

A rose by any other name ...?: What members of the general public prefer to call “climate change”

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Abstract Unlike many other environmental problems, the terms used to describe the phenomenon of increasing atmospheric concentrations of anthropogenic greenhouse gases are many, with multiple and sometimes conflicting meanings. Whether there are meaningful distinctions in public perceptions of “global warming,” “climate change,” and “global climate change” has been a topic of research over the past decade. This study examines public preferences for these terms based on respondent characteristics, including climate change beliefs, political affiliation, and audience segment status derived from the “Global Warming’s Six Americas” classification. Certainty of belief in global warming, political affiliation and audience segment status were found to be the strongest predictors of preference, although “I have no preference” was the modal response. Global warming appears to be a more polarizing term than climate change, preferred most by people already concerned about the issue, and least by people who don’t believe climate change is occurring. Further research is needed to identify which of these two names promotes the engagement of people across the spectrum of climate change beliefs in constructive dialogue about the issue.

Keywords: Global warming, global climate change, climate change, survey

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1 Introduction

For the better part of the past decade, social scientists, marketers and political strategists have recognized that the words commonly used to describe the planetary changes resulting from increasing greenhouse gases – global warming, climate change, and global climate change – each have somewhat different connotations to the public (EcoAmerica 2009; Leiserowitz 2003; Luntz 2002; Villar and Krosnick 2010; Whitmarsh 2009). Moreover, policymakers and scientists provide widely varying definitions for the phrases, with major international scientific and policy documents in disagreement (IPCC 2007a). The definition of climate change varies between the Intergovernmental Panel on Climate Change's (IPCC) scientific assessment reports and the United Nations Framework Convention on Climate Change (UNFCCC) treaty. Adopting a new term that is both scientifically accurate and more vividly expressive, such as global climate disruption, has been widely suggested (Holdren 2007 2010). Yet neither that phrase nor others have taken hold to date.

Whether or not differences in connotations associated with climate change and global warming are meaningful to the public dialogue has been an issue of some contention (Broder 2009; Villar and Krosnick 2010). If significant variation exists, it potentially represents a barrier to effective communication with diverse audiences, and to the validity of measurement in public opinion polls and other social science research that employ these terms to assess beliefs, attitudes, and affective and behavioral responses.

In this study, to identify whether global warming, climate change and global climate change are favored uniformly by the public, or whether there are significant factors that influence preferences, we assessed differences in preferred terminology by political affiliation and other respondent characteristics in a probability-based sample of residents in one U.S. county, and conducted a logistic regression analysis to assess the comparative effects of these predictors.

2 Background

Leading organizations on the science and policy of climate change have used the terms climate change and global warming in different, sometimes conflicting ways. The IPCC, for example, defines climate change as a process that

may be due to either natural or human causes (2007a), but global warming as strictly the result of humanity's changes to Earth's atmosphere (2007b). In contrast, the UNFCCC treaty, states that climate change is "is attributed directly or indirectly to human activity ... and which is in addition to natural climate variability observed over comparable time periods" (2007a).

Within this fluid linguistic environment, climate scientists, social scientists, pollsters, and the media have developed distinctly different vocabularies and definitions. In the public sphere, opinion polls (Nisbet and Myers 2007), media (Boykoff and Boykoff 2004) and even Al Gore's documentary film *An Inconvenient Truth* (2007) have preferentially used the term global warming to describe the phenomenon of human-induced climatic change. At the same time, climate scientists have encouraged the use of climate change as descriptive of the entirety of impacts from increased anthropogenic emissions – including changes to precipitation and sea level rise – and global warming as solely referring to resulting higher temperatures (Conway nd).

Regardless of the denotative meanings of these terms, recipients of communication about climate science – including policy makers and the public – may hold their own connotative interpretations. Political consultant Frank Luntz famously suggested in a 2002 memorandum that Republicans employ the term climate change instead of global warming because it is less frightening and emotional, and not fraught with catastrophic connotations (Luntz 2002), one of his many recommended environmental communication strategies that was widely adopted by members of the party and President George W. Bush's administration (Lee 2003). In 2002 Republicans were less likely than Democrats to believe that the effects of global warming had already begun, but by only 10 percentage points (47% vs. 57%; Dunlap and McCright 2008). By the end of the Bush administration, this difference had grown to 34 percentage points (42% vs. 76%), and continues today (Jones 2010).

