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# Climate Change in the Media: Collective Guilt and Behavioral Effects of News Reports and Environmental Identity

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The College of Wooster

Climate Change in the Media: Collective Guilt and Behavioral Effects of News Reports and  
Environmental Identity

by:

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Presented in Partial Fulfillment of the  
Requirements of Independent Study Thesis Research

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### Abstract

The threats climate change presents are highly intertwined with social, political, and media constructions, which collectively restrict implementation of large scale solutions. As the American public is strongly influenced by, often biased media representations of climate change, the present study examined whether article conditions (advantage, disadvantage, and news control), moderated by environmental identity, predicted collective guilt and behavioral engagement. People with high environmental identity were also expected to experience more collective guilt and behavioral effects than those with low environmental identity. Participants ( $n=295$ ) were recruited to read one of the three articles (randomly distributed) and then indicate their environmental identity, collective guilt as an American, and willingness to engage in environmental behaviors. They also completed measures on their immediate positive and negative affect after reading the articles. People who had high environmental identity generally experienced more collective guilt,  $F(1, 289)= 106.44, p<.001$ , and were more willing to engage in sustainable behaviors,  $F(1, 289)= 129.02, p<.001$ , than those with low environmental identity. The interaction between identity and article condition demonstrated that people with low environmental identity in the advantage and disadvantage conditions experienced less collective guilt than those with high environmental identity, in the same conditions,  $F(2, 289)= 3.31, p<.05$  (people in the control condition did not differ significantly, regardless of identity). The results and analysis of this study have implications for research on climate change in the media and environmental identity's relationship to collective guilt.

*Keywords:* environmental identity, climate change, media, collective guilt, behavior

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### Introduction

When you have a worldview that elevates the Earth above man and says that we can't take those resources because we're going to harm the Earth, by things that frankly are just not scientifically proven, for example, the politicization of the whole global warming debate — this is all an attempt to, you know, to centralize power and to give more power to the government. —Rick Santorum, 2012 (cited in Kapur, 2012)

In response to Rick Santorum, one may say that within his convoluted and grandiose dialogue, the thesis is that because globally warming is not “proven”, we should prioritize our current, gas-guzzling lifestyles over the potential fallacy of climate change. While climate change is not “proven”, simply on the premise that science can theorize and support rather than give perfect proof of any phenomena, Santorum, along with a multitude of other climate change denialists, take this expression to mean evidence is absent. However, although Santorum's assumptions may engage his supporters, he is scientifically incorrect, regardless of his political ideologies. Contrary to media reports and political misinformation, the worldwide presence of anthropogenic climate change is highly uncontested in the scientific community (Intergovernmental Panel on Climate Change (IPCC), 2007; Karl, Melillo, & Peterson, 2009; National Oceanic and Atmospheric Administration (NOAA), 2011). Political distortions, like the information in the preceding quote, frequently infiltrate into media reports which recent research shows substantially enforces the general public's poor understanding of climate change and their reluctance to adopt mitigation behaviors (Arlt, Hoppe, & Wolling, 2011; Boykoff & Boykoff, 2004; Weber & Stern, 2011).

While the media's framing of environmental issues does influence decisions to adopt more sustainable practices, involvement in certain social groups may also prompt change or

stagnancy. Specifically, people who idealize American consumerist values may be reluctant to change their lifestyles, especially if they feel their group is unfairly pressured to make sacrifices (Doosje, Branscombe, Spears, & Manstead, 1998; Ferguson, Branscombe, & Reynolds, 2011). Conversely, social identities like self identification with the environment generally promote sustainable behavior and guilt for bad environmental outcomes (Clayton, 2003; Kaiser, Schultz, Berenguer, Corral-Verdugo, & Tankha, 2008). Defining the U.S. as a primary ingroup, one can assess collective guilt relative to this overarching social identity and other ingroups which may conflict with it, like environmental identity (Ferguson et al., 2011). While previous research suggests there are implications for news framing on environmental behavior and guilt, most studies have explored these issues indirectly and independent of relevant identities (Arlt et al., 2011; Gifford & Comeau, 2011). Furthermore, although recent research shows that social identity can predict environmental collective guilt, assessing such static identities in conjunction with framed news representations of climate change is unprecedented, and thus what the current study seeks to examine (Ferguson et al., 2011).

### **Climate Change and the Environment in the Media**

The theory that anthropogenic greenhouse gas emissions (carbon dioxide, water, methane, etc.) are the foremost cause of climate change is highly agreed upon in the scientific community, contrary to some public beliefs (IPCC, 2007; Karl et al., 2009). Human forcings, most prominently burning fossil fuels, release greenhouse gases into the atmosphere which redirect light and heat absorption to the earth, causing rising temperatures across the globe. In addition, the current rate of deforestation and other land use decreases the extent to which sinks (natural earth processes that control the carbon cycle) are available for absorption of greenhouse gases (IPCC, 2007). The most important forcing overall is increased atmospheric concentrations



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of carbon dioxide (produced mainly by burning fossil fuels), as monitored in Mona Loa, Hawaii since 1959 (Karl et al., 2009; NOAA, 2011). The U.S. Global Research Program contends that the surface temperature has increased approximately 1.8 ° Fahrenheit since the early 20<sup>th</sup> century, with the highest temperatures occurring in the last three decades (Karl et al., 2009). While such a temperature increase seems minimal at a glance, it has a strong impact on a large array of weather effects, most related to sea level rise that results with increased temperatures. These weather effects include increased intensity and prevalence of natural disasters, heat waves, and ocean acidification, among others. In order for these observations to be accounted for in climate models, both natural and anthropogenic causes need to be included. The vast majority of scientists agree that climate change is a very serious problem that must be addressed globally and immediately (IPCC, 2007; Karl et al., 2009; NOAA, 2011).

