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"What is the most pressing environmental issue we face today? [...] At the Oscar ceremonies, Al Gore referred to a 'climate crisis,' but in his State of the Union address President Bush chose the comparatively anodyne phrase 'climate change'" (Adler, par.1, 2007, brackets added). In his article "The War of the Words", Jerry Adler's opening line sums up the present predicament inundating the issue of the Earth's atmospheric carbon content: what we should name it. Rhetoricians and linguists have produced a plethora of terms as they each advise politicians or scientists on how to frame the environmental matter. Most Americans are familiar with the term "global warming" if they have watched Al Gore's film *An Inconvenient Truth* or even just listened to the news. While this term is popular and has been used often, it is not the name everyone agrees *should* be used. Political consultant to former President George W. Bush, Frank Luntz, encouraged the abandonment of "global warming" for "climate change" because "unlike the 'catastrophic' connotations of global warming", Luntz wrote, "climate change sounds [like] a more controllable and less emotional challenge" – in essence, a more likeable way of expressing a perceived problem (qtd. in Adler, par.2, 2007). Dr. Stephen Gardiner (2004) explains how "global warming" is too limiting as it emphasizes only one aspect -- "higher temperatures, and thus suggests a one-dimensional problem" (558). Gardiner (2004) further elaborates that "climate change" is more appropriate in terms of accuracy as it is not how hot or cold or stable the temperatures are so much as recognizing "the actual changes in the climate itself and their consequences for human, and nonhuman, life", and therefore we should heighten awareness of that by using the "change" name (p.559).

On the other hand, cognitive linguistics professor Dr. George Lakoff, University of California, Berkeley, has adamantly argued both "global warming" and "climate change" are not adequate. Lakoff argues that by using "global warming", an audience may be more apt to

acquaint that term with good feelings: “‘Warm’ seems nice. So people think, ‘Gee, I like global warming, Pittsburgh will be warmer’” (qtd. in Butler, p. 65, 2004). His disagreement with the promotion of “climate change” is that the phrase is a mere “attempt to be scientific and neutral” not accurate or, perhaps, even truthful (qtd. in Butler, p. 65, 2004). The term Dr. Lakoff staunchly supports is “climate crisis” because he feels the phrase best communicates “immediate action [is] needed” for a problem he concludes is deserving of the attention one would give to a pending catastrophe (Adler, par.3, 2007, brackets added). Also joining this naming debate is John P. Holdren, the current Assistant to President Obama “for Science and Technology, Director of the White House Office of Science and Technology Policy, and Co-Chair of the President's Council of Advisors on Science and Technology (PCAST)” (WhiteHouse, par.1, 2011). According to Holdren, “[g]lobal warming’ is a misnomer because it implies something gradual, uniform, & benign...” while “global climatic disruption” is more accurately-descriptive (Holdren, Heinz & Heinz, slide 2, 2007).

At this point in time, these four phrases or names stand as the most prominent swarming through journals and public media. As a matter of fact, when it comes to peer-reviewed articles analyzing environmental discourse, such as work by Anthony Leiserowitz (2006) or Eileen Crist (2004), it is not uncommon to find authors using all of these terms interchangeably. Furthermore, it is reasonable to note that political conservatives have a history of favoring “climate change” while liberals are on the opposite spectrum with the “crisis” idea. But it is not new information that conservatives and liberals disagree on their perceptions of an issue. Perhaps this discrepancy in choice of naming is really just a harmless situation in which people have different ways of saying the same thing. If disagreement is only a norm for people of different groups to engage in, and since it seems these terms are used like synonyms anyway, why should we care?

Frames and Names

Our choice of one word over another can drastically change the way someone perceives our message. For example, a person could frame the concept of a messy room as the “remnants of apocalyptic disaster” or “the doings of an untidy child”. While both communicate the same essential message, that there is a disorderly room, the words chosen paint two different pictures. In Dr. Robert Entman’s 1993 book discussing frames, he begins by noting that the idea behind “framing” holds the keys to the force behind the “communicating text” as it is impossible for one to communicate without also utilizing frames (p. 51). When the media produces an advertisement for alcohol or relays the latest update on the War on Terror, or when two people discuss their personal thoughts and beliefs, the “communicator” conveys his or her beliefs into a text utilizing carefully chosen “keywords, stock phrases, stereotyped images, sources of information, and sentences that provide thematically reinforcing clusters of facts or judgments” in order to influence and direct the thought processes of the “receiver” (Entman, pp. 52-53, 1993). A frame functions by zeroing in on certain “aspects of a perceived reality” and emphasizing those aspects to make them “more salient in a communicating text, in such a way as to promote a particular problem definition, causal interpretation, moral evaluation, and/or treatment recommendation” for an issue (Entman, p. 52, 1993). In addition to constructing a message based on what is made more salient, a frame also makes its message by what is purposefully or unconsciously omitted from the spotlight and this has the potential of being “as critical as the inclusions in guiding the audience” (Entman, p. 54, 1993).

There are two branches of framing to consider: the media frame, which we can understand as what is entrenched in all information outside of our brains, and the individual frame, which can be summarized as our individual perceptions of reality which “in turn, provide a framework for interpreting new information and for determining appropriate responses to new

situations” (qtd. in Kearney & Kaplan, 1997). Research by Lee, McLeod, and Shah (2008) echoed this when they pointed out that framing is not just apart of the media, but “framing structures the reasoning process by activating certain constructs that are used to make judgments or form opinions” (Lee, McLeod, & Shah, p. 698, 2008). In Entman’s (1993) frame clarification article, he notes the importance for a researcher to “measure the salience of elements in the text” by weighing the frame against the “audience’s schemata” (p.57). One example to illustrate the media frame versus the individual frame is the idea of fear versus fear perception. In one section of his persuasion theory textbook, Daniel O’Keefe (2002) highlights research revealing that while a message might be framed to instigate fear, it does not mean the audience will respond in fear; their personal opinions may be enough to override whatever is packaged in the message (p. 224). Dr. Anthony Leiserowitz (2003) further explains this idea when he looks at the idea of risk versus risk perception; he references research which has found experts’ messages to have had the opposite affect on laypersons because the risk content of the message was not communicated in such a way as to be *perceived* as such (“Global Warming” 15-16).

