-0.44*** (0.06)	-0.37*** (0.08)	-0.95*** (0.10)	-0.52*** (0.09)	-0.28*** (0.08)	-0.61*** (0.07)	-0.45*** (0.06)	-0.44*** (0.07)
N	509	204	130	175	243	266	457	410
R <sup>2</sup>	0.800	0.707	0.484	0.730	0.792	0.821	0.816	0.827

Notes: Presented are OLS coefficient estimates of electoral attitudes favoring Mr. Obama index (standard errors in parentheses) adjusting for sampling weights. Each column is a separate regression.

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**TABLE 10.28** Study 8: Impact of Mr. Obama's Taking a Green Stance In Presence of Mr. Romney's Not-Green Stance

<i>Predictor</i>	<i>All respondents</i>				<i>Independents</i>		<i>High personal importance</i>		<i>Low personal importance</i>		<i>Registered to vote</i>		<i>Likely voters</i>	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
Obama green = 1 (Obama silence = 0)	-0.00 (0.02)	0.01 (0.03)	0.04 (0.03)	-0.08** (0.03)	0.02 (0.03)	-0.04* (0.02)	-0.00 (0.02)	-0.00 (0.02)	-0.04* (0.02)	-0.00 (0.02)	-0.00 (0.02)	-0.00 (0.02)	-0.00 (0.02)	-0.00 (0.02)
Obama presented first	0.02 (0.02)	-0.05* (0.02)	0.00 (0.03)	0.10*** (0.03)	0.03 (0.03)	0.02 (0.02)	-0.00 (0.02)	-0.00 (0.02)	0.02 (0.02)	0.02 (0.02)	0.02 (0.02)	0.02 (0.02)	0.02 (0.02)	-0.01 (0.02)
Progress economy	0.14*** (0.05)	0.09 (0.07)	0.20** (0.09)	0.20*** (0.07)	0.15** (0.06)	0.14** (0.06)	0.16*** (0.05)	0.16*** (0.05)	0.14** (0.06)	0.16*** (0.05)	0.16*** (0.05)	0.16*** (0.05)	0.16*** (0.05)	0.15*** (0.05)
Progress foreign rel.	0.03 (0.04)	0.08 (0.06)	0.04 (0.10)	-0.08 (0.08)	-0.06 (0.05)	0.18*** (0.07)	0.07 (0.05)	0.07 (0.05)	0.18*** (0.07)	0.07 (0.05)	0.07 (0.05)	0.07 (0.05)	0.07 (0.05)	0.09* (0.05)
Progress pollution	-0.12** (0.05)	-0.16** (0.08)	0.00 (0.09)	-0.02 (0.07)	-0.07 (0.06)	-0.10* (0.06)	-0.11** (0.05)	-0.11** (0.05)	-0.10* (0.06)	-0.11** (0.05)	-0.11** (0.05)	-0.11** (0.05)	-0.11** (0.05)	-0.13** (0.05)
Approval of Obama	0.30*** (0.06)	0.31*** (0.10)	0.40** (0.16)	0.27*** (0.09)	0.23*** (0.07)	0.43*** (0.11)	0.40*** (0.06)	0.40*** (0.06)	0.43*** (0.11)	0.40*** (0.06)	0.40*** (0.06)	0.40*** (0.06)	0.40*** (0.06)	0.39*** (0.06)
Approval on economy	0.06 (0.05)	0.02 (0.06)	-0.23 (0.18)	0.17* (0.10)	0.09 (0.07)	0.04 (0.09)	0.03 (0.05)	0.03 (0.05)	0.04 (0.09)	0.03 (0.05)	0.03 (0.05)	0.03 (0.05)	0.03 (0.05)	0.02 (0.05)
Approval foreign rel.	0.22*** (0.06)	0.15* (0.09)	0.31*** (0.11)	0.24*** (0.08)	0.16* (0.09)	0.10 (0.07)	0.15*** (0.06)	0.15*** (0.06)	0.16* (0.09)	0.10 (0.07)	0.15*** (0.06)	0.15*** (0.06)	0.15*** (0.06)	0.17*** (0.06)
Approval environ.	0.06 (0.04)	0.04 (0.07)	0.21*** (0.08)	-0.04 (0.07)	-0.01 (0.06)	0.07 (0.06)	0.05 (0.04)	0.05 (0.04)	0.07 (0.06)	0.05 (0.04)	0.05 (0.04)	0.05 (0.04)	0.05 (0.04)	0.06 (0.04)
Approval asked first	-0.02 (0.02)	-0.00 (0.03)	-0.02 (0.04)	-0.05 (0.03)	-0.03 (0.03)	-0.01 (0.02)	-0.02 (0.02)	-0.02 (0.02)	-0.01 (0.02)	-0.01 (0.02)	-0.02 (0.02)	-0.02 (0.02)	-0.02 (0.02)	0.00 (0.02)

continued...

Table 10.28 continued...

<i>Predictor</i>	<i>All respondents</i>							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Democrat	0.05* (0.03)				0.07** (0.03)	0.01 (0.04)	0.05 (0.03)	0.07** (0.03)
Republican	-0.15*** (0.03)				-0.26*** (0.07)	-0.12*** (0.03)	-0.12*** (0.04)	-0.09** (0.04)
Liberal	0.01 (0.03)	-0.01 (0.03)	0.15 (0.11)	0.04 (0.05)	-0.01 (0.03)	0.05 (0.05)	-0.01 (0.03)	-0.00 (0.03)
Conservative	-0.10*** (0.02)	-0.15*** (0.05)	-0.10*** (0.04)	-0.06 (0.04)	-0.07** (0.04)	-0.05* (0.03)	-0.09*** (0.03)	-0.10*** (0.03)
Female	0.05*** (0.02)	0.06** (0.03)	0.02 (0.04)	0.09*** (0.03)	0.08*** (0.03)	0.04* (0.02)	0.06*** (0.02)	0.05** (0.02)
Married	-0.00 (0.02)	-0.00 (0.03)	0.12*** (0.04)	-0.06 (0.04)	-0.01 (0.03)	-0.01 (0.03)	0.00 (0.02)	0.00 (0.02)
Some college	0.00 (0.03)	-0.03 (0.03)	0.02 (0.04)	0.05 (0.04)	-0.05 (0.03)	0.07** (0.03)	0.00 (0.03)	0.01 (0.03)
College graduate	-0.03 (0.02)	-0.04 (0.03)	0.02 (0.04)	-0.08* (0.05)	-0.03 (0.04)	0.02 (0.03)	-0.03 (0.03)	-0.01 (0.03)
Post college graduate	-0.05 (0.04)	-0.02 (0.05)	-0.04 (0.07)	-0.01 (0.06)	-0.06 (0.05)	0.01 (0.05)	-0.04 (0.04)	-0.01 (0.04)
Age 18 to 24	-0.01 (0.04)	0.01 (0.05)	-0.14 (0.09)	-0.08 (0.07)	-0.05 (0.05)	0.04 (0.05)	-0.04 (0.04)	-0.03 (0.05)
Age 25 to 34	-0.08* (0.04)	-0.02 (0.06)	-0.19*** (0.06)	-0.07 (0.07)	-0.11* (0.06)	-0.05 (0.05)	-0.09** (0.05)	-0.10** (0.05)

Age 35 to 44	-0.05 (0.03)	-0.05 (0.04)	-0.04 (0.06)	-0.02 (0.06)	-0.11** (0.05)	0.02 (0.04)	-0.06 (0.04)	-0.07* (0.04)
Age 45 to 54	0.02 (0.03)	0.08 (0.05)	0.02 (0.05)	-0.00 (0.07)	0.03 (0.04)	-0.02 (0.04)	0.01 (0.03)	0.02 (0.03)
Age 55 to 64	-0.05 (0.03)	0.02 (0.05)	-0.06 (0.05)	-0.11* (0.06)	-0.04 (0.04)	-0.04 (0.04)	-0.05 (0.03)	-0.05 (0.03)
Having child <18	-0.03 (0.02)	-0.05 (0.04)	-0.02 (0.05)	-0.06 (0.04)	-0.03 (0.03)	-0.01 (0.03)	-0.04 (0.03)	-0.04 (0.03)
Having child 18+	-0.04* (0.02)	-0.09** (0.04)	-0.06 (0.04)	0.03 (0.04)	-0.08** (0.03)	0.03 (0.03)	-0.04* (0.02)	-0.04 (0.02)
Hispanic	0.05 (0.04)	-0.00 (0.04)	0.11** (0.05)	0.15** (0.08)	0.05 (0.05)	0.02 (0.04)	0.03 (0.05)	-0.01 (0.04)
White	-0.00 (0.03)	0.03 (0.05)	-0.01 (0.08)	-0.05 (0.05)	-0.02 (0.04)	0.03 (0.06)	0.02 (0.04)	0.03 (0.04)
Black	0.04 (0.04)	0.09* (0.05)	0.07 (0.16)	0.05 (0.07)	0.01 (0.04)	0.07 (0.08)	0.06 (0.04)	0.08* (0.04)
Working	-0.02 (0.02)	0.00 (0.03)	-0.03 (0.04)	0.00 (0.03)	-0.04 (0.03)	0.00 (0.03)	-0.01 (0.02)	-0.02 (0.02)
Constant	-0.30*** (0.07)	-0.16 (0.12)	-0.65*** (0.10)	-0.28** (0.12)	-0.07 (0.11)	-0.51*** (0.08)	-0.36*** (0.07)	-0.39*** (0.08)
N	500	190	128	182	241	259	437	396
R <sup>2</sup>	0.795	0.557	0.703	0.748	0.708	0.841	0.812	0.830

Notes: Presented are OLS coefficient estimates of electoral attitudes favoring Mr. Obama index (standard errors in parentheses) adjusting for sampling weights. Each column is a separate regression.