A recent study using a split-sample survey design with the three terms – global warming, climate change and global climate change – demonstrated some support for the contention that there are partisan differences in their connotations (Villar and Krosnick 2010). Although the population as a whole, and political Independents, rated the three problems as equally serious, Democrats rated global warming as more serious than climate change, while Republicans rated climate

change as more serious than global warming. These differences, however, were small and only marginally significant.

Another recent study found that Republicans were more likely to say that the world's temperature has been increasing when asked the same survey question phrased using the term climate change instead of global warming (Schuldt et al. 2011).

Differences in connotations of the terms have also been found in other countries. Among a 2003 sample of residents in the south of England, for example, climate change was more likely to be viewed as a natural phenomenon, compared to global warming, which was more likely to be associated with anthropogenic causes (Whitmarsh 2009). Villar and Krosnick (2010) found in an international sample that climate change was more likely than global warming to be cited as the most severe problem facing the world, but found no overall difference in perceived seriousness of the terms.

To shed additional light on potential preferences among members of the U.S. public, we asked a representative sample of residents in one American county to identify their preferred term. We subsequently analyzed these preferences based on various respondent characteristics including belief in global warming and its causation, political affiliation, and audience segment status derived from a previously developed classification called Global Warming's Six Americas (Maibach et al. 2011).

3 Method

In a survey of household energy use and global warming opinion conducted in Alger County, Michigan in the summer of 2010, we asked residents which term they preferred – global warming, climate change, global climate change, other, or no preference. To determine which was most favored by various subgroups of the population, we conducted bivariate and multivariate (hierarchical multinomial logistic regression) analyses using the following hypothesized predictors: belief and certainty of belief in global warming; belief in causation of global warming; political affiliation; and a previously published categorization of the general public based on their global warming beliefs, issue involvement, policy preferences and behaviors termed Global Warming's Six Americas (Maibach et al. 2011).

The mail survey was fielded from June 10 to September 8, 2010 and resulted in completed surveys from 765 adult residents (18 years or older) of Alger County, Michigan. This represents a return rate of 57% calculated on a base number of 1,336 surveys mailed to deliverable county addresses.

Survey Sampling International provided the random sample of 1,598 listings from a frame of 4,613 using address-based sampling. Each survey was addressed to “Alger County Resident” and instructions given for the adult with the most recent birthday to complete the questionnaire.

3.1 Respondents

Geographically, the final sample closely resembles the zip code distribution for the initial mailing base of valid addresses (maximum difference of 3.6 percentage points, with most less than 1.0), which serves as the best indicator of sample representativeness. Due to the small population size of the county, socioeconomic and zip code-level data is primarily available from the 2000 U.S. Census, which is likely to no longer be reliable. According to Census 2000 data, 30.9% of total county housing units were used seasonally, recreationally or only occasionally. That this study was fielded during the summer months likely increased the number of seasonal residents who participated in the study, and increased the income and educational status of respondents. The largest disparity between U.S. Census Bureau 2000 data and the 2010 sample profile is in the distribution of educational attainment, followed by age. Across educational attainment categories, the biggest difference is due to low representation in the high school/GED category (18.9 percentage points); within age categories, the biggest difference is in low representation in the 18-to-29 age group (12.6 percentage points).

Many of the global warming questions in the Alger County survey were also asked in a nationally representative survey fielded in May and June 2010 (Leiserowitz et al. 2010a). The responses of Alger County residents were only modestly different than those of the nationally representative sample. For example, the difference between the two samples in mean response to our global warming certainty of belief measure (scale 1-9, see operational definition below) was 0.26, which is statistically significant (U.S. $M=6.18$, $SE=0.07$; Alger County $M=5.92$, $SE=0.09$; $t(1770) = 2.35$, $p<.05$) but not large.