As was stated at the beginning of this section, one word can make all the difference. Within both the media frames and individual frames, naming has a tremendous effect. In the grammatical point of view, Steven Pinker (1994) explains that “a name is an intricate structure, elegantly assembled by layers of rules [...],” it is “a pure symbol [...]” (p.157, brackets added). Even if we do not usually have to spend a long time thinking about what we hear or read, our mind is categorizing and processing the communicated words into our personal “listeme”, or “memorized list” of meanings (Pinker, p.148, 1994). A word or a name carries with it much more meaning than just one or two ideas, for our minds, like dictionaries, store up “a string of linguistic stuff that is arbitrarily associated with a particular meaning” that can include our

personal experience with that word, our culture's interpretation of that word, as well as the "objective" lexicon interpretation (Pinker, p.148, 1994). For example, let us imagine a few possible, albeit simple, interpretations that could occur with the comprehension of the word "dog". First, the objective definition of a dog being the four-legged, usually-furred omnivorous mammal in the canine family plays a factor in a person's ability to determine *what* the dog is. The person's cultural and personal experiences help determine what *feelings* he or she has towards dogs. If a person lives in a culture in which dog is "man's best friend" and the person also has many happy childhood memories with their very own Fido, the word may generate feelings of happiness and comfort. In his 1991 book on framing of political issues in television, Shanto Iyengar disclosed that there have been studies in which "unobtrusive alterations in the word and form of survey questions [have] produce[d] dramatic variations in opinions" (p.13, brackets added). One of his examples to illustrate this was audience reception to the idea of providing money for "poor people" versus "people on welfare" (Iyengar, p.13, 1991). The only difference is the name or phrase before or after "people" and yet the accompanying interpretations that come to mind for "poor" versus "welfare" were so great as to influence whether or not participants favored a policy. The same idea has been seen in the dissent over what words are used to name disabled individuals. Do we call them "cripples"? "Handicapped"? "Disadvantaged"? The point is obvious – one word can make all the difference. This study will explain how naming significantly affects audience reception of environmental messages.

Past Research

A multitude of research has been completed on both whole frames as well as the particular wording of this issue. Dr. Anthony Leiserowitz's unpublished dissertation (2003) employed "survey methods to investigate global warming risk perceptions, policy preferences

and individual behaviors” (p.1). However, throughout the dissertation, his research questions, hypotheses, and from what he provides on the actual surveys used in his study, “global warming” and “climate change” are used synonymously, therefore not addressing the actual issue of perception based on word choice. In addition to his dissertation, Leiserowitz (2006) performed polls to determine general public awareness and determine general feelings about the problems in the Earth’s atmosphere, but again did not address the issue of naming. Focusing more on perception, Dr. Lorraine Whitmarsh (2009) evaluated “public understanding” of the problems in the environment and found that when her survey used the term “global warming” people offered more concerned responses while “climate change” resulted in less concerned responses (p. 401). In her work, she also found that “climate change” resulted in more people marking an unawareness of the topic as compared to surveys using “global warming” (Whitmarsh, p. 405, 2009). Whitmarsh noted that there has been much effort to discover “awareness of ‘global warming’ compared to ‘climate change,’” but as of 2009, there had been no initiative to determine “whether these two terms are interpreted in qualitatively different ways” (p. 403).

As if to answer her call for a need to begin researching the environmental naming, researchers Villar and Krosnick (2011) performed two studies: the first “testing differences in reactions to the phrases ‘global warming,’ ‘climate change,’ and ‘global climate change’ by assessing the amount of seriousness that respondents ascribe to each of them” and the second “assessing the impact of the wording change via an experiment embedded in surveys done in 31 European countries” (p.2). Villar and Krosnick (2011) produced findings that “suggest that the choice of global warming vs. climate change has had little if any impact on national-level perceptions of the seriousness of the problem”, but that if policymakers want to “inspire citizens to pressure government to ameliorate climate change or simply to express concern about it in

surveys, those opinion leaders should use the phrase ‘global warming’ when talking to Democrats (who are most likely to be responsive) and should instead say ‘climate change’ when talking to Republicans” (p. 11). Also focusing on the political opinion differences, researchers Jonathan Schuldt, Sarah Konrath, and Norbert Schwartz (2011) conducted “analysis of web sites of conservative and liberal think tanks” to find that “conservatives prefer to use the term ‘global warming’ whereas liberals prefer ‘climate change’” (p.1). This research by Schuldt et. al. (2011) also found that “Republicans were less likely to endorse that the phenomenon is real when it was referred to as ‘global warming’...rather than ‘climate change’...whereas Democrats were unaffected by question wording” (p.1).

The extensive research performed on the two most common terms “global warming” and “climate change” has provided necessary and helpful guidelines for what name to pick if one wants to determine what a particular group perceives about the environment and then what term will most influence that group to act. Even though the newer terms “climate crisis” and “climatic disruption” have been around for almost a decade, those terms remain untested. No matter how prominent the people behind the names are or how strongly those people advocate their choice words, we should not utilize those names in rhetoric or policies without first knowing the impact those words will have on audiences.

Research Questions

With these studies, affirming that there is reason to qualitatively test the terms frequently utilized to describe our environment, it makes no sense to put off a study seeking to understand what how the public reacts to each of the four most prominent names used in American environmental rhetoric. As the studies before me have proven, what one says matters and

knowing the *meaning and responses* to what is said matters even more. Therefore, relying on what has been claimed, a study will be conducted based on the following research questions:

Research Question 1: Does the use of “global warming”, “climate change”, “climate crisis” or “climatic disruption” affect the belief that temperatures are changing?

Research Question 2: Will using the term “climate crisis” elicit greater levels of concern than using either of the terms “global warming”, “climate change”, and “climatic disruption”?

Research Question 3: Will using the “climate crisis” encourage a greater willingness to act than using the terms “global warming”, “climate change”, and “climatic disruption”?

Methods and Procedures

Manipulation

The independent variable was an article approximately 990 words in length. The manipulation was based on a work written by William Broad for the *New York Times* in 2006. However, the article was significantly shortened and manipulated to make sure the article presented a brief but balanced perspective on the Earth’s atmosphere and environment. There were five conditions to the experiment: four manipulations and one control group. For each manipulation, the news story had one name used in the article to describe the issue: “global warming” for one condition, “climate change” for the second, “climate crisis” for the third condition, “climatic disruption” for the fourth. In each manipulation, the articles mentioned the respective name once in the title and six times in the body of the text. The article was not administered to the control group. Also within each manipulation, the Consent To Participate Form mentioned the respective name twice and described the purpose of the experiment as a

study to “compare the different understandings and experiences people have had in relation to this issue”.