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

1b that not supported, the failure to support Hypothesis 3c was a result of the failure of the manipulation. If the manipulation had worked, respondents in the treatment condition (Condition 6: Obama Green & Romney Not-Green) would have had been more likely than respondents in the control condition (Condition 3: Romney Not-Green) to perceive Mr. Obama to take a green stance on the issue of global warming; however, perception of Mr. Obama's stance on global warming did not differ between the conditions ( $m = .90$  and  $m = .86$  for the treatment and control condition, respectively,  $p = .15$ ), thus the treatment failed. To sum, Hypothesis 3c was not supported, possibly because of the failure of the manipulation.

## Discussion

### *Methodology 1—Study 1*

Study 1 used methodologies well-established in political science for exploring whether citizens might have used a policy issue as a basis for their candidate choice. As expected, greater relative proximity to Mr. Obama increased the likelihood of voting for him instead of for Mr. McCain in the 2008 presidential election. This held true in a wide range of analyses, using various different ways to represent issue proximity, and using various estimation techniques making different assumptions. Thus, the finding appears to be robust.

This study's limitations include reliance on only a single policy measure, controlling for a subset of the possible causes of vote choice, and assessing covariation among measures with no empirical handle to identify causal influence.

### *Methodology 1—Study 2*

Study 2 employed methodologies well-established in political science for exploring whether citizens might have used a policy issue as a basis for candidate choice, and found evidence indicating that Americans used proximity to the candidates on global warming policy as a basis for choosing between the competitors in the 2012 U.S. Presidential election. The closer a person thought his or her desired change in the level of government action on global warming was closer to Mr. Obama's relative to Mr. Romney's, the more likely the person was to report an intent to vote for Mr. Obama. This held true in a wide range of analyses, using various different ways to represent issue proximity, using various estimation techniques making various different types of assumptions. Thus, the finding appears to be robust.

One methodological limitation of Study 2 involves the issue congruence measure employed: the proximity between the respondent's perception of the

candidate's position and the respondent's own position on the same issue. Such issue proximity may be affected by two psychological processes: projection and persuasion (Krosnick, 2002). Persuasion occurs when a respondent shifts his or her own position toward his/her perception of a favored candidate's position on the same issue or away from the position of a disliked candidate. Projection occurs when the respondent shifts his/her perception of a favored candidate's position toward his/her own position on the same issue or shifts his/her perception of a disliked candidate's position away from his/her own.

Persuasion is most likely to occur among people who do not attach personal importance to an issue (see Boninger et al., 1995), so it is unlikely to explain the pattern of results we see here. Projection, if it occurs, may be more likely to occur among people who do attach importance to the issue and would therefore be troubled by agreeing with a disliked candidate or disagreeing with a liked candidate on that issue. However, the literature currently provides no convincing evidence that projection onto candidates actually occurs in the American context (see Krosnick, 2002). So although the relation documented in this study between global warming issue proximity and predicted vote are correlational and do not allow for unambiguous attribution to policy-based evaluation, these alternative explanations seem unlikely to be causing distortion of our conclusions. To estimate the effect of policy proximity on vote intent would require different types of data, such as panel data or experimental data. We look forward to seeing such research in the future.

### ***Methodology 2—Study 3***

Study 3 provided observational evidence suggesting that Congressional candidates' positions on global warming in 2010 might have influenced their electoral success. The results can be summarized as follows.

- The Democrat expressing a green position instead of being silent/mixed helped him/her win, regardless of whether his/her Republican was silent/mixed or not-green.
- When the Democrat expressed a green position, the Republican expressing a not-green position instead of being silent/mixed reduced his/her chances of victory.
- When the Democrat was silent/mixed, the Republican expressing a not-green position instead of being silent/mixed helped him/her win.

Put another way, when an opponent was silent/mixed, a candidate taking a position on global warming that was consistent with his/her political party's general tendency (a green position for Democrats, a not-green position for Republicans) won more often than if he/she was silent/mixed. However, in

the face of a Democrat expressing a green position (in line with his/her party's general tendency), Republicans hurt their electoral chances by expressing a not-green position (in line with their party's general tendency) instead of being silent/mixed.

Simulations of possible election results if the candidates had taken different positions suggest that each party could have gained seats in 2010 if their candidates had taken different positions on global warming. But according to these simulations, control of the House most likely would not have flipped to the Democrats, even if the Democrats had all expressed strategically wise positions and the Republicans maintained the positions they expressed. Likewise, control of the Senate most likely would not have flipped to the Republicans if the Republicans had all expressed strategically wise positions while the Democrats maintained the positions they expressed.

These findings have simple implications for Democratic campaign strategies but tricky ones for Republicans. It appears that Democrats enhanced their chances of victory by taking a green position, regardless of what their Republican opponents said on the issue. But the optimal strategy for Republicans appears to have hinged on what their opponents said. If a Republican could be confident that his/her Democratic opponent would remain silent on global warming, then the Republican would have gained by expressing a not-green position. But once a Democrat expressed a green position, the Republican should not express a not-green position; being silent/mixed would have been better, and expressing a green position would have been even better than that.

We were not able to examine the impact on electoral victory of some strategies that candidates could have adopted, because too few people actually adopted them. Specifically, there were very few or no instances in which the Democrat expressed a not-green position, so we cannot offer speculations about the impact of them doing so.

Study 3 also has other limitations. First, our content analysis of campaign rhetoric was limited in some ways. For example, we ascertained candidates' positions on global warming via text on their websites. Some websites also included candidate expressions of their positions on issues via audio or video recordings, and we did not code these. Furthermore, candidates expressed positions on many issues during the course of their campaigns in ways that were not captured on their websites at all, such as in news interviews, at campaign rallies, in town hall meetings, and during debates. We assume here that the website analysis captures reasonably well what the candidates chose to articulate most often in these other settings, but we cannot know the plausibility of this assumption without further data collection and analysis.

It seems unlikely that a candidate expressed a green position on his/her website and expressed a not-green position regularly in other forums. And it seems unlikely that a candidate expressed a not-green position on his/her website

and expressed a green position regularly in other forums. But it seems more possible that some candidates might have been silent about global warming on their websites but took green or not-green positions in other campaign settings. Thus, we may be overestimating the number of candidates who were silent. And if these candidates were to be re-coded in the analyses reported here, the results might change in ways we cannot anticipate.

Although we are inclined to look at the websites as indicators of what the candidates said throughout their campaigns, it is possible to view the websites differently: as the very medium of potential influence. When viewed in this way, the websites might be best analyzed taking into account the layout and accessibility of pieces of information there. For example, a candidate may have taken a green position on global warming on his/her website but done so on a page that citizens rarely saw when visiting the website due to the structure of links to it. Thus, although the information may have been publicly available, it may have been less influential in people's thinking than would have been the case if the information were easier to access. Our analysis did not take into account ease of accessing information on the candidates' websites, and doing so might have changed our findings.

A third limitation of Study 3 involves the coding of candidates' positions. We categorized each individual as being green, not-green, or silent/mixed. This approach ignores the fact that candidates differed in the intensity of their expressions on the issue. Some candidates were vociferous, whereas others were not. Perhaps we would have obtained different results if we had taken steps to take intensity of expression into account.

Fourth, because Study 3's results reported here are correlational, we cannot make strong statements about causal influence based on these results alone. That is, we cannot rule out spuriousness (e.g., candidates' decisions about what to say about global warming were influenced by factors that also independently influenced their electoral victories) or reverse causality (e.g., candidates' decisions about what to say about global warming were influenced by their apparent standing in pre-election polls). For example, a Democrat who thought she was leading in the polls might have chosen to express a green position on the grounds that doing so would be a safe way to increase enthusiasm among supporters. But that same candidate might have chosen to remain silent on global warming if she perceived herself to be at risk for losing the race and feared turning off potential supporters who were not-green.

Study 3's analyses did not take into account what the candidates said on issues other than global warming. Of course, the candidates said a great deal on a wide range of other policy matters during the campaign, and these statements may have been influential. If a candidate's expressed position on global warming was correlated with whether and what he/she said on other policy issues, then what might appear here to be an effect of global warming communications

might instead be the result of statements on these other issues. Needless to say, a comprehensive analysis of all statements made by all candidates on all issues would be extremely challenging to implement for reasons of practicality. Nonetheless, future research might explore whether taking into account candidate utterances (or silence) on specific other, related policy issues might alter the findings reported above.

Another limitation of Study 3 is that the websites were downloaded just before the election and just after, but their content may have changed during the course of the primaries and the general election season. Therefore, we may not have fully captured what candidates said about global warming during this entire period.

Lastly, Study 3 was focused specifically on the 2010 Congressional elections, and there may be good reason to be cautious before generalizing these findings to other elections. Nonetheless, the results reported here are consistent with the conclusion that candidates may influence electoral outcomes via their statements or silence on global warming. Being strategically wise on this issue would require taking into account what both candidates say and could say, rather than simply examining one candidate's behavior at a time, ignoring the statements of his/her opponent.

### ***Methodology 3—Study 4***

Study 4 used methodologies well-established in political science for exploring whether citizens might have used a policy issue as a basis for their candidate choice as well as content analysis of political candidates' stances on the issue of global warming. Study 4 explored the extent to which the issue of climate change influenced voters' intent to vote. Consistent with the rational choice theory of voting, voters' greater relative proximity to the candidate increased the likelihood of their intent to vote for him/her instead of other candidate. This held true in a wide range of analyses, using various different ways to represent issue proximity, using various estimation techniques making various different types of assumptions. Thus, the finding appears to be robust.