Because climate summarizes weather patterns over a long period of time, rather than a singular weather event, it is impossible to conclude that any particular storm or disaster was directly caused by climate change, to the confusion of the public (Huber & Gullede, 2011). However, research supports the idea that climate change increases the frequency and intensity of extreme weather in general, suggesting that it is vital to mitigate climate change now, to prevent further environmental and societal damage (Huber & Gullede, 2011; IPCC, 2007). It is also important to note that all regions of the globe are not affected equally by climate change; coastal zones are especially vulnerable to the effects of sea level rise and natural disasters like tsunamis and hurricanes (Huber & Gullede, 2011). However, areas that contribute the most to climate change (i.e. those that release the most greenhouse gases and engage in unsustainable land use) are not necessarily the most adversely affected.

A major example of this is the U.S.; we are responsible for the highest carbon emissions per capita across the globe, however are only weakly affected by the results of climate change in comparison to nations that already suffer major environmental and health effects (Zen, 2000). When we are affected, it is typically in the form of a natural disaster (e.g. hurricane Katrina) or drought (e.g. west Texas, currently), so even if some of the nation experiences harm, it does not produce a cohesive view that climate change is detrimentally affecting the U.S. right now, especially since many do not realize climate change affects natural disasters to begin with (Aalst, 2006; Bostrom, Morgan, Fischhoff, & Read, 1994; IPCC, 2007). In addition, our society has better financial and social means to deal with climate change's effects than unindustrialized nations, which are currently more adversely affected (Qader, 2003). Climate change has strong repercussions for human health, world economies, and the natural environment, which will be experienced around the globe if high carbon-emitting nations, like the U.S. and China, do not engage in mitigation efforts (IPCC, 2007; Zen, 2000).

Focusing on the U.S., the general public still understands little about climate change and many confuse its effects with that of the ozone hole (Bostrom et al., 1994; Weber & Stern, 2011). Moreover, people who can differentiate between the two frequently express some concern regarding the ozone hole, but do not express the same concern or understanding of climate change, despite increasing scientific information about the severity of climate change. This is reasonable because climate change is innately a more complicated scientific concept and is not as accessible to as many people. In addition, people often believe that climate change's only effect is warmer temperatures and do not realize the extent of its consequences on weather patterns (Ungar, 2000). Such information is important to note, as people are often asked to indicate their concern about climate change or environmental issues, while evidently, many do

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not understand about what they are concerned (Weber & Stern, 2011). Research across disciplines shows that this discrepancy between scientific consensus and public knowledge in the U.S. and other countries is influenced by biased and ineffectual media reports of climate change (Boykoff & Boykoff, 2004; Wiegman & Gutteling, 1995).

As to be expected, the news media usually falls behind what is currently accepted in the scientific community, since scientific findings need to grasp journalists' attention and appear ground-breaking to even be considered for a news story. However, this trend becomes most prominent when the issue is political (Boykoff & Boykoff, 2004; Hook, Franks, & Bauer, 2011). As climate change denial is still prevalent and invokes political repercussions when reported about in the news, the issue is often portrayed as hotly debated even if scientific consensus attests otherwise (Kim, 2010). This discrepancy between science and public information is problematic, as there is evidence in social cognitive theory to suggest that the media serves an important role in communicating issues people may have little direct experience with— a category climate change falls under in the U.S. (Bandura, 1986; Bandura, 2001).

Social cognitive theory explains how people use media to fill the gap between firsthand experience and acquired knowledge. Bandura (1986) theorizes that individual behavior is contained within social systems, arguing that determinants of one's actions can be explained by the triadic relationship between behavior, personality, and social structure. When people do not have previous recognition of a certain situation or issue, they rely on a source in their immediate environment, which is typically print or televised news media. Therefore, the mainstream sources of news media (e.g. local news stations, cable news, popular newspapers, etc.) are the information standards for the general public on many scientific issues, including climate change (Bandura, 2001). Moreover, in the absence of direct experience with a serious environmental

problem, most people rely on their choice of media as their standard for relevant information. Based on this standard, people compare any new information they receive to news representations, making communicating climate change crucial for public involvement (Bandura, 2001; Wiegman & Gutteling, 1995).

Furthermore, because the media system is so influential, it has many competing forces to dictate how and what it reports, considering political groups, funding, and other factors, as Bandura (2001) argues. Essentially, the controllers of the media are able to manipulate what news is received by the public, and as an information standard this has major consequences for understanding of social issues. Bandura (1986) uses the theory of social diffusion, within the area of social cognition, to explain how information moves from higher level sources (scientific journals, etc.), through lower sources (word of mouth, the media), to individuals in various social groups. In this model, the media plays a major role in mediating what people, without perceived or real access to higher level sources, hear and believe (Bandura, 2001).

A prime example of the media's influence on perceptions is demonstrated in Wiegman, Gutteling, Boer, and Houwen's (1989) review of environmental and industrial risk news coverage in the Netherlands. They found that people who read newspapers with greater coverage of the risks had more negative attitudes, were more likely to seek further information, and reported more feelings of insecurity in regards to the risks, than those who read newspapers with weak coverage. This demonstrates the powerful influence the media has on public reactions to environmental issues. Considering these findings, which have been replicated worldwide, many would argue that it is the media's responsibility to concretely and openly describe the current and future effects of climate change to those who, fortunately, do not have firsthand experience (Bandura, 2001; Wiegman & Gutteling, 1995). However, previous research

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demonstrates that this is not the case; several recent reports and reviews have examined media coverage of climate change in depth and found it to be biased, misaligned with science, and weak at eliciting public responses (Arlt et al., 2011; Boykoff & Boykoff, 2004; Reser & Swim, 2011; Weber & Stern, 2011).