Instrument

After participants read the article, a survey consisting of thirty-three Likert-scaled questions, one open-ended question, and seventeen demographic questions was administered to capture the dependent variables or the responses of the audience. The instrument was designed to measure whether participants felt that temperature changes were occurring, how they perceived those changes, their trust in experts, data, and media credibility, their beliefs about the consequences of temperature changes, and feelings about proposed causes and solutions. In order to truly isolate the names, the survey never mentioned any of the four terms but only referred to “the issue” or the “environmental issue” or the like. The instrument contained questions identical to or slightly reformatted from Whitmarsh’s 2009 project and Leiserowitz’s 2003 dissertation. For example, the surveys contained multiple attitude statements, which are slightly edited versions of Whitmarsh’s, to elicit the general responses, fear responses, or willingness to act responses (i.e. *This issue frightens me; I do not believe there is a real problem; I feel a moral duty to do something to help fix the environment’s problems*) (p.412). Somewhat reworded declaratives from Leiserowitz’s surveys were also placed in the section dealing with respondents’ willingness to act (i.e. *I would be willing to join, donate money to, or volunteer time with an organization working on the issues of the environment*) (p.118). These attitude-statements were formatted as Likert scales with answer options ranging from 1 to 5 where 1 translated to *strongly disagree* while 5 translated to *strongly agree*. Following the scaled questions, space was offered for subjective comments for any further thoughts that the participants may have wanted to share. After addressing the subject matter, the survey asked a

battery of typical demographic questions, including gender specification, what year they were in college (freshman, sophomore, etc.), their ages, and their major, their political affiliation, and the range of their personal income. They were asked if they have ever heard of “the issue” before; if answered “yes”, participants were prompted to briefly explain where they received information.

Subjects

A convenience sample of ten undergraduate public speaking classes from a mid-sized Western university resulting in a final sample of (N=225) comprised of 103 male and 121 female participants. The majority of participants (90%) were freshman while the remaining consisted of sophomores, one junior and two seniors; only one student did not list a college year. As hoped for by using a generally required course, there were representatives for every college within the university with the majorities coming from the College of Liberal Arts (27%), the College of Agriculture & Food and Environmental Services (22%), and Engineering (21%). There was a roughly equal representation of Democrats (33%), Republicans (30%), and Independents (24%) with the remainder of participants checking the “Other” category to either list a blend of the parties or “unknown”. Although more students chose not to list their religious affiliation, of those that did the majority listed their preference as Protestant (30%) or Catholic (23%). Within the number of those listing their race/ethnicity, the overwhelming majority were White/Caucasian (75%). Of those who chose to list their income, 214 of the participants sat in the same economic bracket (earning less than \$25,000).

Procedure

Before administering the article and surveys for the manipulations and the surveys for the control groups, it was explained to all that participation was completely voluntary, anonymous, and that their answers would not affect their grade in the class. In order to provide incentive for

completion, there was a drawing for a \$10 cash prize for each class; the drawing occurred right after the completed surveys were collected. After completed surveys were completed, it was disclosed to the participants that the intent of the experiment was not to determine their level of understanding regarding the topic so much as to determine how they responded to the topic based on the name chosen. After participants were given the opportunity to ask any questions to further clarify the intent of the research, all were asked to not disclose to their fellow students about their involvement or what they knew about the experiment for the duration of the survey administration period so as to prevent the possibility of a tainted group.

Results

Quantitative

Regardless of the condition, respondents somewhat agreed that temperatures have been steadily increasing this past century ($M=3.57-3.96$, $SD=1.04$) and that they have personally noticed variation in temperatures ($M=3.05-3.53$, $SD=1.27$). In addition to these numbers yielding that naming appears to have no noticeable impact on young adults' belief that temperatures have been increasing, which is an answer in the negative for Research Question 1, these numbers also show that these young Americans are not at all skeptical of the existence of rising temperatures.

While young adults may believe temperatures are changing, the statistics reveal a significant difference between the groups based on their perceptions of rising temperatures. To the statement "*Rising temperatures pose a serious threat to my way of life*", a significant dissimilarity between the groups arose such that the name used shifted views from disagreement to agreement. Respondents were more likely to find rising temperatures a serious threat to their way of living when "climatic disruption" was used but were less likely to consider the issue a

threat when “climate crisis” was used. “Climate change”, the control group, and “global warming”, respectively, fell in between (Table 1). Participants were less likely to agree to the statement “*The effects of rising temperatures are likely to be catastrophic*” in the “climate crisis” condition but significantly more apt to agree to that statement in the “climatic disruption” condition. “Climate change”, the control group, and “global warming”, respectively, fell in between “climatic disruption” and “climate crisis” again (Table 1). On an affective note, when participants responded to “*This issue frightens me*”, those in the “climate crisis” condition were least likely to agree and most likely to agree in the “climatic disruption” condition with the control, “climate change” and “global warming” groups falling respectively in between (Table 1). In answer to Research Question 2, (Will using the term “climate crisis” elicit greater levels of concern than using either of the terms “global warming”, “climate change”, and “climatic disruption”?) this study shows that “climate crisis” is *least* likely to cause young adults to perceive temperature changes as something to be concerned about, while “climatic disruption” is *most* likely to elicit concern in young adults.

To the statement “*Experts are agreed that there is a real problem with rising temperatures*”, participants were neutral (M=2.91-3.45, SD=1.26). When asked if they felt “*the evidence for this issue is unreliable*”, the consistent response was disagreement (M=2.28-2.65, SD=1.10). Further along this point, when the participants were asked if they felt “*there is too much conflicting evidence about this issue to know whether anything problematic is actually happening*”, the overall response was disagreement to neutrality (M=2.72-3.05, SD=1.22). Concluding the questions on experts and information, the groups offered a neutral-leaning-towards-agreement stance on the statement “*The media is often too alarmist or they exaggerate about this issue*” (M=3.50-3.80, SD=1.12). Even though the participants list an inclination

towards finding the media as alarmist or exaggerating, there was no significant difference found based on the naming used to describe the issue. These answers point toward the conclusion that young adults believe there is reliable evidence to support the belief that there is a problem in the environment. At the same time, the participants communicate the perception that experts do not always agree the issue is a problem.