### ***Methodology 4—Study 5***

Study 5 explored the extent various stances on global warming by hypothetical candidates would impact the likelihood of respondents' intent to vote for them. A hypothetical candidate's taking a green stance increased the likelihood that respondent would vote for the candidate, and taking a not-green or a non-committal stance reduced the likelihood that respondent would vote for the candidate. Consistent with the findings from Studies 1, 2, 3 and 4, that green stances gained votes and not-green or non-committal stances lost votes were

apparent among respondents who believed global warming has been happening, who attached high personal importance to the issue of global warming, and who were Democrats and Independents.

### ***Methodology 5—Studies 6, 7 and 8***

Studies 6 and 7 yielded experimental evidence from representative national and regional samples of American adults suggesting Congressional candidates' positions on global warming influence Americans' voting behavior. Candidates who took a green position gained votes, and candidates who took a not-green position (or a non-committal position) lost votes. Confidence in these conclusions is justified by the fact that supportive results were obtained in five separate tests.

Like Studies 6 and 7, Study 8 produced experimental evidence that Mr. Romney, the Republican candidate in the 2012 presidential election, taking a green or a not-green position on global warming influenced Americans' voting behavior, supporting three of the four hypotheses generated from the results of Study 3. Mr. Romney's taking a green position on global warming compared to being silence on the issue yielded more votes for him and more favorable attitudes toward him, whether in absence or in presence of Mr. Obama, supporting the two hypotheses from the insights of Study 3. In presence of Mr. Obama, Mr. Romney's taking a not-green position on global warming compared to being silence on the issue led to no changes in votes for him and more favorable attitudes toward him, supporting another hypothesis from Study 3. However, in absence of Mr. Obama, Mr. Romney's taking a not-green position on global warming compared to being silence on the issue did not gain votes for him and more favorable attitudes toward him, providing no evidence to another hypothesis from Study 3. The lack of support for this hypothesis might have resulted from the fact that the experiment was conducted within 48 hours of the actual 2012 presidential election. Most people would have been familiar with Mr. Romney's stance on global warming, which was a not-green stance, thus diluting the experimental effect of exposing respondents to the video that Mr. Romney took a not-green stance on global warming.

These findings lend credibility to earlier surveys that used different methods to ascertain the attitudes and beliefs of Americans and to gauge the likely impact of these attitudes and beliefs on voting. Many studies suggest that the vast majority of people who attached great personal importance to global warming took green positions on the issue. This led us to expect exactly the effects shown in the present studies. Had these effects not been observed, we would have had reason to doubt the validity of past surveys' measurements. Therefore, the confirmation here of expected effects reinforces the portrait of public opinion that those past surveys paint.

These findings have interesting implications for candidates' campaign strategies. If we first assume that elections will be won and lost mostly by attracting the votes of Independent citizens whose votes cannot be predicted by party affiliations, our results suggest that candidates would do best to take green positions and hurt their electoral chances by taking not-green positions. Furthermore, the pattern of effects we observed among Democratic citizens suggests that candidates trying to capture a Democratic Party nomination or to inspire Democratic citizens to vote for them in general elections would be best off expressing a green position. Interestingly, Democratic candidates wishing to woo Republican voters during general elections apparently have nothing to gain or lose by the positions they take on global warming, leaving them free to take green positions in order to attract Independents.

According to our results, Republican candidates have even more to gain by taking green positions on climate. In addition to attracting Independent voters, Republican candidates who take green positions may have some success wooing Democratic citizens in general elections, especially if their Democratic opponents remain silent on global warming. Furthermore, taking a green position will apparently not hurt a Republican's standing with Republican voters, so this seems like a cost-free strategy. Consequently, Republican candidates are apparently free to take green positions even during primaries, perhaps thereby attracting early attention from Independent and Democratic citizens. Thus, according to our results, Republican candidates stand a good chance of gaining votes by taking green positions and should certainly not take not-green positions.

Studies 6, 7 and 8 have some limitations. First, because the analyses did not focus on the opinions of only likely voters, caution about generalizing the results on all citizens to voters in particular is merited. Furthermore, although we measured intentions to vote (rather than observing actual voting behavior), stated voting intentions are excellent predictors of actual voting behavior (e.g., Visser, Krosnick, Marquette, & Curtin, 1996). Another caution involves the fact that the hypothetical candidates took positions on just a few issues during a short period of time. Since real candidates take positions on many more issues, and because voters learn many other types of information about candidates, different influence might be observed in the course of a real election. Third, we tested one version of a green statement and one version of a not-green statement. The green statement was based partly on the opinions expressed by the American public about global warming in our past surveys, and partly on President Obama's statements about this issue. The not-green statement was based importantly on what Senator James Inhofe and other skeptical candidates said on their websites about global warming. These statements could have been written in other ways, and different results might be obtained with such alternative statements.

And in the simulated elections, only a single candidate was described, whereas contests normally involve competing candidates. Perhaps most importantly, we did not examine what would happen in voters' minds if a candidate took a green or not-green position and was then attacked by his or her opponent for doing so, which could certainly be studied in future experiments. It is conceivable that a candidate who takes a not-green position and is then attacked for doing so by his or her opponent would fare even worse with voters than a candidate who simply takes a not-green position that goes unchallenged. And perhaps a candidate who takes a green position would gain even more votes if his or her opponent attacked that position by taking a not-green position.

## Conclusion

The data from all eight studies make a compelling case that Americans in 2008–2015 may have voted at least partly based on the candidates' positions on global warming. The evidence of moderation of such behavior by the personal importance that citizens attached to the issue is consistent with the issue public theory of voting in contemporary American politics (see Krosnick, 1990).

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## Appendix A

### Survey Methodologies and Measures in Table 10.1

#### Data Collection Methodologies of Surveys in Table 10.1

**Data Collection Methodology of the 2008 Survey.** The 2008 survey in Table 10.1 was a random digit dial landline telephone survey of a national probability sample of 1,000 U.S. adults ages 18 and older, conducted by TNS of Horsham, PA, between July 23 and July 28, 2008, commissioned by ABC News, Planet Green, and Stanford University. The sample was provided by Survey Sampling International, and interviews were conducted in both English and Spanish. The AAPOR Response Rate 3 was 29%.

**Data Collection Methodology of the 2009 Survey.** The 2009 survey in Table 10.1 was conducted by GfK Roper Public Affairs & Media, commissioned by Stanford University and the Associated Press. This telephone poll is based on a nationally representative probability sample of 1,005 adults age 18 or older. The interviews were conducted between November 17 and November 29, 2009, with 705 respondents on landlines and 300 on cellular telephones. Both the landline and cell phone samples were provided by Survey Sampling International. The survey sample included the contiguous 48 states, Alaska and Hawaii. Interviews were conducted in both English and Spanish. The AAPOR Response Rate 3 was 12%.

**Data Collection Methodology of the 2010 Survey.** The 2010 survey in Table 10.1 is a random digit dial telephone survey of a national probability sample of U.S. adults aged 18 and older conducted by Abt SRBI, November 1 and November 14, 2010. 671 respondents were interviewed on a landline phone and 330 were interviewed on a cell phone. Interviews were administered in English and Spanish. Samples were drawn from both landline and cellular random digit dial frames to represent people with access to either a landline or cell phone. The landline and cell phone samples were provided by Survey Sampling International, LLC. The AAPOR Response Rate 3 was 17%.

**Data Collection Methodology of the 2011 Survey.** The 2011 survey in Table 10.1 is a random digit dial telephone survey of a national probability sample of U.S. adults aged 18 and older, which was conducted by Ipsos Public Affairs of Washington, DC, between September 8 and September 12, 2011. 890 respondents were interviewed on a landline phone and 244 were interviewed on a cell phone. Interviews were administered in English and Spanish. The AAPOR Response Rate 3 was 8%.

**Data Collection Methodology of the 2012 Survey.** The 2012 survey in Table 10.1 is a random digit dial telephone survey of a national probability sample of U.S. adults aged 18 and older, which was conducted by Abt SRBI between June

13 and June 21, 2012. 603 respondents were interviewed on a landline phone, and 201 were interviewed on a cellular phone. Interviews were administrated in English only. The AAPOR Response Rate 3 for the survey was 15%.

**Data Collection Methodology of the 2013 Survey.** The 2013 survey in Table 10.1 is a random digit dial telephone survey of a national probability sample of U.S. adults aged 18 and older, which was conducted by Abt SRBI between November 20 and December 5, 2013. 521 respondents were interviewed on a landline telephone, and 280 were interviewed on a cell phone. Interviews were administrated in English only. The AAPOR Response Rate 3 was 13%.

**Data Collection Methodology of the 2015 Survey.** The 2015 survey in Table 10.1 is a random digit dial telephone survey of a national probability sample of U.S. adults aged 18 and older, which was conducted by SSRS between January 7 and January 22, 2015. 483 respondents were interviewed on a landline telephone, and 523 were interviewed on a cell phone. Interviews were administrated in English and Spanish. The AAPOR Response Rate 3 was 12%.