Focusing on studies based on U.S. mass media coverage, studies have found that news reports of climate change are weak and ineffectual at eliciting public responses (Arlt et al., 2011; Boykoff & Boykoff, 2004). Boykoff and Boykoff (2004) reviewed news articles on climate change from the “U.S. prestige press”, which is defined as the *New York Times*, *Los Angeles Times*, and *Washington Post*. They examined how newspaper media handles climate change and whether or not they communicate it as an urgent issue needing attention, as the IPCC (2007) recommends. Their study concluded that over half of the news articles gave equal attention to both sides of the climate change debate, regardless of scientific consensus that anthropogenic carbon emissions are causing climate change. Examples of “balanced reports” include one article in the *Los Angeles Times* that states, “*Some* scientists believe- and *some* ice cap studies *seem* to indicate - that humanity’s production of carbon dioxide is leading to *potentially* dangerous overheating of the planet. But skeptics contend there is *no evidence* the warming exceeds the climate’s *natural variation*.” which demonstrates that referring to climate change as debatable and normal is still acceptable by news standards (p.131). Boykoff and Boykoff (2004) also found that among media reports on what to do about climate change, 78.20% of news reports gave “balanced” arguments on action (casually act versus immediately act; voluntarily action versus mandatory action). In the article, this trend in news media is referred to as “balance as bias.” Fundamentally, the extreme efforts the media puts forth to give a balanced story become bias when the information reported diverges significantly from peer reviewed

scientific evidence. Furthermore, current reporting on climate change allows a small group of denialists to gain an unfair share of attention and have their views amplified, as demonstrated in the preceding quote—which in essence is bias. Lastly, attempting to tell “both sides of the story” can alone be unjust when it can cause harmful behavior, as discounting the importance of preventing climate change poses risk in itself (Boykoff & Boykoff, 2004; Weber & Stern, 2011).

While “balance as bias” gives climate change denialists and supporters of anthropogenic climate change equal attention, other research shows that all groups perceive bias depending on their views (Boykoff & Boykoff, 2004). Kim (2010) focuses on the hostile media perception in regards to climate change, which refers to the sensitivity people have to news reports where they feel as though the media is biased towards the side opposite themselves. He found that individuals who believed climate change was natural perceived bias towards anthropogenic climate change, while those who believed in anthropocentric climate change perceived media bias towards natural causes, as hypothesized. Even when the participants read the same article about EPA legislation, both groups perceived bias towards opposite sides. Weber and Stern (2011), reviewed findings similar to Kim (2010) and Boykoff and Boykoff (2004), asserting that members of both sides of the climate change debate use the other’s weaknesses (e.g. emphasizing drama, faulty data, etc.) to accomplish their own goals.

Perceived bias on both sides of the climate change “debate” demonstrates how little most people trust the media, yet still use it to verify existing beliefs (Kim, 2010). However, scientific evidence is not subjected to the same degree of framing, as the information reported is either supported or unsupported in the research. Therefore, since scientific evidence belongs to a category inherently separate from framed media, one should assume it be a standard of its own in which the public has open access (Hook et al., 2011; Weber & Stern, 2011). Since the media is

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still their primary standard of information, the public should be able to look to news sources to find out scientifically accurate information about climate change. The media's misalignment with scientific evidence, to the extent that Boykoff and Boykoff (2004) demonstrate, is concerning as attempted balance in the media could effectively prevent climate change mitigation efforts.

As media reports of climate change have been described as biased or counterfactual to scientific consensus, it is important to recognize that poor reporting actually has a negative effect on understanding and behavior; it is not only weak, but also ineffectual (Arlt et al., 2011; Kim, 2010). When people are presented with confusing and "uncertain" reports, they are unable to infer the need to react. For example, when news reports stress that a natural disaster cannot be directly caused by climate change, people take it to mean climate change is not occurring nor important (the increased frequency of hazardous weather events strongly suggests climate change is happening, although it cannot explain a single weather event) (IPCC, 2007; Weber & Stern, 2011). The most distinctively damaging part about the media's weak climate change reports is that most current articles are insufficient to motivate sustainable behavior. Specifically, Arlt et al. (2011) demonstrated that people who frequent news media do not practice significantly more environmental behaviors than those who do so less often. These results were contrary to their hypothesis- seemingly, people who read the news, which regularly reports on environmental issues and disasters, should understand environmental problems better and behave accordingly. However, the results revealed that media reports were too weak or inconclusive to adequately predict behavioral intentions. As behavioral intention, supported by numerous studies, is the single best predictor of actually engaging in pro-environmental

behaviors, ineffective news reporting potentially has significant negative effects on climate change mitigation efforts (Arlt et al., 2011; Bamberg & Moser, 2007; Kaiser et al., 2008).

Additionally, the media has special concerns in regards to communicating issues in a politically sound way, which is less of a concern in science reports. As reporters need to satisfy pertinent social groups and adhere to those higher in power, they selectively choose information that is entertaining and politically acceptable to report to the public. Essentially, they focus on specific issues and solutions while others are overlooked. One of the most important factors for journalists is to draw attention of readers and make the news engaging (Hook et al., 2011). Because the media is pressured to make stories dramatic, natural disaster stories get heavy coverage (Bandura, 1968; Boykoff & Boykoff, 2004). However, reporting climate change as a causal factor not only puts political pressure on the news source due to climate change denialism, but is also innately less powerful than reporting damages and other details with clear imagery; climate change cannot be visualized and is not clearly accessible to the public. Moreover, climate change as a factor in disasters is a newly understood phenomenon and only recently have journalists had to consider it (Aalst, 2006). Therefore, while the media fervently pursues and reports on natural disasters, it can overlook climate change when there may be more dramatic and vivid details to report (Reser & Swim, 2011; Wiegman & Gutteling, 1995).