Across the groups, the participants stood neutral-leaning-towards-agreeing that “*Temperature increases have been causing migrating animals to break from their migratory patterns*” (M=3.29-3.83, SD=0.92), which fits in with their perceptions of rising temperatures posing a problem. Furthermore, the groups rejected the idea that “*Rising temperatures have no effect on the intensity of natural disasters, such as hurricanes*” (M=2.07-2.40, SD=0.91). The groups generally agree that “*Sea levels are rising due to melting glaciers and polar ice caps*” (M=3.52-4.09, SD=0.97). Another point of significant difference occurs over the statement “*Fluctuations in the Earth’s environment are causing coral reefs to die*”: using “climate crisis” made respondents less likely to agree to this while “global warming” was the most successful to garner a response of agreement (See Table 1).

While all five groups strongly rejected the statement “*Human activities have no impact on global temperatures*” (M=1.57-1.80, SD=0.99), the groups were less certain that “*Rising temperatures were the consequence of modern life*” (M=3.41-3.67, SD=1.18) or that “*Pollution (i.e. burning fossil fuels) from industry is the main cause of a hotter Earth*” (M=3.02-3.55, SD=1.13). When looking at natural causes for rising temperatures, the groups stood in disagreement-leaning-neutral on the idea that “*The Earth is just undergoing natural temperature fluctuations in temperatures*” (M=2.68-3.18, SD=1.16) but in steady disagreement that “*The sun is the main cause of rising temperatures*” (M=2.26-2.67, SD=0.96).

As expected, the young adults in all five groups conveyed favor for having “*The federal government...provide incentives for people to look after the environment*” (M=3.84-4.05, SD=1.15) but when asked if they would “*support increases in taxes, such as gasoline taxes, as a way to reduce fuel emissions into the atmosphere*” the agreement levels dropped (M=2.39-2.74, SD=1.35). Generally, all groups favored having “*Industry and private business...doing more to tackle environmental problems*” (M=3.97-4.33, SD=0.88). The groups displayed optimistic mindsets when all strongly disagreed to the statement “*It is already too late to do anything about this issue*” (M=1.56-1.84, SD=0.82), that “*There is a problem, but there is no point for me to do anything if no one else cares*” (M=1.50-1.84, SD=0.89), and also with the statement “*Nothing I do makes any impact on the Earth’s temperatures one way or another*”(M=1.48-1.91, SD=.89). Despite this, the group sat in a neutral position on the idea of having a moral duty to do something about this issue (M=3.28-3.64, SD=1.16). Once looking at more of the personally costly solutions, the groups showed neutrality-leaning-towards-disagreement when asked if such beliefs would lead them to “*be willing to join, donate money to, or volunteer time with an organization working on the issues of the environment*” (M=3.20-3.83, SD=1.15). In contrast to this, however, the participants favored the idea of using “*energy-efficiency as a selection criteria when buying a lightbulb, a household appliance, or a motor vehicle*” (M=4.37-4.69, SD=0.82). While the data does not show that naming significantly impacts individuals’ willingness to act, these answers do point towards aligning young adults today with the idea of consumerism: if any of their money or time needs to be spent on correcting issues with the environment, young adults would rather that their contribution come through the normal day-to-day activities, such as environmentally-friendly purchases.

Qualitative

The subjective section of the surveys further provides a way to make sense of what is in the mind of a young adult when they perceive this subject and whether their perceptions differ based on the name used. To provoke comments, the subjective section asked the participant to write down what came to mind when he or she thought about the issue. Across all five conditions, it was not unusual for there to be some form of the following answer: “I don’t really know anything about this topic” or for “global warming” and “climate change” to pop up in conditions that did not ever mention those phrases. However, in looking at the comments in each of the manipulations, the results reveal a similar trend to that of the significant objective data. In the “global warming” groups, the majority of the comments noted that it was a “major issue”, caused by humans who then have the “duty...to do everything we can do to protect our environment society” because the problem is “a long-term thing that’s going to affect the generations to come”. In the “climate change condition”, almost all of the comments followed the same idea as the following: “I wish people would care more about protecting the environment and living sustainably”. Just as seen with the objective data, the “climate crisis” holds the least concerned and most skeptical comments of all five conditions: “Debates, no real evidence,” “a lot of made up stuff from scientists comes to mind”, “a sensationalized hot topic that is stupid”, and “It’s hard to imagine 1/6billionth of the world’s population would have much of an effect on anything. I’m environmental when it’s convenient for me, just like almost everybody else”. The “climatic disruption” comments also aligned with the objective results as the majority of the comments consisted of the following: “Our future generations not being able to survive with the world we’re leaving them”, “Regulation is needed to protect the environment we live in now and in the future”, and “Global warming is obviously real, and us humans need to

do something about it”. In comparison to the manipulated sections, the control group comments offered an almost equal display of concerned views, i.e. “I am afraid my children won’t live in a place that is worth living in, because of global warming” or “ [This is] an issue facing the world today that will have more effect on future generations than it will on us” and comments of dismissal, i.e. “Propoganda [sic] overplaying the issues at hand” or “A young species such as ourselves wont deplete a billion year old earth”. By looking at the subjective section, there is further evidence to suggest that “climate crisis” instigates feelings of an exaggerated claim instead of provoking greater feelings of fear and willingness to act, while the terms most successful in achieving both fear and a desire to see action are “global warming”, “climate crisis”, and “climatic disruption”.

Discussion

Simply put, my research has confirmed that the words truly do matter. At this point, there is little evidence to support the use of “climate crisis” as the golden term to be used. In each of the areas where I discovered significance, the “climate crisis” performed the worst, meaning that use of this term leads to the backlash effects of disbelief and less concern (Table 1). On the other hand, “climatic disruption” performed the best, or second best to “global warming,” in each of the areas of significance (Table 1). Whether Holdren (2007) is right in his argument that “climatic disruption” is the best to use because it is most accurately descriptive, that is for the scientists to say (slide 2). But one thing has become much clearer: “climatic disruption” is right up there with “global warming” in garnering serious responses. This data confirms Dr. Whitmarsh’s (2009) finding that the term “global warming” elicits more concerned responses while “climate change” results in less concerned responses (p. 401). Even more, my research supports the findings of Villa and Krosnick (2011) since my statistics also show that a person’s

perception of the “seriousness of the problem” does not significantly change when the term “global warming” is used or “climate change” is used (p.11).