3.2 Measures

Following an initial section on household energy use, the survey addressed global warming public opinion, posing a series of questions about the respondents' beliefs, attitudes, behaviors and policy preferences. Sixteen of these were used in this analysis, and are described below. Sociodemographic measures were included as a control in the multivariate analysis.

Preferred term for climate change. The first question within the global warming opinion section asked: "Which term do you prefer?: Global warming, Climate change, Global climate change, Other, I have no preference." Survey participants were invited to write open-ended responses to "other." In the logistic regression analysis, climate change and global climate change responses were combined into one category. "No preference" and "other" responses also were combined and became the referent category in dummy coding.

Global warming belief. "What do you think? Do you think that global warming is happening?: Yes, No, I don't know." A second part to the question was used to create a 9-point scale of belief certainty that was used as a continuous measure in the multivariate analysis: "If you answered yes or no, how sure are you?: I'm extremely sure, I'm very sure, I'm somewhat sure, I'm not at all sure." "Extremely sure global warming is happening" is coded high.

Global warming causation. "Assuming global warming is happening, do you think it is: Caused mostly by human activities; Caused mostly by natural changes in the environment; Caused by both natural changes in the environment and human activities; None of the above because global warming isn't happening." In the logistic regression analysis, causation was dummy coded into three categories: caused mostly by human activities, caused by mostly natural changes or not happening, and both natural changes and human activities (the referent category).

Global Warming's Six Americas audience segmentation questions. The certainty of belief and causation measures listed above were followed by 13 additional items; together they comprise the brief screening instrument for the Global Warming's Six Americas audience segments (Maibach et al. 2011). The Six Americas represent a division of the U.S. population into homogenous groups that reflect characteristic global warming attitudes, beliefs, behaviors and policy preferences in a range from those who are most "Alarmed" to those most

“Dismissive.” The 15-item screening tool on average correctly identifies 83.8% of the sample using discriminant functions derived from an original 2008 segmentation. In the logistic regression analysis, the segments were combined into three categories – Alarmed/Concerned, Cautious/Disengaged and Doubtful/Dismissive – with the middle category used as a referent in dummy coding.

Political affiliation. “Generally speaking, do you think of yourself as a ... Republican, Democrat, Independent, Other, No party; not interested in politics.” The categories of Independent, No party and Other were combined for the multivariate analysis and used as the referent in dummy coding.

Sociodemographics. Gender was dummy coded with female high. Age was operationalized as a set of seven categories between 18 and more than 80 years of age, with the latter as the highest value. Education was measured by a five-point scale ranging from less than high school to an advanced degree. Annual household income was designated using nine categories, from less than \$10,000 per year to \$150,000 or more.

3.3 Analysis

To evaluate the relationship between each independent variable and preferred name, we performed a bivariate analysis using a Pearson chi-square test and Cramer’s V values to measure the strength of association. Expected frequencies were greater than 5 in all cells, allowing for adequate approximation of the chi-square distribution. To evaluate the relative effect size of the independent variables we performed a hierarchical multinomial logistic regression analysis, using terminology preference as the dependent variable. Multinomial logistic regression provides an analysis based on two sets of comparisons of the dependent variable’s nominal response categories (Hosmer and Lemeshow 1989). In this case, the comparisons were global warming preference versus no preference for one of the three terms, and climate change/global climate change preference also compared to no preference. The initial model was comprised of four sociodemographic variables as a control: age, gender, education and household income. In the three subsequent models the following sets of variables were added sequentially according to theoretical causal considerations (Cohen et al. 2002): political

affiliation; certainty of belief whether global warming is happening and global warming causation; and Six Americas audience segment category.

Multinomial logistic regression analysis provides odds ratios that can be used to evaluate a change in the probability of preference for either global warming, or climate change/global climate change, compared to no preference for each one-unit increase in the independent variable (Field 2009). The odds ratios can also be used as a comparative measure of effect size for the independent variables, and were computed both as a component of the multinomial logistic regression analysis and individually to indicate the comparative probability of terminology preference based on selected audience characteristics, calculated by dividing the odds of one event occurring over the odds of another.