Although recent research demonstrates that current news frames are ineffective in eliciting behavior and understanding of climate change, as Bandura (2001) theorized, media does connect people to social systems and it can, if used effectively, elicit behavioral change (Boykoff & Boykoff, 2004; Gifford & Comeau, 2011). As information about climate change in the print media is also positioned within a frame, it is important to identify effective framing methods to communicate climate change. Framing is defined as communicating an issue or event through a



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choice of phrases, imagery, and words. It allows a story or report to call attention to certain aspects of an issue or event, while allowing others to be disregarded (Gifford & Comeau, 2011). News frames are concerned with appearing unbiased, however are also interested in highlighting drama and controversies. This can inadvertently introduce bias, as it allows the story to weigh exciting or controversial matters (e.g. natural disasters, terrorism) more heavily than those that are chronic or present slowly (e.g. climate change). Other countries (namely, the UK) have had better success in making the public informed on climate change, demonstrating that more effective framing exists. One successful strategy includes implementing methods of “nonpersuasive communication”, where scientists make it a priority to explain the truth behind climate change to journalists and the general public (Weber & Stern, 2011). Framing climate change as a personal health issue is also effective at influencing attitudes and behavioral change (Hook et al., 2011). Another way is to effectively tell people how to manage climate change risks while communicating them, as even when people are worried about climate change it is not always apparent what can be done to help (Reser & Swim, 2011; Weber & Stern, 2011).

Though further research is needed to examine individual and group responses to various media messages, there is evidence to suggest that highlighting the advantages to sustainable behavior is important in motivating action. The advantage frame was used as priming material in Gifford and Comeau’s (2010) study where participants either read about the personal benefits of behaving sustainably, or the potential costs. As expected, individuals who were motivated by the priming material were more optimistic about acting to prevent climate change than those who read about the sacrifices associated with changing behavior. People in the advantage condition also reported more willingness to engage in environmental behavior than those in the sacrifice condition. Kolandai-Matchett (2009) found similar results using “strategic message” framing,

which employed the use of newsletters to change public responses to climate change. The newsletters detailed the negative effects of consumerism on both social life and the environment; they also reviewed the potential feasibility and cost-effectiveness of behaving environmentally. Compared to a control condition, participants who read the advantageously framed newsletters improved in knowledge of sustainable consumption and the downside to consumerism. Although they did not measure behavioral change directly, the results have positive implications for using clear messages about sustainability over the mixed messages currently seen in mass media coverage (Kolandai-Matchett, 2009).

The success of advantageously framing climate change to alter behavior is supported by Bandura's (1986; 2001) research, where he explains that people are reluctant to try new trends until they see profits gained by early implementers. He reviews that people do not want to commit to a behavior without understanding the potential consequences; therefore knowing that a specific sustainable method has worked for others helps them reject any uncertainties (Bandura, 2001). For example, explicitly noting that money can be saved when decreasing energy use and that health benefits come with buying local and organic food can have a large impact on people's willingness to change. Conversely, if people are told they will have to spend more money to buy fuel efficient cars and "green" products, they will be discouraged. Advertisements and some media certainly allude that behaving environmentally is a luxury for those of high socioeconomic status; however, changing framing to accentuate the possible savings associated with environmental behavior and the pay-off of initial purchases, can motivate those without the perceived financial means to take action (Swim, Clayton, & Howard, 2011). Therefore, altering news frames to include positive behavioral messages could potentially

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be very useful in improving environmental behavior and inhibiting “balanced” media frames from negatively affecting public perceptions.

### **Environmental Behavior**

While changing frames to include motivating information about sustainable behavior is potentially useful to include in news stories, there are other personal and social factors associated with actual implementation of environmental behaviors. Environmental behavior refers to how people act to mitigate climate change and other environmental threats. Many studies and meta-analyses have attempted to better understand predictors of environmental behavior, demonstrating that a complex array of factors are necessary for participation in mitigation efforts (Bamberg & Moser, 2007; Kaiser et al., 2008; Osbaldiston & Schott, 2011; Reser & Swim, 2011). As mentioned previously, behavioral intention is shown to predict actual behavior; Bamberg and Moser’s (2007) meta-analysis concluded that intention can account for up to 27% of variance in actual environmental behavior. Therefore, inferring actual environmental behavior from the more measurable behavioral intention construct is relevant to studies seeking to experimentally predict actual behavior (i.e., it is difficult to find out how people will actually behave after an experiment without a longitudinal design). This is important to note, as many researchers question whether asking people about their intentions can realistically relate to their current or future behaviors (Bamberg & Moser, 2007; Fujii, 2006; Kaiser et al., 2008).

Some of the other factors in predicting environmental behavior include perceived behavioral control (e.g. coping appraisal) and perceived threat (Bamberg & Moser, 2007; Reser & Swim, 2011). Both of these factors can be manipulated, to some extent by how an issue is framed, while more individual predictors (which cannot be manipulated as easily) such as environmental identity, moral norms, and attitudes also help to explain variance in behavior

(Bamberg & Moser, 2007; Osbaldiston & Schott, 2011; Poortinga, Steg & Vlek, 2004). The first factor mentioned, perceived behavioral control, refers to the degree to which one can realistically behave environmentally, considering potential limitations. Previous studies have shown that limitations like finances, time constraints, and availability of resources contribute to perceived behavioral control (Bamberg & Moser, 2007). Poortinga et al. (2004) found that “quality of life” variables (e.g. health, environmental quality, social justice) significantly predicted intentions to behave environmentally. As an example, one who is in poor health or a dire economic situation likely does not have the resources to dedicate efforts to changing behavior for seemingly distant environmental problems. Therefore, situational constraints and perceived difficulty of acting environmentally are very important in predicting environmental intentions and behaviors.