Limitations

Although this research has resulted in valuable findings, there is still much more research to be done with “global warming”, “climate change”, “climate crisis”, and “climatic disruption”. While this study did not focus on the impact these four terms have based on an audience’s political affiliation, the research by Villa and Krosnick (2011) and Schuldt et. al. (2011) both demonstrate that this is an important focus to add to the findings. If these two previous studies show significant differences between political parties based on whether “global warming” or “climate change” is used, we should expect to see similar patterns when those parties are introduced to Holdren’s and Lakoff’s phrases. Since this study worked with a sample of a limited demographic – college-age, younger adults from generally similar economic backgrounds and, naturally, similar education statuses – future research should seek to test these names on a broader population with the goal of testing a more balanced representation of post-college age groups, including diversity in economic and education backgrounds. If a researcher were to use an older, more diverse generation, we might expect to see a general population offering stronger, perhaps even more amplified responses contingent to this issue based on the word choice. In addition, future studies would do well to manipulate the medium through which the prompt is delivered, for example looking to see if the names have a different effect if delivered as a speech, or if that speech is accompanied with power-point images, or as a simulated television newscast. Finally, it would also be worthwhile for future research to repeat this study with an obviously one-sided article instead of a balanced one to determine if the responses for this study could be influenced based on how the name is presented.

Conclusion: Words That Matter

My evaluative study acts as an addition to previous research as it confirms what has already been discovered and adds to that information by offering the first steps to understanding the naming impact of “climate crisis” and “climatic disruption”. Although there is much more that should be done to determine all the ways that people respond to these names, my data leads me to conclude that the terms selected to describe or label the current state of the environment really are important. If a researcher is writing for the sake of a concurring audience, by all means use the terms interchangeably. If, on the other hand, a researcher, policymaker, a linguist or a student is looking to make the persuasive case for there being problems in the environment, which demand concern and action, the names should not be seen as synonymous because even in environmental rhetoric, the words really do matter.

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Appendix A: Table 1

TABLE 1. Perception of Temperature Change					
	Group Means	M	SD	F	p*
Q3. Rising temperatures pose a serious threat to my way of life.	Climate Crisis Climate Change Control Group Global Warming Climatic Disruption	2.84	1.23	2.68	0.03
Q6. The effects of rising temperatures are likely to be catastrophic.	Climate Crisis Climate Change Control Group Global Warming Climatic Disruption	3.18	1.04	2.51	0.04
Q.16 Fluctuations in the Earth's environment are causing coral reefs to die.	Climate Crisis Climatic Disruption Climate Change Control Group Global Warming	3.56	1.00	3.19	0.01
Q.31 This issue frightens me.	Climate Crisis Control Group Climate Change Global Warming Climatic Disruption	2.97	1.33	2.69	0.03

*Subset for alpha = 0.05

Appendix B: Global Warming Condition

The Developing Debate On Global Warming

William Broad, *New York Times*, 7 Nov. 2006

ProQuest Historical Newspapers, The New York Times, pg. F1

In recent years, scientists have made sizable gains in what was once considered an impossible art – reconstructing the history of Earth’s atmosphere from more than a half billion years ago. Scientists have learned about the changing makeup of the vanished gases by teasing subtle clues from fossilized soils, plants and sea creatures. They have also gained insights from computer models that predict how phenomena like eroding rocks and erupting volcanoes have altered the planet’s evolving air. For the first time, a United Nations group that analyzes the Earth’s environment plans to include a chapter on the reconstructions in its latest report, due early next year.

The discoveries have stirred a little-known dispute that, if resolved, could have major implications. At issue is whether the findings back or undermine the prevailing view on global warming. One side foresees a looming issue of planetary heating; the other, temperature increases that would be more nuisance than catastrophe. Perhaps surprisingly, both hail from the same camp: scientists who study the big picture of Earth’s past, including geologists and paleoclimatologists. Most public discussions of global warming concentrate on evidence from the last few hundred or, at most, few thousand years; and some environmental scientists remain unconvinced that data from the deep past are solid enough to be relevant to the debates. But the experts who peer back millions of years, though they may debate what their work means, do agree on the relevance of their findings. They also agree that the aeon known as the *Phanerozoic*, a lengthy time span from the present to 550 million years ago including the dawn of complex life, typically bore concentrations of carbon dioxide that were up to 18 times the levels present in the short reign of *Homo sapiens*. Moreover, the opponents tend to agree on why the early Earth’s high carbon dioxide levels failed to roast the planet: first, the sun was dimmer in its youth and, second, as the gas concentrations increase, the Earth’s heat trapping capacity slows and reaches a plateau.

Specialists clash on what the evidence means for the ideas claiming that industrial civilization and the burning of fossil fuels are the main culprits in global warming. The two sides agree that carbon dioxide can block solar energy that would otherwise radiate back into space, an effect known as the greenhouse effect. But they differ sharply on its strength. Some argue that CO₂ fluctuations over the *Phanerozoic* period follow trends fairly well supporting a causal relationship between high gas levels and high temperatures. “The geologic record over the past 550 million years indicates a good correlation,” said Dr. Robert A. Berner, a Yale geologist and pioneer of paleoclimate analysis. “There are other factors at work here. But in general, global warming is due to CO₂. It was in the past and is now.”

Other experts say that is an oversimplification of a complex picture of natural variation. The fluctuations in the gas levels, they say, often fall out of step with the planet’s hot and cold cycles, undermining the claimed supremacy of carbon dioxide. “It’s too simplistic to say low CO₂ was the only cause of the glacial periods” on time scales of millions of years, said Robert

Glegengack, a geologist at the University of Pennsylvania who studies past atmospheres. “The record violates that one-to-one correspondence.” He and others say the planet is clearly shifting today, as it has repeatedly done, but insist that no one knows exactly why. Other possible causes, they say, include changes in sea currents, sun cycles and cosmic rays that bombard the planet. “More and more data,” Jan Veizer, an expert on *Phanerozoic* environment at the University of Ottawa, said, “point to the sun and stars as the dominant driver.”