For the purposes of the analysis, some of the response categories were collapsed. Open-ended “other” responses to the question on preferred terminology for climate change were analyzed for predominant thematic representations.

4 Results

Among the 743 participants who answered the question “Which term do you prefer?” the most common response was “I have no preference” (40.2%). Respondents approximately equally favored climate change (20.5%) and global warming (18.0%), with global climate change not far behind (12.9%). The percentages of those preferring climate change and global warming were not statistically distinct ($Z=1.18$, $p=.24$), but were both significantly different from the proportion of respondents preferring global climate change (GCC vs. CC, $Z=3.90$, $p<.01$; GCC vs. GW, $Z=2.73$, $p<.01$). The category of “other” (8.3%) predominantly captured two themes, each of which expressed doubt in anthropogenic climate change: natural climate processes, and climate change/global warming is not occurring.

When terminology preference was tested for association across four sets of factors – global warming belief, global warming causation belief, audience segment and political affiliation – all the bivariate relationships were found to be statistically significant and of small to medium scale. The hierarchical multinomial logistic regression analysis found certainty of global warming belief, audience segment status and political affiliation contributed significantly to the prediction of terminology preference in the final model, but more so for preferences for the

term global warming than for climate change/global climate change. Only education was a significant predictor of preference for the terms climate change and global climate change when all independent variables were included in the model. The final model predicted preference for the term global warming 49.2% of the time, while its accuracy for climate change/global climate change preference was only 26.7%. The model was correct 76.8% of the time in predicting the modal response: no preference or other, and 54.4% overall (Cox and Snell $R^2=.235$, Nagelkerke $R^2=.268$, $\chi^2(22)=167.174$, $p<.001$).

4.1 Human causation

Bivariate analysis. Belief in the causation of global warming was significantly associated with word choice ($\chi^2(12) = 158.38$, $p<.001$), though relatively weakly (Cramer's $V=.269$, $p<.001$) (Table 1). People who said that global warming is mostly the result of human causes were 5.9 times more likely to prefer the term global warming than those who said it is mostly the result of natural changes, and 17.2 times more likely than people who believe it isn't happening. The only group to prefer any specific term over "no preference" was those who believe global warming is caused mostly by human activity.

Table 1 Term preference by global warming causation

	Sample total ^a	Caused mostly by human activities (n=137)	Caused mostly by natural changes in the environment (n=96)	Caused by both natural changes in the environment and human activities (n=433)	None of the above because global warming isn't happening (n=66)
Global warming	18.0%	35.0%	8.3%	17.6%	3.0%
Climate change	20.5%	19.0%	19.8%	22.9%	9.1%
Global climate change	12.9%	16.8%	8.3%	13.6%	7.6%
Other	8.3%	2.2%	18.8%	3.0%	37.9%
No preference	40.2%	27.0%	44.8%	43.0%	42.4%

^a 11 people did not respond to the question on global warming causation.

Multivariate analysis. Belief in the anthropogenic nature of global warming was a significant predictor of preference for the term global warming in the multivariate analysis, but only when audience segment was not included in the model ($B = 0.63$, Wald $\chi^2(1) = 4.41$, $p < .05$). (See supplementary materials.) When audience segment was added into the final model, belief that humans are primarily the cause of global warming – as opposed to both human activities and natural changes – became a non-significant predictor of preference for the phrase global warming. (The audience segmentation includes causation as one of the 15 variables that comprise the algorithm. The correlation between the category AlarmedConcerned and anthropogenic belief in global warming is of medium size, $\phi = .382$, $p < .001$.) Respondents who understand that human activities are mostly the cause of climatic changes were 1.9 times more likely to prefer the term global warming over those who believe that human activities and natural changes are equally responsible.