Moreover, perception of the threats of climate change is important to how one understands the importance of engaging in such behaviors. Relative to the media’s ineffectiveness in provoking sustainable initiatives, people who understand the true severity of the risks are more likely to do something about them (O’Connor, Bord, & Fisher, 1999; Reser & Swim, 2011). Flawed perceptions of risks, either the assumption that the risk is too high or too low, weaken both affective and behavioral responses to mitigating climate change (Ferguson & Branscombe, 2010; O’Connor et al., 1999). Ferguson and Branscombe (2010) demonstrated that when people think the effects of climate change are too severe, they reject affective responses to the information. Conversely, O’Connor et al. (1999) found that people who accurately understand the severity of the risks are more likely to behave in ways that mitigate climate change’s effects. Therefore, communication of risks must be balanced so that people understand that harm is real and pending, however not so severe that they feel incapable of helping substantially. Furthermore, proximal intensity of the environmental hazards is also relevant to

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predicting behavior. Reser and Swim (2011) report in their review that people who perceive a threat to be acute and severe are more likely to act (e.g. in the case of a hurricane, tsunami, or other majorly destructive weather event) compared to those who perceive the threat to be chronic and minor (e.g. short periods of drought or heat waves). This is related to environmental action because most current climate change effects are relatively mild, although gradually destructive, and therefore people are not especially motivated to invest in mitigation efforts.

Overall, each of these behavioral factors is important to consider while framing environmental issues. However, more inherent individual variables are also essential to consider in predicting environmental behavior. Moral norms are useful, as measuring norms allows one to evaluate internal attributions (i.e., whether or not one believes that climate change can be affected by the individual is somewhat dependent on norms) and social factors relative to climate change. Additionally, attitudes on their own can predict climate change mitigation efforts (Bamberg & Moser, 2004). For example, people who have positive attitudes towards protecting the environment tend to recycle more and adopt other smaller environmental behaviors, although it is important to note that attitudes do not predict more extensive behaviors as well (Kollmuss & Agyeman, 2002). Among other personal constructs, identification with the environment (i.e. environmental identity) has strong implications for behavioral intentions. The previously mentioned behavioral predictors, which include climate change severity and quality of life variables, can be moderated if the individual sees environmental issues as relevant to their identity (Clayton, 2003; Fritsche & Hafner, 2011). Therefore, as environmental identity is a validated and measurable construct, it is useful to understand its effect on behavior, relevant to other factors.

### **Social Identity Theory and Environmental Identity**

Environmental identity influences environmental behavior, given that those who have a high environmental identity view it as a self-relevant ingroup (Clayton, 2003; Sparks & Shepherd, 1992). In order to explain the effect of environmental identity on sustainable behavior, it is imperative to review social identity theory. Although it has only been applied explicitly to environmentalism in a few instances, social identity theory is important in understanding environmental identification and collective guilt generating from a specified ingroup (Ferguson & Branscombe, 2010; Sparks & Shepherd, 1992). According to Tajfel and Turner (1986), people identify as members of their prominent social groups (ingroups, in relation to outsiders who form outgroups), rather than as isolated individuals and other group members define them accordingly. Members behave in ways that match what is generally acceptable for a group member and have emotional attachments to their most self-relevant ingroups. For example, based on social identity theory, high environmental identifiers' expectations for themselves to buy organic food, invest in clean energy and participate in other sustainable behaviors, match those of their prominent ingroup (environmental identifiers), rather than their larger societal group (Sparks & Shepherd, 1992). Social identity is most relevant when there is conflict between groups, causing people to stop behaving and thinking as individuals and more as group members. Conflict and social identity are also strongly related to political identification and environmental involvement (Huddy, 2001; Tajfel & Turner, 1986).

Early works on social identity focus on how inter-group conflict is influenced by the psychological processes of individual group members. Tajfel and Turner (1986) focus on movement between social groups as a source of conflict. When people leave one group for another, or move within the group to higher or lower positions, tensions rise as status in a group

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influences identification. People with low status in a self-relevant group paradoxically feel inferior to other group members, yet idealize the group in order to justify their involvement; large status differences can also cause group splitting and further conflicts between individuals. Also, explained by Hogg (2006), are specific motivations individuals have for involvement with a group. He summarizes that people use ingroups for self enhancement and to reduce uncertainty of others. This means people can have expectations of other group members that are irrational to ask from non-group members.

Among the positive aspects of group identification, people value ingroups to maintain “optimal distinctiveness”; individuals prefer groups that distinguish them from outgroup members, yet desire feelings of inclusion from their ingroup (Hogg, 2006). The salience of group inclusion was demonstrated in Brewer and Gardner (1996), where people who were primed with “we” statements rather than “they” statements faster inferred the similarity between themselves and other members of the group. Those primed with “we” statements were also more likely to describe themselves in collective rather than individual terms. Because their inclusion in a social group was made salient in the “we” condition, people were more likely to indicate similarities and maintain feelings of inclusion, demonstrating the positive collective and relational effects of group identification.