Highlighting the gap, the two sides clash on how much the Earth’s atmosphere would be different today if carbon dioxide concentrations doubled from preindustrial levels, as scientists expect. Many climatologists see an increase of as much as 8 degrees Fahrenheit. The skeptics drawing on *Phanerozoic* data, tend to see far less, perhaps 2 or 3 degrees. Dr. Berner of Yale has focused on computer models. From the start, he consistently reported close ties between carbon dioxide and global warming. For instance in the explosion of plant life from 400 million to 300 million years ago, he found a sharp drop in the gas, occurring as the earth entered an ice age. “These results,” Dr. Berner wrote in the journal *Science* in 1990, “support the notion that the atmospheric CO₂ greenhouse mechanism is a major control on environment over very long time scales.”

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(Appendix B: Global Warming Condition)

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Appendix C: Climate Change Condition

The Developing Debate On Climate Change

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ProQuest Historical Newspapers, The New York Times, pg. F1

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Appendix D: Climate Crisis Condition

The Developing Debate On the Climate Crisis

William Broad, *New York Times*, 7 Nov. 2006

ProQuest Historical Newspapers, The New York Times, pg. F1

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Appendix E: Climatic Disruption Condition

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William Broad, *New York Times*, 7 Nov. 2006

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You are being asked to take part in this study by reading a short news article. Following the news story, you will also be asked to complete a brief questionnaire. Your participation will take approximately fifteen minutes for the article and fifteen minutes for the questionnaire. Please be aware that you are not required to participate in this research and you may discontinue your participation at any time without penalty. If any items in the questionnaire concern you, you may omit any items you prefer not to answer.

The possible risks associated with participation in this study are minimal. This project is asking you to read a short paragraph and answer a brief set of objective and subjective questions. You may experience feelings of anxiety or frustration that are often associated with putting your ideas into writing or in filling out a form.

Your confidentiality will be protected. No information will be shared with commercial entities. Although your name will be collected on a separate card to be placed into a drawing, that information will not be published in the project. Potential benefits associated with the study include a better understanding of your own views on the climatic disruption as well as improving scholarly understanding of what the public knows, feels, and understands about this important issue.

If you have questions regarding this study or would like to be informed of the results when the project is completed, please feel free to contact Larissa Jaskulsky at envirostudy.srprj@gmail.com. If you have concerns regarding the manner in which the study has been conducted, you may contact Dr. Steve Davis, Chair of the Cal Poly Human Subjects Committee, at 756-2754, sdavis@calpoly.edu, or Dr. Susan Opava, Dean of Research and Graduate Programs, at 756-1508, sopava@calpoly.edu.

If you agree to voluntarily participate in this research as described, please indicate your agreement by reading the designated article and completing and returning the questionnaire. Please retain this informed consent form for your reference, and thank you for your participation in this research.

Appendix F: Survey for Global Warming, Climate Change, Climate Crisis, & Climatic Disruption Condition

CIRCLE THE NUMBER THAT BEST FITS YOUR VIEW ON THE FOLLOWING STATEMENTS:

1. Temperatures have been steadily increasing this past century.

Strongly Disagree 1 2 3 4 5 *Strongly Agree*

2. I have not noticed any variation in temperatures

Strongly Disagree 1 2 3 4 5 *Strongly Agree*

3. Rising temperatures pose a serious threat to my way of life.

Strongly Disagree 1 2 3 4 5 *Strongly Agree*

4. I believe it is possible for pollution levels to get so high that the environment cannot recover.

Strongly Disagree 1 2 3 4 5 *Strongly Agree*

5. It is too early to say whether there is really a problem with the Earth's environment.

Strongly Disagree 1 2 3 4 5 *Strongly Agree*

6. The effects of rising temperatures are likely to be catastrophic.

Strongly Disagree 1 2 3 4 5 *Strongly Agree*

7. I do not believe this issue is a real problem.

Strongly Disagree 1 2 3 4 5 *Strongly Agree*

8. Experts are agreed that there is a real problem with rising temperatures.

Strongly Disagree 1 2 3 4 5 *Strongly Agree*

9. The evidence for this issue is unreliable.

Strongly Disagree 1 2 3 4 5 *Strongly Agree*

10. There is too much conflicting evidence about this issue to know whether anything problematic is actually happening.

Strongly Disagree 1 2 3 4 5 *Strongly Agree*

11. The media is often too alarmist or they exaggerate about this issue.

Strongly Disagree 1 2 3 4 5 *Strongly Agree*

12. Temperature increases have been causing migrating animals to break from their migratory patterns.

Strongly Disagree 1 2 3 4 5 *Strongly Agree*

13. Natural disasters are not increasing, there is just more reporting of such in the media these days.

Strongly Disagree 1 2 3 4 5 *Strongly Agree*

14. Rising temperatures have no effect on the intensity of natural disasters, such as hurricanes.

Strongly Disagree 1 2 3 4 5 *Strongly Agree*

15. Sea levels are rising due to melting of glaciers and polar ice caps.

Strongly Disagree 1 2 3 4 5 *Strongly Agree*

16. Fluctuations in the Earth's environment are causing coral reefs to die.

Strongly Disagree 1 2 3 4 5 *Strongly Agree*

17. Human activities have no significant impact on global temperatures.

Strongly Disagree 1 2 3 4 5 *Strongly Agree*

18. Rising temperatures are a consequence of modern life.

Strongly Disagree 1 2 3 4 5 *Strongly Agree*

19. Pollution (i.e. burning fossil fuels) from industry is the main cause of a hotter Earth.

Strongly Disagree 1 2 3 4 5 *Strongly Agree*

20. The Earth is just undergoing a natural fluctuation in temperatures.

Strongly Disagree 1 2 3 4 5 *Strongly Agree*

21. The sun is the main cause of rising temperatures.

Strongly Disagree 1 2 3 4 5 *Strongly Agree*

22. The federal government should provide incentives for people to look after the environment

Strongly Disagree 1 2 3 4 5 *Strongly Agree*

23. Industry and [private] business should be doing more to tackle environmental problems.

Strongly Disagree 1 2 3 4 5 *Strongly Agree*

24. It is already too late to do anything about this issue.

Strongly Disagree 1 2 3 4 5 *Strongly Agree*

25. There is a problem, but there is no point for me to do anything if no one else cares.

Strongly Disagree 1 2 3 4 5 *Strongly Agree*

26. I would be willing to join, donate money to, or volunteer time with an organization working on the issues of the environment.