**TABLE 10.A1** Global Warming Measures in Table 10.1

<i>Measure</i>	<i>Survey Question</i>	<i>Coding of the Measure</i>
Existence of global warming	You may have heard about the idea that the world's temperature may have been going up slowly over the past 100 years. What is your personal opinion on this—do you think this has probably been happening, or do you think it probably has not been happening?	1 if "Probably has been happening"; 0 if "Probably has not been happening", or Don't Know or Refused
Human causal influence on warming	[Added "Assuming it's happening" among those who were coded 0 in "The planet has probably been warming";] Do you think a rise in the world's temperature (is being/would be) caused mostly by things people do, mostly by natural causes, or about equally by things people do and by natural causes?	1 if "Things people do" or "Both equally"; 0 if "Natural causes", or Don't Know or Refused
If nothing is done to stop it, global warming will be at least a moderately serious problem for the nation	2009–2015: If nothing is done to reduce global warming in the future, how serious of a problem do you think it will be for THE UNITED STATES—very serious, somewhat serious, not so serious or not serious at all?	1 if "Very serious" or "Somewhat serious"; 0 if "Not so serious", or "Not serious at all", or Don't Know or Refused

<i>Measure</i>	<i>Survey Question</i>	<i>Coding of the Measure</i>
The federal government should do more than it is doing now to address global warming	<p>2008: Do you think the federal government should do more than it's doing now to try to deal with global warming, should do less than it's doing now, or is it doing about the right amount?</p> <p>2009 and 2010: A) How much do you think the U.S. government should do about global warming? A great deal, quite a bit, some, a little, or nothing?</p> <p>B) How much do you think the U.S. government is doing now to deal with global warming? A great deal, quite a bit, some, a little, or nothing?</p>	<p>1 if "Should do more" in 2008; 1 if the response in A) is greater than the response in B) in 2009 and 2010. 0 if "Should do less", or "Doing about the right amount", or Don't Know or Refused in 2008; 0 if the response in A) is equal to or less than the response in B) in 2009 and 2010, or "Don't Know" or Refuse in either 2009 and/or 2010.</p>
Members of global warming issue public	How important is the issue of global warming to you personally—extremely important, very important, somewhat important, not too important, or not at all important?	<p>1 if "Extremely important"; 0 if "Very important", or "Somewhat important", or "Not too important", or "Not at all important", or Don't Know or Refused</p>
Party identification	Do you consider yourself a Democrat, a Republican, an Independent, or none of these?	<p>Respondents who said "Democrat" were coded as Democrats; respondents who said "Republicans" were coded as Republicans; respondents who said "Independent", "None of these", or Don't Know, or declined to answer were coded as "Independents".</p>

## Appendix B

### Methodology of Study 2

#### Dependent Variable Measure: Turnout and Candidate Choice

**Turnout and Candidate Choice.** In the November 2008 wave of the FFRISP, all respondents were asked: “In the election held on November 4, Barack Obama ran on the Democratic ticket and John McCain ran on the Republican ticket. During the months leading up to the election for President, did you ever plan to vote in that election, or didn’t you plan to do that?” and then asked: “Which one of the following best describes what you did in this election? Definitely did not vote; definitely voted in person at a polling place on Election Day; definitely voted in person at a polling place before Election Day; definitely voted by mailing a ballot to elections officials before election day; definitely voted in some other way; not completely sure whether you voted or not.”

Respondents who said “definitely did not vote” and respondents who said “not completely sure whether you voted or not” and answered “probably did not vote” to the follow-up with the question “If you had to guess, would you say that you probably did vote in the election, or probably did not vote in the election?” were coded as not voting.

Respondents who said any of the “definitely voted” options and respondents who said “not completely sure whether you voted or not” and said “probably voted” to the follow-up with the question “If you had to guess, would you say that you probably did vote in the election, or probably did not vote in the election?” were coded as voters. These respondents were asked in which state they voted, and then asked of their candidate choice through the following question “For whom did you vote for President and Vice President of the United States?” A complete list of candidates that was specific to the state in which they voted was displayed, including “BARACK OBAMA for President and JOE BIDEN for Vice President, Democrat,” “JOHN MCCAIN for President and SARAH PALIN for Vice President, Republican,” and other candidates who were listed on the ballot (e.g. “CHUCK BALDWIN for President and DARRELL L. CASTLE for Vice President, Independent”). Respondents who chose “BARACK OBAMA for President and JOE BIDEN for Vice President, Democrat” were coded as “voting for Obama,” Respondents who chose “JOHN MCCAIN for President and SARAH PALIN for Vice President, Republican” were coded as “voting for McCain,” and the respondents who chose others were coded as “voting for a nonmajor party candidate.”

### ***Issue Proximity***

#### *Self and Candidate Placements on Global Warming*

In the November 2008 wave of the FFRISP, respondents were asked two global warming policy questions. First, they were asked: "Next, we'd like to ask whether Barack Obama favors, opposes, or neither favors nor opposes a series of ways that the federal government might try to reduce future global warming. Power plants put gases into the air that could cause global warming. Does Barack Obama favor, oppose, or neither favor nor oppose the federal government lowering the amount of these gases that power plants are allowed to put into the air?" Respondents who answered with "Favor" or "Oppose" were asked of a follow-up question "Does Barack Obama favor that a great deal, moderately, or a little?" or "Does Barack Obama oppose that a great deal, moderately, or a little?" (Favor a great deal = 3, Favor moderately = 2, Favor a little = 1, Neither favor nor oppose = 0, Oppose a little = -1, Oppose moderately = -2, Oppose a great deal = -3). Similar questions were asked about Mr. McCain.

A randomly selected half of the respondents were asked in October 2008 and the other were asked in February 2009 the identically worded questions (except that the questions were asked of their own placement): "Next, we'd like to ask whether you favor, oppose, or neither favor nor oppose a series of ways that the federal government might try to reduce future global warming. Power plants put gases into the air that could cause global warming. Do you favor, oppose, or neither favor nor oppose the federal government lowering the amount of these gases that power plants are allowed to put into the air?" The follow-up intensity questions were identically worded, and the coding of issue placement of global warming of the respondent himself/herself was done in the identical way.

The respondents were then asked, "Do you favor, oppose, or neither favor nor oppose the federal government requiring automakers to build cars that use less gasoline?", and then respondents were asked to report their perceptions of the candidates; positions on this issue as well. Coding was done as for the first question.

### ***Ideological Proximity***

#### *Self and Candidate Placements of Liberal/Conservative Ideology*

In the October 2008 wave of the FFRISP, all respondents were asked "When it comes to politics, would you describe Barack Obama as liberal, conservative, or neither liberal nor conservative?" Respondents who chose "Liberal" or "Conservative" were then asked "Would you call Barack Obama very liberal or somewhat liberal?" or "Would you call Barack Obama very conservative or somewhat conservative?" Respondents who chose "Neither liberal nor

conservative” were then asked “Do you think of Barack Obama as closer to liberals, or conservatives, or neither of these?” (Very liberal = 3, Somewhat liberal = 2, Closer to liberals = 1, Closer to neither liberals nor conservatives = 0, Closer to conservatives = -1, Somewhat conservative = -2, Very conservative = -3). Similar questions were asked about Mr. McCain.

Respondents were asked identically worded questions (except that the questions were asked of their own placement) in October 2008: “When it comes to politics, would you describe yourself as liberal, conservative or neither liberal nor conservative?” The follow-up intensity questions were identically worded, and the coding of political ideology placement of the respondent himself/herself was done in the identical way.

### ***Party Identification and Other Political Variables***

#### *Party Identification*

In the October 2008 wave of FFRISP survey, respondents were asked: “Do you consider yourself a Democrat, Republican, an Independent, or what?” A Democrat dummy variable was coded 1 for Democrats and 0 for all others. A Republican dummy variable was coded 1 for Republicans and 0 for all others.

#### *Attitudes Toward Big Government*

In the November 2008 wave of the FFRISP, respondents were asked three questions on size of government. First, they were asked: “Do you think the government should provide more services than it does now, fewer services than it does now, or about the same number of services as it does now?” Respondents who chose “More” or “Fewer” were then asked “Do you think that the government should provide a lot more services, somewhat more services, or slightly more services than it does now?” or “Do you think that the government should provide a lot fewer services, somewhat fewer services, or slightly fewer services than it does now?” (Coding: A lot fewer services = 0.00, Somewhat fewer services = .17, Slightly fewer services = .33, About the same = .50, Slightly more services = .67, Somewhat more services = .76 A lot more services = 1.00)

Second, respondents were asked: “Do you think the U.S. federal government should have more effect on Americans’ lives than it does now, less effect, or about the same amount of effect that it has now on Americans’ lives?” Respondents who chose “More effect” or “Less effect” were then asked “A lot more, a moderate amount more, or a little more?” or “A lot less, a moderate amount less, or a little less?” (Coding: A lot less = 0.00, A moderate amount less = .17, A little less = .33, About the same = .50, A little more = .67, A moderate amount more = .76 A lot more = 1.00)

Third, respondents were asked: “Do you think the U.S. federal government should do more to influence how businesses operate in this country, should the federal government do less to influence businesses, or should the government do about what it’s doing now to influence businesses?” Respondents who chose “More” or “Less” were then asked “A lot more, a moderate amount more, or a little more?” or “A lot less, a moderate amount less, or a little less?” (Coding: A lot less = 0.00, A moderate amount less = .17, A little less = .33, About what it’s doing now = .50, A little more = .67, A moderate amount more = .76 A lot more = 1.00)

An index was computed by average the above three measures, ranging from 0 (favoring smaller government) to 1 (favoring big government).

### *Bush Job Approval*

In the November 2008 wave of the FFRISP, respondents were asked: “Overall, do you approve, disapprove, or neither approve nor disapprove about the way George W. Bush is handling his job as President?” Respondents who chose “Approve” or “Disapprove” were then asked “Do you approve extremely strongly, moderately strongly, or slightly strongly?” or “Do you disapprove extremely strongly, moderately strongly, or slightly strongly?” (Coding: Strongly disapprove = 0.00, Somewhat disapprove = .17, Slightly disapprove = .33, neither approve nor disapprove = .50, Slightly approve = .67, Somewhat approve = .76 Strongly approve = 1.00)

### *Perception of the Economy*

In the October 2008 wave of FFRISP survey, respondents were asked: “Now thinking about the economy in the country as a whole, would you say that as compared to one year ago, the nation’s economy is now better, about the same, or worse?” and then followed up with “Much better or somewhat better?” among respondents who choose “Better” and “Much worse or somewhat worse” among respondents who choose “Worse.” (Coding: Much worse = 0.00, Somewhat worse = .25, About the same = .50, Somewhat better = .75, Much better = 1.00)

### *Interest in Politics*

In the November 2008 wave of the FFRISP, respondents were asked: “How interested are you in information about what’s going on in government and politics?” (Coding: Not interested at all = 0, Slightly interested = .25, Moderately interested = .50, Very interested = .75, Extremely interested = 1.00)

### *Personal Importance*

In the April 2009 wave of the FFRISP, respondents were asked: “How important is the issue of global warming to you personally—not at all important, not too important, somewhat important, very important, or extremely important?” A dummy variable was coded 1 for respondents who said “Very important” or “Extremely important” and 0 for all other respondents.