Further studies have used social identity theory to describe outgroup discrimination by ingroup members, demonstrating one of the downfalls to group identity (Billig & Tajfel, 1973; Jetten, Spears, & Manstead, 1996; Oakes & Turner, 1980). In their classic study, Oakes and Turner (1980) demonstrated this effect, where they had participants choose from two paintings which they preferred (Klee versus Kandinsky). People who preferred Klee were more likely to award an abstract profit to other Klee choosers over Kandinsky choosers, based on the group

members' weak and lone commonality (Kandinsky choosers also chose to benefit their ingroup). In addition, those who awarded the profits to members of their own group were more likely to have increased self esteem than those who awarded profits more fairly. Altogether, Oakes and Turner's (1980) study demonstrates that individuals favor their own groups even if it means their choices are potentially unfair and contradict social norms of nondiscrimination. Jetten et al. (1996) also demonstrated this effect, where they arbitrarily assigned participants to an ingroup (all "detailed perceivers") and requested the group complete a task together to increase group salience. The participants were then asked if they would favor "detailed perceivers", over "global perceivers" if they had a specified amount of money to give away. Group members chose to allocate the money to ingroup members over outgroup members, again demonstrating discrimination effects of ingroup membership.

Although social identity has been applied to various phenomena including discrimination and political identity, few studies have explicitly used it to describe environmental identity. Sparks and Shepherd (1992) studied environmental identity with the purpose of examining how it relates to consumption of organic food and intentions to purchase organic food. They found that even when the behavior is not planned, people are still more likely to buy organic food if they have high identification with the environment. This is important to recognize as behavioral intention is a well supported predictor of actually behaving, however the predicting value of identity has not been studied as in depth. Under social identity theory, environmentalists need to view the ingroup in a positive light and want to maintain that they are contributing members, and therefore they behave in ways that allow them to preserve a sense of cohesion (Hogg, 2006; Sparks & Shepherd, 1992).



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Also relevant to applying social identity theory to environmental and American identity, is the valence of group membership, which Huddy (2001) defines as whether the common view of the group is positive or negative. If people view an ingroup as generally negative, it inhibits identification with the group and meaningful association with other members. From this, one can infer belonging to the American ingroup is not always seen as a positive aspect of one's identity. For example, if people identify highly with the environment they may disapprove of how American consumerism affects the natural environment (Swim et al., 2011). Therefore, for those with high environmental identity, parts of American identity may seem undesirable thus causing them to identify less strongly as an American. As such associations have implications for mitigation behavior and affective responses to environmental problems, understanding intertwined environmental and American identities is fundamentally important (Ferguson et al., 2011; Swim et al., 2011).

Environmental identity defines how one perceives the natural environment to influence their sense of self (Clayton, 2003; Hinds & Sparks, 2008). Environmental identity summarizes the personal significance of interacting with nature, feelings about the environment, and time spent outdoors; fundamentally, it applies social identity theory to nature. Clayton (2003) argues that environmental identity is an important collective identity, similar to ethnic or national identity, and is relevant in explaining attitudes and behaviors towards the environment. Specifically, because environmental identity is concerned with peoples' innate values and needs for nature, it helps explain why people appreciate nature for its own sake (the biocentric view), rather than how it can be used to benefit humans (the anthropocentric view) (Clayton & Myers, 2009). Early use of environmental identity stemmed from place identity, which explains the emotional connection people associate with a specific environment and other individuals

connected with it. More recently however, it has been applied to nature in general and related to affective and behavioral components of environmentalism (Hinds & Sparks, 2008).

Previous work suggests that environmental identity strongly correlates to one's emotional attachment to nature, which also positively influences pro-sustainability efforts. Because affection for the environment is defined as a subjective experience, it is impossible to quantitatively measure directly. Therefore it must be measured indirectly, through environmental identity and factors that enforce it, like experiences in nature and perceived value of natural settings (Hinds and Sparks, 2008). Additionally, environmental identity alone is a positive predictor of environmental behavior (Clayton, 2003; Fritsche & Hafner, 2011). Clayton (2003) had participants make decisions about protecting the environment versus harming the environment and showed that people with high environmental identity were more likely to choose to protect the environment in various scenarios. This demonstrates that people's attachments to the environment and ingroup identification may actually have a powerful influence on actions, although the study was limited by anticipated behavior rather than using an actual behavior measure. Further studies have found similar effects; Fritsche and Hafner (2011) examined the moderation of environmental identity in the relationship between existential threat and environmental behavior. Existential threat, or the theory that nature reminds people of their own mortality, typically correlates to low engagement with environmental behaviors, as people who are afraid of natural forces try to avoid interacting with them. Fritsche and Hafner's (2011) results, however, demonstrate that if people have a high environmental identity they are not as likely to allow existential threats diminish environmental behavior, illustrating the powerful moderation effect of environmental identity.

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As people idealize the good works of their self-relevant ingroups, those who identify with the environment behave according to environmentalist ingroup norms, rather than outgroup norms (Clayton, 2003; Tajfel & Turner, 1986). This aspect of environmental identity suggests that there is a political component to high identification (Huddy, 2001; Simon & Klandermans, 2009). According to Simon and Klandermans (2009), balancing the power of various in-groups within a larger group is the concept that defines the politicization of collective identity. The authors explain that generally, a group is political if its members are struggling for power with other groups. The three components that influence how political a group is, are shared grievances (i.e. groups rights or wants are threatened), external blame, and “involving society by triangulation”, which is after the blamed other refuses to change, the in-group gets society involved for their own justice (Simon & Klandermans, 2009).

Relevant to environmental identity, American environmentalists define themselves as a smaller group within the larger U.S. ingroup. In this case, environmentalists resist the overarching American ingroup's actions (e.g. high energy consumption, pollution, and other issues). As they have ingroup objections to these typically American acts (shared grievances) and campaign to involve society in their efforts (triangulation), they have two of three political group components (Simon & Klandermans, 2009). However, whether or not they fully place blame for environmental problems externally, on outgroup members in the absence of individual remorse, is not without further considerations. Previous studies have demonstrated that environmentalists have both high individual and collective guilt over environmental problems, which suggests that those with high environmental identity blame themselves, at least to some degree (i.e. not fully politicized in terms of external blame) (Ferguson et al., 2011; Kaiser et al., 2008; Simon & Klandermans, 2009).