4.2 Global warming belief

Bivariate analysis. The question “Is global warming happening?” was significantly associated with terminology preference ($\chi^2(8) = 198.41$, $p < .001$) and generated a medium-sized Cramer’s V statistic of .366 ($p < .001$) (Table 2). This represents a medium-sized effect. Respondents who said that global warming is happening were 12.0 times more likely to use the term than were those individuals who said that the phenomenon is not occurring.

Table 2 Term preferences by belief in whether global warming is happening

	Sample total ^a	No (n=172)	Yes (n=400)	I don't know (n=169)
Global warming	18.0%	3.5%	30.3%	4.1%
Climate change	20.5%	18.6%	19.8%	23.7%
Global climate change	12.9%	9.3%	16.5%	8.3%
Other	8.3%	26.7%	2.8%	3.0%

No preference	40.2%	41.9%	30.8%	60.9%
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^aTwo people did not respond to the question on whether global warming is happening.

Multivariate analysis. Certainty of belief in response to the question “Is global warming happening?” was a significant predictor for having a preference for the term global warming over no preference for one of the three terms in the multivariate analysis ($B=0.35$, Wald $\chi^2(1)=15.65$, $p<.001$). Certainty of belief in the existence of global warming remained a significant predictor in the final model including the audience segments, even though it too is a component of the Six Americas statistical algorithm and the variables are highly correlated (using AlarmedConcerned, CautiousDisengaged and DoubtfulDismissive as a continuous scale, $r= -.756$, $p<.001$). For each unit of certainty in whether global warming is occurring, respondents were 1.4 times more likely to prefer the term global warming over having no preference, or “other.”

In the model without audience segment, certainty of belief in global warming was also a significant predictor of preference for the terms climate change and global climate change, ($B=0.15$, Wald $\chi^2(1)=8.72$, $p<.01$).

4.3 Political affiliation

Bivariate analysis. There was a significant association between political party affiliation and terminology preference ($\chi^2(12) = 51.68$, $p<.001$) (Table 3), but the level of association level was weak (Cramer’s $V=.156$, $p<.001$). The odds of a Democrat preferring the term global warming were 2.02 times that of a Republican. Democrats and Republicans were both more likely to report “no preference.”

Table 3 Term preference by political party affiliation

	Sample total^a	Republican (n=120)	Democrat (n=225)	Independent; Other (n=262)	No party; Not interested in politics (n=102)
Global warming	18.0%	15.8%	27.6%	14.5%	9.8%
Climate change	20.5%	15.8%	20.0%	24.0%	20.6%

Global climate change	12.9%	8.3%	15.1%	13.4%	15.7%
Other	8.3%	14.2%	3.1%	11.5%	2.0%
No preference	40.2%	45.8%	34.2%	36.6%	52.0%

^a 34 people did not respond to the question on party affiliation

Multivariate analysis. Being a Democrat was a significant predictor of global warming terminology preference ($B=0.76$, Wald $\chi^2(1)=7.67$, $p<.01$) (Table 3). Being a Democrat versus Independent/No party/Other had the strongest effect on global warming preference in the version of the model without audience segment as predictors. With an effect size of 2.1 it was second in the final model only to a respondent being in the Alarmed/Concerned audiences. The comparison of these effect sizes should be interpreted cautiously however, as the upper and lower bounds of the 95% confidence interval for its odds ratio overlap those of both certainty of global warming belief and Alarmed/Concerned audience segments. (See supplementary materials for values.)

4.3 Global Warming's Six Americas

Bivariate analysis. Audience segment status was moderately associated with respondents' terminology preferences than global warming belief ($\chi^2(20)=278.11$, $p<.001$; Cramer's $V=.312$, $p<.001$), and demonstrated the largest between-groups likelihood difference (Table 4). The Alarmed, the segment most concerned about global warming, were 33.1 times more likely to prefer the term global warming than those on the other end of the scale, the Dismissive. The plurality of those who are less involved in the issue – the Cautious, Disengaged and Doubtful – had no preferences as to name.