A randomly selected half of the FFRISP respondents were asked the following question in October 2008, and the other half were asked in February 2009: “You may have heard about the idea that the world’s temperature may have been going up slowly over the past 100 years. What is your personal opinion on this? Do you think this has probably been happening, or do you think it probably hasn’t been happening?” Respondents who choose “Has probably been happening” were asked “Do you think a rise in the world’s temperatures is being caused mostly by things people do, mostly by natural causes, or about equally by things people do and by natural causes?” A dummy variable was coded 1 for respondents who said “Things people do” or “About equally by things people do and by natural causes” and 0 for all others.

### *Demographics*

Respondents in the FFRISP were asked the following demographic questions in September 2008.

**Female.** Respondents were asked: “Please enter whether you are male or female.” A Female dummy variable was coded 1 for females and 0 for males.

**Age.** Respondents were asked: “Please enter your age.” Age was measured in years.

**Hispanic Ethnicity.** Respondents were asked: “Are you of Spanish, Hispanic, or Latino descent?” A Hispanic dummy variable was coded 1 for those reporting Hispanic ethnicity and 0 for others.

**Race.** Respondents were asked to “check one or more categories” from a list in order to indicate what race(s) they considered themselves to be. A Black dummy variable was coded 1 for respondents who selected “Black or African-American” and 0 for all others.

**Education.** Respondents were asked: “What is the highest degree or level of school that you have completed?” (Coding: No schooling completed = 0, Nursery school to 4th grade = .07, 5th or 6th grade = .14, 7th or 8th grade = .23, 9th grade = .30, 11th grade = .38, 12th grade no diploma = .46, High school graduate = .54, High school diploma or the equivalent (GED) = .62, Some college, no degree = .69, Associate degree = .77, Bachelor’s degree = .85, Master’s degree = .92, Professional or Doctorate degree = 1)

**Income.** Respondents were asked “The next question is about the total income of your household for the past 12 months. Please include your income plus the income of all members living in your household (including cohabiting partners and armed forces members living at home). Please count income before taxes, including income from all sources (such as wages, salaries, tips, net income from a business, interest, dividends, child support, alimony, and Social Security, public assistance, pensions, or retirement benefits). Was your total household income in the past 12 months?” (Coding: Less than \$20,000 = 0, \$20,000 to \$34,999 = .2, \$35,000 to \$49,999 = .40, \$50,000 to \$74,999 = .6, \$75,000 to \$99,999 = .8, \$100,000 or more = 1)

**Region.** Three dummy variables identified respondents in the Midwest, South, and West Census regions. Respondents living in the Northeast region constituted the omitted category.

## Appendix C

### Methodology of Study 3

#### Content Analysis: Instructions to Coders

You will answer 12 questions listed below for each candidate. Please answer each question based on the text in the spreadsheet for the candidate. Type your answer to each question in the column with the question's number at the top. Type "y" to answer a question yes, and type "n" to answer a question no. Type "a" for ambiguous if you are uncertain about whether to answer a question yes or no. You are to follow these general notes during the coding.

- 1 It is important that your coding be accurate, objective, and consistent. Please read and code at the pace that allows you to code accurately.
- 2 Please do NOT discuss the coding task AT ALL with anyone else besides the investigators of the study, especially the other coders. You must make your decisions completely independently—you must not influence or be influenced by others.
- 3 Please do NOT use information that you have learned about the candidates from other sources. Please rely only on what the candidate's website said and nothing else when making coding decisions.

#### 12 Coding Questions

Please copy and paste the quote or quotes that form the basis for your answer "y" or "a" to EACH question about a candidate into the appropriate cell on that candidate's row. 12 Coding Questions are the following.

**Q1.** GW/CC has been happening.

Type "y" if the candidate said something like:

- 1a Global warming or global warming has been happening or will happen.

OR

- 1b There is scientific evidence indicating that GW/CC has been happening or will happen.

and paste all the quotes (in sentences, or parts of sentences) that are the basis for your code "y".

Type "n" if the candidate did not anything like (1a) or (1b).

Type "a" if you are not sure and paste all the quotes that are the basic for your code "a".

**Q2.** GW/CC has not been happening.

Type “y” if the candidate said something like:

- 1c Global warming or global warming has not been happening or will not happen.  
OR
- 1d The candidate is not sure whether global warming or global warming has been happening or will happen.  
OR
- 1e There is no, or little, or insufficient amount of scientific evidence indicating that GW/CC has been happening or will happen.  
OR
- 1f The candidate is not sure whether there is (sufficient) scientific evidence that GW/CC has been happening or will happen.

and paste all the quotes (in sentences, or parts of sentences) that are the basis for your code “y”.

Type “n” if the candidate did not anything like (1c), (1d), (1e), or (1f).

Type “a” if you are not sure and paste all the quotes that are the basic for your code “a”.

**Q3.** GW/CC is man-made.

Type “y” if the candidate said something like

- 2a Human actions, such as burning fossil fuels, are a cause of GW/CC.

and paste all the quotes (in sentences, or parts of sentences) that are the basis for your code “y”.

Type “n” if the candidate did not anything like (2a).

Type “a” if you are not sure and paste all the quotes that are the basic for your code “a”.

**Q4.** GW/CC is not man-made.

Type “y” if the candidate said something like:

- 2d Human actions are not a cause of GW/CC.  
OR

- 2e The candidate is not sure whether human actions cause GW/CC.

and paste all the quotes (in sentences, or parts of sentences) that are the basis for your code “y”.

Type “n” if the candidate did not anything like (2d) or (2e).

Type “a” if you are not sure and paste all the quotes that are the basic for your code “a”.

**Q5.** GW/CC is bad.

Type “y” if the candidate said something like:

- 3a Global warming or global warming will have one or more undesirable consequences.  
OR
- 3b GW/CC is a serious problem.  
OR
- 3c GW/CC is an important issue.

and paste all the quotes (in sentences, or parts of sentences) that are the basis for your code “y”.

Type “n” if the candidate did not anything like (3a), (3b) or (3c).

Type “a” if you are not sure and paste all the quotes that are the basic for your code “a”.

**Q6.** GW/CC is not bad.

Type “y” if the candidate said something like:

- 3d Global warming or global warming will not have undesirable consequences.  
OR
- 3e The candidate is not sure whether GW/CC will have any undesirable consequences.  
OR
- 3f GW/CC is NOT a serious problem.  
OR
- 3g The candidate is not sure whether GW/CC is a (serious) problem.  
OR
- 3h GW/CC is NOT an important issue.  
OR
- 3i The candidate is not sure whether GW/CC is an important issue.

and paste all the quotes (in sentences, or parts of sentences) that are the basis for your code “y”.

Type “n” if the candidate did not anything like (3d), (3e), (3f), (3g), (3h), or (3i).

Type “a” if you are not sure and paste all the quotes that are the basic for your code “a”.

**Q7.** Producing energy using “green” methods is good.

Type “y” if the candidate said something like:

- 4a Passing laws that would encourage producing more energy from “clean” sources, such as wind, solar power, water, or nuclear power plants, would be a good idea.

and paste all the quotes (in sentences, or parts of sentences) that are the basis for your code “y”.

Type “n” if the candidate did not anything like (4a).

Type “a” if you are not sure and paste all the quotes that are the basic for your code “a”.

Q8. Producing energy using “green” methods is not good.

Type “y” if the candidate said something like:

4b Passing laws that would encourage producing more energy from “clean” sources, such as wind, solar power, water, or nuclear power plants, would NOT be a good idea.

OR

4c The candidate is not sure whether Passing laws that would encourage producing more energy from “clean” sources, such as wind, solar power, water, or nuclear power plants, would be a good idea.

and paste all the quotes (in sentences, or parts of sentences) that are the basis for your code “y”.

Type “n” if the candidate did not anything like (4b) or (4c).

Type “a” if you are not sure and paste all the quotes that are the basic for your code “a”.

Q9. Actions about global warming should be taken.

Type “y” if the candidate said something like:

5a Actions should be taken to reduce global warming or the effects of global warming.

OR

5b We should limit the amount of greenhouse gasses (carbon dioxide, CO<sub>2</sub>) in the future.

and paste all the quotes (in sentences, or parts of sentences) that are the basis for your code “y”.

Type “n” if the candidate did not anything like (5a) or (5b).

Type “a” if you are not sure and paste all the quotes that are the basic for your code “a”.

Q10. NO actions about global warming should be taken.

Type “y” if the candidate said something like:

5c No actions should be taken about global warming or global warming.

OR

5d No actions should be taken to limit the amount of greenhouse gasses in the future.

OR

5e The candidate is not sure whether we should take actions about GW/CC.

OR

5f The candidate is not sure whether we should limit carbon emissions.

and paste all the quotes (in sentences, or parts of sentences) that are the basis for your code “y”.

Type “n” if the candidate did not anything like (5c), (5d), (5e), or (5f).

Type “a” if you are not sure and paste all the quotes that are the basic for your code “a”.

**Q11.** The candidate supported cap-and-trade.

Type “y” if the candidate said something like:

6a The candidate supports cap-and-trade.

and paste all the quotes (in sentences, or parts of sentences) that are the basis for your code “y”.

Type “n” if the candidate did not anything like (6a).

Type “a” if you are not sure and paste all the quotes that are the basic for your code “a”.

**Q12.** The candidate opposed cap-and-trade.

Type “y” if the candidate said something like:

6b The candidate opposes cap-and-trade.