Individual guilt, which is defined by an affective response to perceived or real moral errors, can predict behavior. Specifically, guilt over the state of the environment can predict pro-environmental behavior, most strongly for those who identify with it (Kaiser et al., 2008). Furthermore, recent research suggests that guilt over environmental issues is not limited to the individual's actions or inaction, but includes a relevant ingroup's harmful behaviors which described as collective guilt (Ferguson & Branscombe, 2010; Ferguson et al., 2011). Based on this research, the current study is concerned with examining differences in American collective guilt for environmental problems, between those belonging to an environmental ingroup (high environmental identity) versus those in the outgroup (low environmental identity). Collective guilt will be examined instead of individual guilt as it has stronger implications for recognizing group differences and understanding perceived American responsibility for climate change. I chose to study collective guilt from an American standpoint because it is most applicable to the sample available and relates the U.S's large contributions to environmental destruction, which affect populations around the globe.

### **Collective Guilt**

Collective guilt describes the affective response people experience when they feel as though their group has unfairly harmed another group. It is different than individual guilt since one does not have to be personally involved in the wrongdoing to feel collective guilt, as long as their group is clearly the perpetrator (Ferguson & Branscombe, 2010). Collective guilt is supported under the theory of social identity, which explains that people need to have positive views of their ingroups. If those views are challenged, people first try to lessen group attribution of harm, whether it is through denying responsibility of their group, discounting the harmed group's moral standing (i.e., moral exclusion), claiming the harm was minor and justified, or

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various other external attributions (Wohl, Branscombe, & Klar, 2006). However, if none of these reasons are sufficient and unjustified harm brought about by the group is admitted by the individual, collective guilt develops, and in many cases it can increase one's willingness to make reparations towards the misfortunate group (Doosje, et al., 1998; Schmitt, Branscombe, & Brehm, 2008; Wohl et al., 2006). Wohl et al. (2006) summarize four factors that are necessary to facilitate collective guilt: an individual must identify with the group, acknowledge the group's responsibility for harm, feel the harm was caused unfairly, and understand that a reasonable cost to the group member will be required to make reparations.

First, the person must truly feel as though a component of their identity lies with that group. If their attachments to the group are weak or the ingroup is not particularly self-relevant, the person will not accept guilt on behalf of the group; not all groups one belongs to are valued equally (Doosje, Branscombe, Spears, & Manstead, 2004; Wohl et al., 2006). However, other collective guilt research suggests that too high identification with a group may cause one to preserve their identity by denying the group's harmful actions. Specifically, Doosje et al.'s (1998) study manipulated Dutch history (bad group actions versus control) and measured national identity in a Dutch sample. People who were high Dutch identifiers experienced less collective guilt than those who identified less highly with their nationality. Participants whose national identity was incredibly salient were less likely to accept threatening information about their group and experience collective guilt (i.e. it was too close to their personal identity), whereas those who had lower identification with the group could admit the nation's downfalls and react affectively to them. This is supported by social identity theory, in that group members need to have a generally positive view of self-relevant groups (Jetten et al., 1996). Therefore, one cannot identify too strongly with a group and internally acknowledge its potentially upsetting

downfalls. However, they do need to have some degree of attachment to the group for its wrongdoings to elicit an emotional response (Doosje et al., 1998; Doosje et al., 2004).

Additionally, people need to feel as though their group is actually responsible for any harm caused to another group (Wohl et al., 2006). Ferguson and Branscombe (2010) demonstrated this, relative to environmental issues. People who were told climate change was a natural process reported low collective guilt, while those who believed it was anthropogenic reported high collective guilt. Overall, those who did not feel as though their group could have an impact on climate change had no reason to feel guilty, as they were not perceptibly at fault. This has wide implications for people who deny the human causes of global climate change, as collective guilt is a strong predictor of environmental behavior (Ferguson & Branscombe, 2010; Kaiser et al., 2008).

For people to experience collective guilt, they not only have to feel their group is responsible, but they also have to perceive their group's actions to be unfair. If group members feel that the act was moral (or they morally exclude the harmed outgroup), necessary, or are able to blame the victims, their actions are justified and they do not experience guilt (Wohl et al., 2006). Wohl and Branscombe (2004) demonstrated this by framing North American Jews with either a reading about their group's oppression of Palestinians, or a reading about Palestine's past acts of terrorism. They found that people who read about Palestinian terrorism were able to blame the Palestinians for their struggles, and thus avoided feeling collective guilt. On the other hand, North American Jews who read about the Israeli Jews' oppression of the Palestinians, felt responsible and experienced collective guilt. Therefore, if people are able to legitimize harm caused by their group, they tend to do so, as it allows them to avoid negative feelings of collective guilt (Wohl et al., 2006).

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Lastly, for collective guilt to be experienced, ingroup members need to feel as though they have potential to repair harm the caused by their group (Schmitt et al., 2008; Wohl et al., 2006). If the costs to the ingroup for the reparations are too great, they will be unmotivated and will not experience collective guilt; however, if making reparations is too easy, they will not experience collective guilt because they will not think the harm caused is sufficiently damaging. This is best demonstrated in Schmitt et al.'s (2008) study, where white men read articles about their group's contributions to women's inequality. They then had three conditions where participants were told they would need 5, 50, or 100 signatures on a petition for a safety service for women, to effectively make amends. Men who read that they would have to get 50 signatures (difficulty of reparations was moderate), experienced the most collective guilt, while those who needed 5 or 100 signatures, experienced the least. Thus, if making amends is framed as reasonable, yet needing some effort, people will experience more collective guilt than if it is framed as unreasonable or easy to repair with little effort.