Table 4 Term preference by the Global Warming's Six Americas audience segmentation

	Sample total^a	Alarmed (n=113)	Concerned (n=220)	Cautious (n=126)	Disengaged (n=96)	Doubtful (n=83)	Dismissive (n=77)
Global warming	18.0%	46.9%	26.4%	8.7%	5.2%	4.8%	2.6%
Climate change	20.5%	14.2%	21.4%	26.2%	24.0%	16.9%	14.3%

Global climate change	12.9%	20.4%	15.9%	14.3%	7.3%	8.4%	3.9%
Other	8.3%	0.9%	0.9%	4.8%	4.2%	16.9%	41.6%
No preference	40.2%	17.7%	35.5%	46.0%	59.4%	53.0%	37.7%

^a 28 people did not respond to more than 20% of the segmentation items.

Multivariate analysis.

Being in the Alarmed/Concerned audience segments had the largest effect on terminology preference of the independent variables in the multivariate analysis. Respondents in that category were almost four times (3.8) more likely than other audience segments to prefer the term global warming ($B=1.32$, Wald $\chi^2(1)=13.65$, $p<.001$). Comparisons of Alarmed/Concerned effect size against that of being a Democrat should be made with caution however due to overlapping 95% confidence interval boundaries.

5 Conclusion

By asking respondents which name they prefer – global warming, climate change or global climate change – this study demonstrated that the most common answer was “no preference,” although among those who do prefer one of the terms there are large and potentially important differences between subgroups, at least in our sample from Alger County, Michigan. Caution is required in generalizing the findings of this Michigan sample to a larger national audience, however, the analyses of our data (reported above) suggest that Alger County, Michigan residents may be a reasonable proxy for Americans as a whole with regard to their reactions to various names associated with climate change.

All the factors analyzed in this study – global warming belief, belief in the causation of global warming, audience segment, and political affiliation – were found to be significantly associated with terminology preference. The between-group differences, however, are most sharply defined by those who are most involved in the issue on either side of the spectrum.

The finding that political affiliation was more weakly associated with terminology preference than audience segment status might be expected from

other literature. Political affiliation is but one reflection of an individual's belief system, even though it has been highly associated with the issue of global warming in the United States (Dunlap and McCright 2008). Studies have shown that other indicators, such as cultural worldview and audience segment, have been more powerful in predicting global warming beliefs and policy preferences than political affiliation or ideology (Kahan et al. in press, Leiserowitz 2003 2006, Maibach et al. 2011).

That the modal preference was “no preference” was unexpected, but perhaps should not be surprising. As of June 2010, approximately half of the United States public had previously thought “little” or “not at all” about global warming (45%, Leiserowitz et al 2010a). People in the less involved audience segments – the Cautious, Disengaged and Doubtful – were particularly likely to hold no preference regarding the term used to describe climate change (46.0%, 59.4%, 53.0%, respectively). Moreover, climate change and global warming have been used synonymously in the public discourse (Boykoff and Boykoff 2007).

Overall, only a bare majority of respondents (51.4%) preferred any one of the three terms, and the percentages of those favoring global warming (18.0%) and climate change (20.5%) were statistically indistinct. When the percentages of those who prefer “climate change” and “global climate change” are added together, however, they represent a third of all respondents (33.4%). Those people preferring the name “global warming” lag behind by a full 15 percentage points. From this perspective – given that the largest percentages have no preference or prefer a variant of the term climate change – one might reasonably conclude that climate change is the superior term to use in public communication efforts.

These aggregate numbers, however, mask large differences in the preferences of specific subgroups that may allude to subtleties in perceived meanings between the terms. Those who believe that human-induced climate change is occurring, especially those who have given a lot of thought to the issue (i.e. the Alarmed), prefer the term global warming. In contrast, those who do not believe that global warming is occurring, especially members of the Dismissive audience segment, prefer the phrase climate change over global warming and global climate change (although more selected “no preference” and “other” than either of the three terms).