OR

6c The candidate is not sure, where cap-and-trade is a good idea.

and paste all the quotes (in sentences, or parts of sentences) that are the basis for your code “y”.

Type “n” if the candidate did not anything like (6b) or (6c).

Type “a” if you are not sure and paste all the quotes that are the basic for your code “a”.

## Appendix D

### Methodology of Study 4—Ipsos

#### *Question Wording, Response Options, and Coding*

##### *Candidate Preferences as the Dependent Variable Measures*

All respondents were asked: “If the 2012 presidential election were being held today and the candidates were Barack Obama, the Democrat, and [INSERT CANDIDATE BELOW AND ROTATE LIST: Mitt Romney, Jon Huntsman, Michelle Bachmann, Ron Paul, Rick Perry], the Republican, for whom would you vote?”

**Frequency of voting for Barack Obama.** The first dependent measure was the frequency of voting for Barack Obama, which is the number of times the respondent stated that he/she would vote for Barack Obama in the above five questions, in each of which, an indicator was constructed such that voting for Mr. Obama was coded 1 and 0 for all other answer. The sum of the five indicators was the dependent variable measure, an integer ranging from 0 to 5.

**Candidate choice.** The second dependent measure was an indicator in each of the above five question with a value of 1 indicating the respondent said he/she would vote for the candidate presented in the voting choice occasion and 0 otherwise. Six named candidates (Barack Obama, Mitt Romney, Ron Paul, Rick Perry, Jon Huntsman, and Michele Bachmann) plus a composite fictional “candidate” that indicated the respondent would vote for some other unnamed candidate or gave a “don’t know” answer or refusal to answer the question were measured in a numerical variable ranging from a value of 1 to 7.

##### *Global Warming Belief and Belief Proximity as the Independent Measures*

**Believing in global warming existence/human cause.** All respondents were first asked “You may have heard about the idea that the world’s temperature may have been going up slowly over the past 100 years. What is your personal opinion on this? Do you think this has probably been happening, or do you think it probably has not been happening?” Respondents who choose “Probably has been happening” were then asked “Do you think a rise in the world’s temperatures is being caused mostly by things people do, mostly by natural causes, or about equally by things people do and by natural causes?” Respondents who choose “Probably has not been happening” or did not give an answer were asked “Assuming it’s happening, do you think a rise in the world’s temperatures is being caused mostly by things people do, mostly by natural

causes, or about equally by things people do and by natural causes?" A dummy variable of Believing in Global Warming Existence/Human Cause was set to 1 for the respondents who choose "Probably has been happening" to the first question and choose "Things people do" or "About equally by things people do and by natural causes" to the second question and 0 for the rest.

### *Certainty of Global Warming Belief as Moderator Measure*

**Certainty of global warming belief.** Respondents who answered with "Probably has been happening" to the existence of global warming were asked "How sure are you that the world's temperature has been going up—extremely sure, very sure, somewhat sure, or not sure at all?" Respondents who answered with "Probably has not been happening" to the existence of global warming were asked "How sure are you that the world's temperature has not been going up—extremely sure, very sure, somewhat sure, or not sure at all?" High certainty dummy variable was coded to 1 if the respondents choose "Extremely sure" and 0 otherwise.

### *Party Identification and Other Political Variables Measures*

#### *Party identification*

All respondents were asked: "Do you consider yourself a Democrat, Republican, an Independent, or none of these?" A Democrat dummy variable was coded 1 for Democrats and 0 for all others. A Republican dummy variable was coded 1 for Republicans and 0 for all others.

#### *Approval of President Obama*

All respondents were asked: "Overall, do you approve, disapprove, or have mixed feelings about the way Barack Obama is handling his job as President?" Respondents who chose "Approve" or "Disapprove" were then asked "Do you approve (disapprove) extremely strongly, moderately strongly, or slightly strongly?" (Coding: Strongly disapprove = 0.00, Somewhat disapprove = .17, Slightly disapprove = .33, neither approve nor disapprove = .50, Slightly approve = .67, Somewhat approve = .7583 Strongly approve = 1.00)

#### *Country in the right direction*

All respondents were asked: "Generally speaking, would you say things in this country are heading in the right direction, or are they off on the wrong track?"

A dummy variable Country in the right direction was coded 1 if the respondent choose “Right direction” and 0 otherwise.

### *Demographic Variables*

**Male.** Interviewers recorded the gender of the respondent. A Male dummy variable was coded 1 for male respondents and 0 for female respondents.

**Age.** Respondents were asked: “In what year were you born?” Respondents who gave a valid range of answer between 1900 and 1993 to the birth year question were then asked “Have you already had a birthday this year?” Respondents who refused to answer the birth year question were asked “Are you ...” and asked to choose a 10-year age range such as “Under 25,” “25–34,” “35–44,” “45–54,” “55–64,” “65–74,” and “75 or older.” Dummy variables were created for each of these age groups. Age group Under 25 was the omitted base category.

**Hispanic Ethnicity.** Respondents were asked: “Are you of Hispanic ethnicity?” A Hispanic dummy variable was coded 1 for those reporting Hispanic ethnicity and 0 for others.

**Race.** Respondents were asked “Are you White, Black, or Asian?” A White dummy variable was coded for 1 for individuals who answered with “White” and 0 for others.

**Education.** Respondents were asked: “What is the last year of school you completed? Grade school or some high school, Completed high school, Some college but did not finish, Completed a two year college degree, Completed a four year college degree, Completed a post-graduate degree such as Master’s or PhD?” A Less Than High School dummy variable was coded 1 if the respondent chose “Grade school or some high school” and 0 otherwise. A High School Graduate dummy variable was coded 1 if the respondent chose “Completed high school” and 0 otherwise. A Some College dummy variable was coded 1 if the respondent chose “Some college but did not finish” or “Completed a two year college degree” and 0 otherwise. A College Degree dummy variable was coded 1 if the respondent chose “Completed a four year college degree” or “Completed a post-graduate degree such as Master’s or PhD” and 0 otherwise. Less Than High School was the omitted base category.

**Income.** All respondents were asked “Now, I am going to read a list of income ranges. When I get to the income range that best describes your household income from all sources in 2010, please stop me. Was your household income for 2010...?” A series of dummy variables were constructed for income under \$15K, \$15K–\$25K, \$25K–\$40K, \$40K–\$50K, \$50K–\$75K, \$75K–\$100K, and \$100K or higher. A dummy variable Income-DKRF was coded 1 if the respondent did not give an answer and 0 otherwise. Income Under \$15K was the omitted base category.

**Region.** Was coded using a set of dummy variables representing three different census regions in the United States: Midwest, South, and West. Respondents living in the Northeast region constituted the omitted, base category.

### ***Content Analysis: Instructions to Coders***

#### *Coding Questions*

You will answer 12 questions listed below for each candidate. Type your answer to each question in the column with the question's number at the top. For Q1–Q12, type “y” to answer a question yes, and type “n” to answer a question no. You are to follow:

- 1 It is important that your coding be accurate, objective, and consistent. Please read and code at the pace that allows you to code accurately.
- 2 Please do NOT discuss the coding task with anyone else besides the investigators of the study. You must make your decisions completely independently—you must not influence or be influenced by others.
- 3 Please do NOT use information that you have learned about the candidates from other sources. Please rely only on what you read about the candidate on this task and nothing else when making your coding decisions.

#### *Important coding notes*

- 1 You copy and paste the quote(s) and the webpage(s) address that contains(s) the quote(s) that form the basis for your answer “y” to EACH question about a candidate into the appropriate cell on that candidate's row. E.g. your quote(s)/webpage(s) for Q1 should be entered in the column named “Q1—quotes/websites.”
- 2 You use ANYONE's statements/quotes about the candidate, including the candidate himself/herself, to make the coding questions. That “ANYONE” includes the writers of the articles, an unnamed but identifiable identity (person(s) or organizations), such as:
  - “the public” or
  - “well-educated young Americans” or
  - “campaign advisers to or spokesmen of the candidate,” or
  - “League of Conservation Voters.”

A quote such as Obama says climate change is a threat to the world would allow you to code “yes” to “Q5 GW/CC is bad,” but it does not allow you to code “Q6 GW/CC is not bad,” because saying “GW/CC is bad” does not indicate saying “GW/CC is not bad.”

In all coding questions, a coding decision of “yes” require you to find (at least) one quote to support your decision, however, a coding decision of “no,” however, requires you to read all the articles you are asked to read for the candidate and find none evidence.

### 12 Coding Questions

**Q1.** GW/CC has been happening.

Type “y” if the candidate said or someone/organization said the candidate believed in something like:

- 1a Global warming or climate change has been happening or will happen.  
OR
- 1b There is scientific evidence indicating that GW/CC has been happening or will happen.

and paste the quotes (in sentences, or parts of sentences), in column “Q1x quotes/websites,” that are the basis for your code “y”.

Type “n” if nobody said anything like (1a) or (1b) about the candidate’s beliefs and attitudes.

**Q2.** GW/CC has not been happening.

Type “y” if the candidate said or someone/organization said the candidate believed in something like:

- 1c Global warming or climate change has not been happening or will not happen.  
OR
- 1d The candidate is not sure whether global warming or climate change has been happening or will happen.  
OR

- 1e There is no, or little, or insufficient amount of scientific evidence indicating that GW/CC has been happening or will happen.  
OR

- 1f The candidate is not sure whether there is (sufficient) scientific evidence that GW/CC has been happening or will happen.

and paste the quotes, in column “Q2x quotes/websites,” that are the basis for your code “y”.

Type “n” if nobody said anything like (1c), (1d), (1e), or (1f) about the candidate’s beliefs and attitudes.

**Q3.** GW/CC is man-made.

Type “y” if the candidate said or someone/organization said the candidate believed in something like:

- 2a Human actions, such as burning fossil fuels, are a cause of GW/CC.

and paste the quotes, in column “Q3x quotes/websites,” that are the basis for your code “y”.