Strongly Disagree 1 2 3 4 5 *Strongly Agree*

27. I would be willing to use energy-efficiency as a selection criteria when buying a lightbulb, a household appliance, or a motor vehicle.

Strongly Disagree 1 2 3 4 5 *Strongly Agree*

28. Nothing I do makes any impact on the Earth's temperatures one way or another.

Strongly Disagree 1 2 3 4 5 *Strongly Agree*

29. I would support an increase in taxes, such as gasoline taxes, as a way to reduce fuel emissions into the atmosphere.

Strongly Disagree 1 2 3 4 5 *Strongly Agree*

30. I feel a moral duty to do something about this issue.

Strongly Disagree 1 2 3 4 5 *Strongly Agree*

31. This issue frightens me.

Strongly Disagree 1 2 3 4 5 *Strongly Agree*

32. I think protecting the environment is more important than economic growth, even if it costs jobs. In other words, if economic growth causes environmental problems, it would be better to do without the economic growth.

Strongly Disagree 1 2 3 4 5 *Strongly Agree*

33. When I buy things at the store, I usually think of the impact the things I buy have on the environment.

Strongly Disagree 1 2 3 4 5 *Strongly Agree*

PLEASE USE THE SPACE BELOW TO ANSWER THE FOLLOWING QUESTION.

34. When you think about this topic, what comes to mind?

MARK THE ANSWER THAT BEST RELATES TO YOU.

35. Have you ever taken a class on this subject? *YES* ____ *NO* ____

If *YES*, about how many classes have you had? _____

36. How often do you tend to read about this subject?

Often ____ *Occasionally* ____ *Almost Never* ____ *Never* ____

37. You consider yourself to be knowledgeable on the subject.

Strongly Disagree 1 2 3 4 5 *Strongly Agree*

38. You are: *Male* ____ *Female* ____

39. How old are you? _____

40. What year are you? *Freshman* *Sophomore* *Junior* *Senior*

41. What college are you enrolled in?

College of Agriculture, Food and Environmental Sciences ____

Architecture & Environmental Design ____

Orfalea College of Business ____

Engineering ____

Liberal Arts ____

Science & Mathematics ____

School of Education ____

42. What is your political affiliation?

Democrat ____

Republican ____

Independent ____

Other (please specify): _____

43. Do you consider yourself to be:

Strongly liberal ____

Moderately liberal ____

Neutral leaning liberal ____

Neutral leaning conservative ____

Moderately conservative ____

Strongly conservative ____

44. Apart from events such as weddings and funerals, how often do you attend religious services?

- More than once a week* ____
- Once a week* ____
- Once or twice a month* ____
- A few times a year* ____
- Never* ____

45. What, if any, is your religious preference?

- Protestant Christian* ____
- Catholic* ____
- LDS / Mormon* ____
- Jewish* ____
- Buddhist* ____
- Muslim* ____
- Hindu* ____
- Other* ____ (Specify) _____
- No Preference / No religious affiliation* ____
- Prefer not to say* ____

46. How active do you consider yourself in the practice of your religious preference?

- Very active* ____
- Somewhat active* ____
- Not very active* ____
- Not active* ____
- Does not apply / Prefer not to say* ____

47. What is your race/ethnicity? Check all that apply.

- White/Caucasian* ____
- Latin/Hispanic* ____
- American Indian* ____
- Alaskan Native* ____
- African American* ____
- Asian* ____
- Native Hawaiian/Pacific Islander* ____

48. Do you donate money or belong to any environmental or conservation organizations (e.g., Cal Poly's AEP, Sierra Club, Nature Conservancy, Greenpeace, local groups, etc.)?

YES ___ NO___

49. Do your parents or other close family members donate money or belong to any environmental or conservation organizations (e.g., Sierra Club, Audubon, Nature Conservancy, Greenpeace, local groups, etc.)?

YES ___ NO___ DON'T KNOW ___

50. About how much do your parents earn annually?

\$75,000 or greater _____
\$50,000-\$75,000 _____
\$25,000-\$50,000 _____
Less than \$25,000 _____
Don't know _____

51. About how much do you earn annually?

\$75,000 or greater _____
\$50,000-\$75,000 _____
\$25,000-\$50,000 _____
Less than \$25,000 _____

**THANK YOU FOR YOUR PARTICIPATION IN THIS STUDY. YOUR TIME IS GREATLY APPRECIATED.
PLEASE RETURN THIS FORM AND THE NEWS ARTICLE TO THE RESEARCHER.**

Appendix G: Control Group Condition

INFORMED CONSENT TO PARTICIPATE

Senior project research on public understanding of an environmental issue is being conducted by Larissa Jaskulsky in the Communication Studies Department at California Polytechnic State University, San Luis Obispo. The purpose of the study is to compare the different understandings and experiences people have had in relation to this issue.

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If you agree to voluntarily participate in this research as described, please indicate your agreement by reading the designated article and completing and returning the questionnaire. Please retain this informed consent form for your reference, and thank you for your participation in this research.

(Appendix G: Control Group Condition)

RECENTLY, THERE HAS BEEN A SIGNIFICANT AMOUNT OF MEDIA AND POLITICAL ATTENTION ON THE ISSUE OF THE EARTH'S INCREASING TEMPERATURE – MORE SPECIFICALLY ON THE CAUSES, HOW DIRE THE CONSEQUENCES ARE OR MAY BE AND POSSIBLE SOLUTIONS.

CIRCLE THE NUMBER THAT BEST FITS YOUR VIEW ON THE FOLLOWING STATEMENTS:

1. Temperatures have been steadily increasing this past century.

Strongly Disagree 1 2 3 4 5 *Strongly Agree*

2. I have not noticed any variation in temperatures

Strongly Disagree 1 2 3 4 5 *Strongly Agree*

3. Rising temperatures pose a serious threat to my way of life.

Strongly Disagree 1 2 3 4 5 *Strongly Agree*

4. I believe it is possible for pollution levels to get so high that the environment cannot recover.

Strongly Disagree 1 2 3 4 5 *Strongly Agree*

5. It is too early to say whether there is really a problem with the Earth's environment.

Strongly Disagree 1 2 3 4 5 *Strongly Agree*

6. The effects of rising temperatures are likely to be catastrophic.

Strongly Disagree 1 2 3 4 5 *Strongly Agree*

7. I do not believe this issue is a real problem.

Strongly Disagree 1 2 3 4 5 *Strongly Agree*

8. Experts are agreed that there is a real problem with rising temperatures.

Strongly Disagree 1 2 3 4 5 *Strongly Agree*

9. The evidence for this issue is unreliable.

Strongly Disagree 1 2 3 4 5 *Strongly Agree*

10. There is too much conflicting evidence about this issue to know whether anything problematic is actually happening.

Strongly Disagree 1 2 3 4 5 *Strongly Agree*

11. The media is often too alarmist or they exaggerate about this issue.

Strongly Disagree 1 2 3 4 5 *Strongly Agree*

12. Temperature increases have been causing migrating animals to break from their migratory patterns.

Strongly Disagree 1 2 3 4 5 *Strongly Agree*

13. Natural disasters are not increasing, there is just more reporting of such in the media these days.

Strongly Disagree 1 2 3 4 5 *Strongly Agree*

14. Rising temperatures have no effect on the intensity of natural disasters, such as hurricanes.

Strongly Disagree 1 2 3 4 5 *Strongly Agree*

15. Sea levels are rising due to melting of glaciers and polar ice caps.

Strongly Disagree 1 2 3 4 5 *Strongly Agree*

16. Fluctuations in the Earth's environment are causing coral reefs to die.

Strongly Disagree 1 2 3 4 5 *Strongly Agree*

17. Human activities have no significant impact on global temperatures.

Strongly Disagree 1 2 3 4 5 *Strongly Agree*

18. Rising temperatures are a consequence of modern life.

Strongly Disagree 1 2 3 4 5 *Strongly Agree*

19. Pollution (i.e. burning fossil fuels) from industry is the main cause of a hotter Earth.

Strongly Disagree 1 2 3 4 5 *Strongly Agree*

20. The Earth is just undergoing a natural fluctuation in temperatures.

Strongly Disagree 1 2 3 4 5 *Strongly Agree*

21. The sun is the main cause of rising temperatures.

Strongly Disagree 1 2 3 4 5 *Strongly Agree*

22. The federal government should provide incentives for people to look after the environment

Strongly Disagree 1 2 3 4 5 *Strongly Agree*

23. Industry and [private] business should be doing more to tackle environmental problems.

Strongly Disagree 1 2 3 4 5 *Strongly Agree*

24. It is already too late to do anything about this issue.

Strongly Disagree 1 2 3 4 5 *Strongly Agree*

25. There is a problem, but there is no point for me to do anything if no one else cares.

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26. I would be willing to join, donate money to, or volunteer time with an organization working on the issues of the environment.

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27. I would be willing to use energy-efficiency as a selection criteria when buying a lightbulb, a household appliance, or a motor vehicle.

Strongly Disagree 1 2 3 4 5 *Strongly Agree*

28. Nothing I do makes any impact on the Earth's temperatures one way or another.

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29. I would support an increase in taxes, such as gasoline taxes, as a way to reduce fuel emissions into the atmosphere.

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32. I think protecting the environment is more important than economic growth, even if it costs jobs. In other words, if economic growth causes environmental problems, it would be better to do without the economic growth.

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33. When I buy things at the store, I usually think of the impact the things I buy have on the environment.

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PLEASE USE THE SPACE BELOW TO ANSWER THE FOLLOWING QUESTION.

34. When you think about this topic, what comes to mind?

MARK THE ANSWER THAT BEST RELATES TO YOU.

35. Have you ever taken a class on this subject? *YES* ____ *NO*____

If *YES*, about how many classes have you had? _____

36. How often do you tend to read about this subject?

*Often*____ *Occasionally*____ *Almost Never*____ *Never*____

37. You consider yourself to be knowledgeable on the subject.

Strongly Disagree 1 2 3 4 5 *Strongly Agree*

38. You are: *Male* ____ *Female* ____

39. How old are you? _____

40. What year are you? *Freshman* *Sophomore* *Junior* *Senior*

41. What college are you enrolled in?

College of Agriculture, Food and Environmental Sciences ____

Architecture & Environmental Design ____

Orfalea College of Business ____

Engineering ____

Liberal Arts ____

Science & Mathematics ____

School of Education ____

42. What is your political affiliation?

Democrat ____

Republican ____

Independent ____

Other (please specify): _____

43. Do you consider yourself to be:

Strongly liberal ____

Moderately liberal ____

Neutral leaning liberal ____

Neutral leaning conservative ____

Moderately conservative ____

Strongly conservative ____

44. Apart from events such as weddings and funerals, how often do you attend religious services?

- More than once a week* ____
- Once a week* ____
- Once or twice a month* ____
- A few times a year* ____
- Never* ____

45. What, if any, is your religious preference?

- Protestant Christian* ____
- Catholic* ____
- LDS / Mormon* ____
- Jewish* ____
- Buddhist* ____
- Muslim* ____
- Hindu* ____
- Other* ____ (Specify) _____
- No Preference / No religious affiliation* ____
- Prefer not to say* ____

46. How active do you consider yourself in the practice of your religious preference?

- Very active* ____
- Somewhat active* ____
- Not very active* ____
- Not active* ____
- Does not apply / Prefer not to say* ____

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- White/Caucasian* ____
- Latin/Hispanic* ____
- American Indian* ____
- Alaskan Native* ____
- African American* ____
- Asian* ____
- Native Hawaiian/Pacific Islander* ____

48. Do you donate money or belong to any environmental or conservation organizations (e.g., Cal Poly's AEP, Sierra Club, Nature Conservancy, Greenpeace, local groups, etc.)?

YES ___ NO___

49. Do your parents or other close family members donate money or belong to any environmental or conservation organizations (e.g., Sierra Club, Audubon, Nature Conservancy, Greenpeace, local groups, etc.)?

YES ___ NO___ DON'T KNOW ___

50. About how much do your parents earn annually?

\$75,000 or greater ___
\$50,000-\$75,000 ___
\$25,000-\$50,000 ___
Less than \$25,000 ___
Don't know ___

51. About how much do you earn annually?

\$75,000 or greater ___
\$50,000-\$75,000 ___
\$25,000-\$50,000 ___
Less than \$25,000 ___

**THANK YOU FOR YOUR PARTICIPATION IN THIS STUDY. YOUR TIME IS GREATLY APPRECIATED.
PLEASE RETURN THIS FORM AND THE NEWS ARTICLE TO THE RESEARCHER.**