An implicit association of climate change with natural processes (IPCC 2007a; Luntz 2002; Whitmarsh 2009) may explain this effect. Indeed, those respondents who said the changes occurring in the climate are mostly human-induced were the only ones to have a strong preference for the use of the term global warming. Research suggests a correlation between climate science understanding with the degree to which facts fit with individuals' political views (Leiserowitz and Smith 2010). The Alarmed are the segment most likely to correctly assert that global warming is primarily caused by human activities, whereas the Dismissive are most likely to correctly state that the Earth is not the warmest that it has ever been.

For those members of the public who are very concerned about the impacts of global warming, both the phrase and issue of global warming may hold particular emotional resonance. When the Alarmed think of the issue of global warming, it makes them feel sad (85%), disgusted (82%), angry (78%) and afraid (75%) in greater percentages than any other segment (Leiserowitz et al 2010b). In contrast, those who hold equally strong beliefs that climate change is not happening may disapprove of the term global warming precisely because of these emotional connotations. Many members of the Dismissive segment report feeling disgusted (53%) and angry (42%) when they think about global warming, but few indicate feeling sad (14%) or afraid (6%) (Leiserowitz et al 2010b).

The heightened emotional resonance of the term global warming suggests both potential and peril from a climate change communication perspective. Regarding its potential, the name global warming may be more meaningful precisely because of its connotative associations with human causation. Conversely, this term may also pose peril if public dialogue is stymied by the use of language that certain segments of the American public reject.

Recent research by Schuldt and colleagues (2011) takes a step toward addressing this larger question, namely: Which term is superior in engaging a broad cross-section of the American public in meaningful dialogue about climate change? Their findings indicate that the term climate change is less politically polarizing than global warming and therefore may be the superior option for promoting public engagement. These findings cannot be considered conclusive however until additional studies clarify why Republicans are markedly more likely to endorse the reality of climate change than global warming. Whether the

use of the term global warming (or climate change) manifests potential – or peril – for public engagement efforts is a question that clearly warrants further attention by researchers.

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Model 1		GW vs No preference			
	<i>B</i> (SE)		95% CI for odds ratio		
			Lower	Odds ratio	Upper
Intercept	-1.788**	(.551)			
Age	.108	(.078)	.956	1.114	1.299
Gender (female=1)	-.123	(.217)	.578	.884	1.353
Education	.326**	(.108)	1.121	1.386	1.713
Income	-.125	(.071)	.767	.882	1.015

		CC/GCC vs No preference			
	<i>B</i> (SE)		95% CI for Odds Ratio		
			Lower	Odds ratio	Upper
Intercept	-.828	(.458)			
Age	.047	(.066)	.921	1.048	1.192
Gender (female=1)	-.085	(.183)	.641	.918	1.315
Education	.197*	(.093)	1.014	1.218	1.463
Income	-.066	(.059)	.835	.936	1.050

R²=.021 (Cox and Snell), .024 (Nagelkerke), Model $\chi^2(8)=13.439$, $p>.05$

Model 2		GW vs No preference			
	<i>B</i> (SE)		95% CI for odds ratio		
			Lower	Odds ratio	Upper
Intercept	-2.035***	(.571)			
Age	.072	(.080)	.918	1.074	1.258
Gender (female=1)	-.281	(.224)	.487	.755	1.172
Education	.371**	(.111)	1.166	1.449	1.800
Income	-.138	(.074)	.754	.871	1.006
Democrat¹	1.071***	(.248)	1.795	2.920	4.750
Republican¹	.047	(.318)	.562	1.048	1.955

		CC/GCC vs No preference			
	<i>B</i> (SE)		95% CI for Odds Ratio		
			Lower	Odds ratio	Upper
Intercept	-.849	(.462)			
Age	.037	(.067)	.911	1.037	1.182
Gender (female=1)	-.145	(.186)	.600	.865	1.246
Education	.222*	(.095)	1.037	1.249	1.504
Income	-.062	(.059)	.837	.939	1.055
Democrat¹	.306	(.212)	.896	1.358	2.057
Republican¹	-.514	(.269)	.353	.598	1.014

R²=.060 (Cox and Snell), .069 (Nagelkerke), Model $\chi^2(12)=38.876$, $p<.001$

Model $\Delta \chi^2(4)=25.437$, $p<.001$

¹The referent category is Independent/Other/No party.