Type “n” if nobody said anything like (2a) about the candidate’s beliefs and attitudes.

**Q4.** GW/CC is not man-made.

Type “y” if the candidate said or someone/organization said the candidate believed in something like:

2d Human actions are not a cause of GW/CC.

OR

2e The candidate is not sure whether human actions cause GW/CC.

and paste the quotes, in column “Q4x quotes/websites,” that are the basis for your code “y”.

Type “n” if nobody said anything like (2d) or (2e) about the candidate’s beliefs and attitudes.

**Q5.** GW/CC is bad.

Type “y” if the candidate said or someone/organization said the candidate believed in something like:

3a Global warming or climate change will have one or more undesirable consequences.

OR

3b GW/CC is a serious problem.

OR

3c GW/CC is an important issue.

and paste the quotes, in column “Q5x quotes/websites,” that are the basis for your code “y”.

Type “n” if nobody said anything like (3a), (3b) or (3c) about the candidate’s beliefs and attitudes.

**Q6.** GW/CC is not bad.

Type “y” if the candidate said or someone/organization said the candidate believed in something like:

3d Global warming or climate change will not have undesirable consequences.

OR

3e The candidate is not sure whether GW/CC will have any undesirable consequences.

OR

3f GW/CC is NOT a serious problem.

OR

3g The candidate is not sure whether GW/CC is a (serious) problem.

OR

3h GW/CC is NOT an important issue

OR

3i The candidate is not sure whether GW/CC is an important issue.

and paste the quotes, in column “Q6x quotes/websites,” that are the basis for your code “y”.

Type “n” if the candidate did not anything like (3d), (3e), (3f), (3g), (3h), or (3i).

**Q7.** Producing energy using “green” methods is good.

Type “y” if the candidate said or someone/organization said the candidate believed in something like:

4a Passing laws that would encourage producing more energy from “clean” sources, such as wind, solar power, water, or nuclear power plants, would be a good idea.

and paste the quotes, in column “Q7x quotes/websites,” that are the basis for your code “y”.

Type “n” if nobody said anything like (4a) about the candidate’s beliefs and attitudes.

**Q8.** Producing energy by “green” methods is not good.

Type “y” if the candidate said or someone/organization said the candidate believed in something like:

4b Passing laws that would encourage producing more energy from “clean” sources, such as wind, solar power, water, or nuclear power plants, would NOT be a good idea.

OR

4c The candidate is not sure whether Passing laws that would encourage producing more energy from “clean” sources, such as wind, solar power, water, or nuclear power plants, would be a good idea.

and paste the quotes, in column “Q8x quotes/websites,” that are the basis for your code “y”.

Type “n” if nobody said anything like (4b) or (4c) about the candidate’s beliefs and attitudes.

**Q9.** Actions should be taken to deal with GW/CC.

Type “y” if the candidate said or someone/organization said the candidate believed in something like:

5a Actions should be taken to reduce climate change or the effects of climate change.

OR

- 5b We should limit the amount of greenhouse gasses (carbon dioxide, CO<sub>2</sub>) in the future.

and paste the quotes, in column “Q9x quotes/websites,” that are the basis for your code “y”.

Type “n” if nobody said anything like (5a) or (5b) about the candidate’s beliefs and attitudes.

**Q10.** NO actions should be taken to deal with GW/CC.

Type “y” if the candidate said or someone/organization said the candidate believed in something like:

- 5c No actions should be taken about global warming or climate change.

OR

- 5d No actions should be taken to limit the amount of greenhouse gasses in the future.

OR

- 5e The candidate is not sure whether we should take actions about GW/CC.

OR

- 5f The candidate is not sure whether we should limit carbon emissions.

and paste the quotes, in column “Q10x quotes/websites,” that are the basis for your code “y”.

Type “n” if nobody said anything like (5c), (5d), (5e), or (5f) about the candidate’s beliefs and attitudes.

**Q11.** Support cap-and-trade to reduce emissions contributing to GW/CC.

Type “y” if the candidate said or someone/organization said the candidate believed in something like:

- 6a The candidate supports cap-and-trade.

and paste the quotes, in column “Q11x quotes/websites,” that are the basis for your code “y”.

Type “n” if nobody said anything like (6a) about the candidate’s beliefs and attitudes.

**Q12.** Oppose cap-and-trade to reduce emissions contributing to GW/CC.

Type “y” if the candidate said or someone/organization said the candidate believed in something like:

- 6b The candidate opposes cap-and-trade.

OR

- 6c The candidate is not sure, where cap-and-trade is a good idea.

and paste the quotes, in column “Q12x quotes/websites,” that are the basis for your code “y”.

Type “n” if nobody said anything like (6b) or (6c) about the candidate’s beliefs and attitudes.

## Appendix E

### Methodologies of Studies 6 & 7

#### Study 6: Statements on Issues Other Than Climate Change

This part of the interview began by respondents hearing the following: “I’d like to read you a few things that a person running for U.S. Senate in your State might say. After you listen to each one, I’ll ask you whether you mostly agree with it, mostly disagree with it, or neither agree nor disagree with it. First, what if the candidate said the following ...”

A first issue statement, randomly selected from six non-climate statements (the wording of these six statements is described below), was read to the respondent. Respondents were asked “Overall, do you mostly agree with what I just read, mostly disagree with it, or neither agree nor disagree with it?”

Respondents were then asked “Next, what if the candidate said this ...” A second issue statement, randomly selected from six non-climate statements (the wording of these six statements is described below), was read to the respondent. Respondents were asked “Overall, do you mostly agree with what I just read, mostly disagree with it, or neither agree nor disagree with it?”

Below are the six issues statements, from which two were randomly selected for each respondent.

- 1 “Our nation remains a target for terrorists. Terrorists are unrelenting in their desire to kill Americans. We cannot let down our guard, and we must continue to meet this ongoing threat with strength and resilience. During the past eight years, significant resources have been devoted to the prevention of a terrorist attack using a biological, chemical, or nuclear weapon. But the improvised explosive device remains the weapon of choice for terrorists. And terrorists can also choose to use firearms. For many Americans, including many families in our state, the right to own guns is part of their heritage and way of life. This right is protected by the Second Amendment. And so our government confronts a difficult issue today: how do we protect the constitutional right of Americans to bear arms, while preventing terrorists from using guns to carry out their murderous plans? None of us wants a terrorist to be able to purchase a gun. But neither should we want to infringe upon a constitutional right of law-abiding Americans.”
- 2 “It makes no sense that the capital and risk standards for our nation’s largest financial institutions are more lenient than those that apply to smaller depository banks, when the failure of larger institutions is much

more likely to have a broad economic impact. Yet that is currently the case. We must give the regulators the tools and the direction to address this problem. I have proposed an amendment that will strengthen the economic foundation of these firms, increase oversight and accountability, and help prevent the excesses that contributed to the deep recession that has cost millions of Americans their jobs. Increasing capital requirements as firms grow provides a disincentive to their becoming “too big to fail” and ensures an adequate capital cushion in difficult economic times.”

- 3 “When we are dealing with foreign-born suspects with known ties to terrorist organizations, and these people are carrying out plans to indiscriminately kill Americans, we need to NOT treat them like they’re common criminals. Treating these people like common criminals is dangerous, and it limits the intelligence information that we can gather from suspects. The suspected Christmas Day bomber could have provided valuable information about potential terror plots. Instead, he was charged in the civilian court system where he got a lawyer and stopped talking. When someone is given Miranda rights and access to a lawyer, gathering valuable information about possible terrorist plots is greatly diminished.”
- 4 “I believe that all Americans deserve quality, affordable health care, and that we must address the issues of rising health care costs and accessibility. Unfortunately, the recently enacted Federal health care legislation does not accomplish these goals and instead raises taxes on individuals and businesses, increases government spending, and will result in higher costs for consumers. I believe we must focus on fixing and replacing this law with common-sense health care reforms that drive down costs, make it easier for people to purchase affordable insurance, and strengthen the existing private market system.”
- 5 “I believe that terrorism is not a political issue; it is a national security issue. To win the war against terrorism, we must be able to quickly adapt to ever-changing terrorist tactics. Congress and the Administration must work together in a bipartisan fashion to continue support for all elements of national security, to increase information sharing and collective security efforts around the globe, and to expand vital law enforcement partnerships. Our Constitution and laws exist to protect this nation — they do not grant rights and privileges to enemies in wartime. In dealing with terrorists, our tax dollars should pay for weapons to stop them, not lawyers to defend them.”
- 6 “I am an unwavering proponent of the Second Amendment to the United States Constitution and the right it confers on the people to keep and bear arms. As such, any attempts to deny this right violate both the letter and spirit of our Constitution. Enforcement, not new gun control laws, is the answer. To address concerns of gun crimes and criminal possession of firearms, the answer is not to create laws that deny law abiding citizens the ability to defend themselves. Criminals will not be deterred by any such laws. Rather, the answer is proper and robust enforcement of appropriate

gun laws now on the books. Furthermore, the proper way to combat crimes in our communities is to ensure that those who commit them are properly arrested, convicted and incarcerated for their crimes.”

### ***Study 7: Statements on Issues Other Than Climate Change***

#### *Florida*

The follow questions were asked of all respondents in Florida when the issue statements unrelated to global warming were read to them. First issue statement was:

“When we are dealing with foreign-born suspects with known ties to terrorist organizations, and these people are carrying out plans to indiscriminately kill Americans, we need to NOT treat them like they’re common criminals. Treating these people like common criminals is dangerous, and it limits the intelligence information that we can gather from suspects. The suspected Christmas Day bomber could have provided valuable information about potential terror plots. Instead, he was charged in the civilian court system where he got a lawyer and stopped talking. When someone is given Miranda rights and access to a lawyer, gathering valuable information about possible terrorist plots is greatly diminished.”