Model 3		GW vs No preference			
		95% CI for odds ratio			
	<i>B</i> (SE)	Lower	Odds ratio	Upper	
Intercept	-5.482*** (.815)				
Age	.134 (.089)	.961	1.143	1.360	
Gender (female=1)	-.573* (.247)	.347	.564	.915	
Education	.262* (.124)	1.018	1.299	1.657	
Income	-.096 (.079)	.778	.908	1.060	
Democrat	.761** (.271)	1.260	2.141	3.638	
Republican	.463 (.358)	.789	1.590	3.203	
Certainty of belief GW is happening	.523*** (.078)	1.449	1.687	1.964	
Anthropogenic²	.633* (.301)	1.043	1.883	3.399	
Natural cause/not happening²	-.618 (.444)	.226	.539	1.288	

CC/GCC vs No preference		95% CI for Odds Ratio		
	<i>B</i> (SE)	Lower	Odds ratio	Upper
Intercept	-1.701** (.563)			
Age	.061 (.069)	.929	1.063	1.217
Gender (female=1)	-.318 (.197)	.495	.728	1.070
Education	.196* (.097)	1.006	1.217	1.471
Income	-.037 (.061)	.854	.963	1.086
Democrat	.166 (.219)	.768	1.180	1.814
Republican	-.326 (.279)	.418	.722	1.246
Certainty of belief GW is happening	.146** (.050)	1.050	1.158	1.276
Anthropogenic²	.411 (.276)	.879	1.509	2.589
Natural cause/not happening²	-.340 (.273)	.417	.712	1.215

R²=.212 (Cox and Snell), .242 (Nagelkerke), Model χ^2 (18)=148.803, p<.001

Model $\Delta \chi^2$ (4)=109.927, p<.001

²The referent category is "Caused by both natural changes in the environment and human activities."

Model 4		GW vs No preference		
		95% CI for odds ratio		
	<i>B</i> (SE)	Lower	Odds ratio	Upper
Intercept	-4.990*** (.837)			
Age	.135 (.090)	.960	1.145	1.365
Gender (female=1)	-.726** (.255)	.293	.484	.798
Education	.232 (.127)	.983	1.262	1.618
Income	-.084 (.080)	.787	.919	1.075
Democrat	.762** (.275)	1.249	2.142	3.672
Republican	.630 (.369)	.910	1.878	3.874
Certainty of belief GW is happening	.348*** (.088)	1.192	1.417	1.683

Anthropogenic ²	.470	(.308)	.875	1.600	2.925
Natural cause/not happening ²	.028	(.515)	.375	1.029	2.825
Alarmed/Concerned³	1.321***	(.358)	1.859	3.748	7.554
Doubtful/Dismissive³	-.559	(.635)	.165	.572	1.987

CC/GCC vs No preference

	B (SE)		95% CI for Odds Ratio		
			Lower	Odds ratio	Upper
Intercept	-1.451*	(.583)			
Age	.067	(.069)	.934	1.070	1.225
Gender (female=1)	-.388	(.201)	.458	.679	1.007
Education	.194*	(.098)	1.001	1.214	1.471
Income	-.033	(.062)	.857	.968	1.092
Democrat	.165	(.221)	.766	1.180	1.817
Republican	-.268	(.281)	.441	.765	1.327
Certainty of belief	.085	(.059)	.971	1.089	1.222
GW is happening					
Anthropogenic ²	.349	(.280)	.818	1.417	2.455
Natural cause/not happening ²	-.131	(.313)	.475	.877	1.621
Alarmed/Concerned³	.358	(.248)	.879	1.430	2.327
Doubtful/Dismissive³	-.403	(.343)	.341	.668	1.310

R²=.235 (Cox and Snell), .268 (Nagelkerke), Model χ^2 (22)=167.174, p<.001

Model $\Delta \chi^2$ (4)=18.371, p<.01

³The referent category is the Cautious and Disengaged.