And the second issue statement was:

“Lifting the Cuba travel ban represents a blatant disregard of the human rights violations that the Castro regime commits against the Cuban people. This attempt to appease the Cuban dictatorship is wholly inconsistent with the United States’ role as a beacon of freedom in this hemisphere, and around the world. This effort puts narrow corporate interests ahead of the need to protect the Cuban people from the Castro regime’s brutal oppression. Canadian and European tourists have long made their way to Cuba, despite the fact that the Cuban regime has grown more repressive and living conditions for a majority of Cubans have declined to unprecedented low levels. The money they spend there is handed over to the Castro regime’s desperate totalitarian machine. Americans cannot allow themselves to be caught in the same trap of funding brutality.”

#### *Massachusetts*

The follow questions were asked of all respondents in Massachusetts when the issue statements unrelated to global warming were read to them. The first issue statement was:

“I believe that all Americans deserve quality, affordable health care, and that we must address the issues of rising health care costs and accessibility. Unfortunately, the recently enacted Federal health care legislation does not accomplish these goals and instead raises taxes on individuals and businesses, increases government spending, and will result in higher costs for consumers. I believe we must focus on fixing and replacing this law with common-sense health care reforms that drive down costs, make it easier for people to purchase affordable insurance, and strengthen the existing private market system.”

The second issue statement was:

“I believe that terrorism is not a political issue; it is a national security issue. To win the war against terrorism, we must be able to quickly adapt to ever-changing terrorist tactics. Congress and the Administration must work together in a bipartisan fashion to continue support for all elements of national security, to increase information sharing and collective security efforts around the globe, and to expand vital law enforcement partnerships. Our Constitution and laws exist to protect this nation—they do not grant rights and privileges to enemies in wartime. In dealing with terrorists, our tax dollars should pay for weapons to stop them, not lawyers to defend them.”

### *Maine*

The follow questions were asked of all respondents in Maine when the issue statements unrelated to global warming were read to them. The first issue statement was:

“Our nation remains a target for terrorists. Terrorists are unrelenting in their desire to kill Americans. We cannot let down our guard, and we must continue to meet this ongoing threat with strength and resilience. During the past eight years, significant resources have been devoted to the prevention of a terrorist attack using a biological, chemical, or nuclear weapon. But the improvised explosive device remains the weapon of choice for terrorists. And terrorists can also choose to use firearms. For many Americans, including many Maine families, the right to own guns is part of their heritage and way of life. This right is protected by the Second Amendment. And so our government confronts a difficult issue today: how do we protect the constitutional right of Americans to bear arms, while preventing terrorists from using guns to carry out their murderous plans? None of us wants a terrorist to be able to purchase a gun. But neither should we want to infringe upon a constitutional right of law-abiding Americans.”

The second issue statement was:

“It makes no sense that the capital and risk standards for our nation’s largest financial institutions are more lenient than those that apply to smaller depository banks, when the failure of larger institutions is much more likely to have a broad economic impact. Yet that is currently the case. We must give the regulators the tools and the direction to address this problem. I have proposed an amendment that will strengthen the economic foundation of these firms, increase oversight and accountability, and help prevent the excesses that contributed to the deep recession that has cost millions of Americans their jobs. Increasing capital requirements as firms grow provides a disincentive to their becoming ‘too big to fail’ and ensures an adequate capital cushion in difficult economic times.”

**Studies 6 and 7: Question Wordings**

After hearing all statements, respondents were asked, “Now based on all these things that you have heard the candidate say, how likely do you think you would be to vote for this candidate in an election for U.S. Senate? Do you think you definitely would vote for this candidate, probably would vote for this candidate, probably would not vote for this candidate, or definitely would not vote for this candidate?”

**TABLE 10.E1** Measures of Beliefs and Attitudes about Global Warming and Personal Importance

<i>Measure</i>	<i>Survey Question</i>	<i>Coding of the Measure</i>
Existence of global warming	You may have heard about the idea that the world’s temperature may have been going up slowly over the past 100 years. What is your personal opinion on this—do you think this has probably been happening, or do you think it probably has not been happening?	1 if “Probably has been happening”; 0 if “Probably has not been happening”, or Don’t Know or Refused
Human causal influence on warming	[Added “Assuming it’s happening” among those who were coded 0 in “The planet has probably been warming”,] Do you think a rise in the world’s temperature (is being/would be) caused mostly by things people do, mostly by natural causes, or about equally by things people do and by natural causes?	1 if “Things people do” or “Both equally”; 0 if “Natural causes”, or Don’t Know or Refused

continued...

Table 10.E2 continued...

<i>Measure</i>	<i>Survey Question</i>	<i>Coding of the Measure</i>
Personal importance of global warming	How important is the issue of global warming to you personally – extremely important, very important, somewhat important, not too important, or not at all important?	1 if “Extremely important” or “Very important”; 0 if “Somewhat important”, or “Not too important”, or “Not at all important”, or Don’t Know or Refused
Party identification	Do you consider yourself a Democrat, a Republican, an Independent, or none of these?	Respondents who said “Democrat” were coded as Democrats; respondents who said “Republicans” were coded as Republicans; respondents who said “Independent”, “None of these”, or Don’t Know, or declined to answer were coded as “Independents”.

## Appendix F

### Methodology of Study 8

#### *Question Wording and Coding*

##### *Party Identification and Demographic Variables*

**Party identification.** Participants were asked: “Do you consider yourself a Democrat, Republican, an Independent, or none of these?” A Democrat dummy variable was coded 1 for Democrats and 0 for all others. A Republican dummy variable was coded 1 for Republicans and 0 for all others. An Independent dummy variable was coded 1 for participants who chose “Independent” or “None of these” and 0 for all others. A dummy variable was constructed for participants who refused to answer the education question. The Independent dummy variable was the omitted base category in the regression.

**Ideology.** Participants were asked: “Generally speaking, do you consider yourself liberal, moderate, or conservative?” A Liberal dummy variable was coded 1 for participants who chose “Liberal” and 0 for all others. A Conservative dummy variable was coded 1 for participants who chose “Conservative” and 0 for all others. A Moderate dummy variable was coded 1 for participants who chose “Moderate” and 0 for all others. A dummy variable was constructed for participants who refused to answer the education question. The Moderate dummy variable was the omitted base category in the regression.

**Female.** Participants were asked: “Please enter whether you are male or female.” A Female dummy variable was coded 1 for females and 0 for males.

**Age.** Participants were asked: “Please enter your age.” Age was measured in years. Dummy variables were constructed for age 18 to 24, age 25 to 34, age 35 to 44, age 45 to 54, age 55 to 64, and age 65 or older. Age 65 or older dummy variable was the omitted base category in the recession.

**Race and Hispanic ethnicity.** Participants were asked: “Are you of Spanish, Hispanic, or Latino descent?” A Hispanic dummy variable was coded 1 for those reporting Hispanic ethnicity and 0 for others. Participants were asked to “check one or more categories” from a list and were told to select what race(s) they considered themselves to be. A Non-Hispanic White dummy variable was coded for 1 if participants were not Hispanic and selected “White” and 0 otherwise. A Non-Hispanic Black dummy variable was coded for 1 for participants were not Hispanic and selected “Black or African–American” and 0 for others. A Non-Hispanic Other Race dummy variable was coded for 1 for participants were not Hispanic and selected a category other than “White” and “Black or African–American” and 0 otherwise. Non-Hispanic White dummy variable was the omitted base category in the regression.

**Education.** Participants were asked: “What is the highest grade of school that you completed?” and presented with the following response choices: Less than high school graduate, High school graduate, Technical/trade school, Some college, College graduate, Some graduate school, and Graduate degree. A dummy variable of “Less than high school or high school graduate” was constructed (1 for participants who chose “Less than high school,” “High school graduate,” or “Technical/trade school” and 0 otherwise). A dummy variable of “Some college” was constructed (1 for participants who chose “Some college” and 0 otherwise). A dummy variable of “College graduate” was constructed (1 for participants who chose “College graduate,” “Some graduate school,” or “Graduate degree,” and 0 otherwise). A dummy variable was constructed for participants who refused to answer the education question. Less than high school or high school graduate dummy variable was the omitted base category in the regression.

**Income.** Participants were asked “Was your total income of you and all members of your family who lived with you in 2012, before taxes, less than \$50,000, or \$50,000 or more?” Participants who answered with “Less than \$50,000” were asked to choose one of the following categories: Less than \$10,000, \$10,000 to \$19,999, \$20,000 to \$29,999, \$30,000 to \$39,000, and \$40,000 to \$49,999. Participants who answer with “\$50,000 or more” were asked to choose one of the following categories: \$50,000 to \$74,999, \$75,000 to \$99,999, \$100,000 to \$149,999, and \$150,000 or more. A dummy variable was constructed for each of these income categories: less than \$30,000, \$30,000 to \$49,000, \$50,000 to \$74,999, \$75,000 to \$100,000, and \$100,000 or more. The lowest category, “Less than \$30,000” was the omitted base category in the regression.

**Region.** Was coded using a set of dummy variables representing three different census regions in the United States: Midwest, South, and West. Participants living in the West region constituted the omitted base category in the regression.

## Notes

- 1 This research was supported by National Science Foundation Grant 1042938 and by the Woods Institute for the Environment at Stanford University, California. Authors thank Ana Villar for her contribution to Study 7. Jon Krosnick is University Fellow at Resources for the Future. Address correspondence about this study to Jon A. Krosnick, McClatchy Hall, Stanford University, Stanford, CA 94305 (email: krosnick@stanford.edu).
- 2 We did not include an interaction to explore the case when the Democrat was not-green and the Republican was green, because no such instances occurred in 2010 (see row 1 column 1 in Table 10.7).