In recent years, collective guilt has been applied to environmental issues and sustainable behavior (Ferguson & Branscombe, 2010; Ferguson et al., 2011; Kaiser et al., 2008). Research has shown that guilt over environmental issues predicts anticipated environmental behavior, which is the best predictor of actually engaging in a behavior (Kaiser et al., 2008). As the U.S. uses more energy than most other nations (effectively a harm causing ingroup), increasing collective guilt among Americans for environmental problems is potentially a successful way to predict environmental behavior. Additionally, the U.S. ingroup has been targeted in previous studies examining collective guilt for environmental destruction. Ferguson and Branscombe (2010) found that when Americans thought climate change was human-caused and would have manageable effects (rather than natural and devastating effects), they reported more collective

guilt and more willingness to engage in environmental behavior. Therefore, framing environmental issues in a way that induces self-efficacy is important to consider in media reactance to severe weather or other environmental stress. Specific to the U.S., if the degree to which we are contributing to climate change was made more salient, it is likely collective guilt would be higher.

As earlier described, difficulty of making reparations to a harmed outgroup influences collective guilt, and in turn, affects behavior. Employing advantageously framed environmental issues to stimulate collective guilt is also supported by Schmitt et al. (2008). Specifically, if making reparations is too easy or too hard, people will be weakly affected by it. Pertinent to climate change, if the severity is taken too lightly (e.g., the view that climate change will just cause a small temperature increase, but will not have extreme effects on weather patterns), people will not be motivated to act and will not feel guilty. However, if the potential or current damages are made to seem too severe, even if the ingroup (i.e. the U.S.) is at fault, individuals will not accept collective guilt and will not behave accordingly (Ferguson & Branscombe, 2010; Schmitt et al., 2008). Furthermore, even if people do accurately understand the severity of climate change, collective guilt will be low if people feel incapable of doing much. For example, if sacrifices that go with behaving environmentally are made overly salient, people will shut down any feelings of guilt because they have no realistic way of dealing with it. In this case, no environmental behavior would follow because the sacrifices are unreasonable in terms of finances, time, and other factors (Schmitt et al., 2008).

Furthermore, collective guilt and behaviors' relation to environmental identity is potentially supported by previous work (Ferguson et al., 2011). Specifically, recent research examined the predictive value of environmental group membership on environmental behavior.



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Ferguson et al. (2011) examined how manipulating identity via time scale influenced willingness to engage in environmental behavior. The participants were compared to either past or future students, requiring them to think about their generation in relation and read a current article about the scientific consensus of climate change. The results showed that students who compared themselves to past students agreed to engage in more environmental behaviors than those who were compared to future students. Theoretically, this is because when compared to past students, current students felt like they were in the environmental ingroup (i.e., they were more informed about environmental issues), and therefore rated behavior higher because it corresponded more to their social identity, in this condition. However when compared to future students, they did not feel like part of the environmental in-group (future students will likely act more sustainably than students now), and therefore rated their behavior lower because it was not part of their identity, in this condition. As ingroup identity, both high and low (as evidenced in the Doosje et al., 1998), has implications for collective guilt, these findings are relevant to predicting behavior. Environmental ingroup membership could arguably be measured by environmental identity, which reliably predicts behavior (Doosje et al., 1998; Doosje et al., 2004; Ferguson et al., 2011). Although there is no previous work directly connecting environmental identity or ingroup membership as an environmentalist to collective guilt, the results of the studies mentioned can be used to deduce that there are implications for collective guilt and group identity.

Extending the relationship between group identity and behavior further (likely mediated by collective guilt), and adding the politicization of climate change, ingroup identification suggests further consequences in regards to the environment (Doosje et al., 1998; Ferguson et al., 2011; Simon & Klandermans, 2001). As mentioned previously, all the groups one belongs to are

not equally self relevant (Doosje et al., 1998). This suggests that people who identify very strongly as environmentalists (in some cases a political identification) likely associate more with that ingroup identity than their American identity. If one sees his or herself as first an environmentalist, and then an American, their ingroup identity likely predicts environmental behavior, but also political activism and negative feelings towards American consumerism and climate change denialism (Ferguson et al., 2011; Simon & Klandermans, 2001). Referring back to the Doosje et al. (1998) study which explained that too high identification with a group may decrease collective guilt, as negative information may threaten their personal identity, there may be different implications for high environmental identifiers. As a separate ingroup exposed to an issue targeting the American ingroup, high environmental identifiers could potentially be willing to accept the most collective guilt as the cause is very important to them (i.e. they certainly relate). However, their identity in the American ingroup will not be as threatened if they admit collective guilt, because their identity comes first as an environmentalist (Doosje et al., 1998; Simon & Klandermans, 2001).

In addition to measuring collective guilt, other affective measures are useful for predicting emotional reactions to various stimuli. Specifically, the positive and negative affect schedule (PANAS) separates positive and negative moods into two overarching, reliable and valid scales (Watson, Clark, & Tellegen, 1988). Positive affect measures the extent to which one feels inspired, active, alert, and other positive mood factors, while negative affect measures emotions that include distress, guilt, hostility, and other pessimistic factors. While the PANAS was initially developed to measure general moods over extended periods of time, it can also be useful for measuring affective reactions to a certain type of stimuli (e.g. a news article). Therefore, the PANAS has been used to measure different positive and negative responses to

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news stimuli in order to describe how differently framed articles make participants feel (Watson et al., 1988).

### **The Current Study**

The purpose of the current study was to examine collective guilt, behavior, and other affective responses (PANAS) elicited by three differently framed articles. Advantage and disadvantage framed articles were used as primes along with a recent news article, in order to determine how the news media compares to other frames that had been successful in eliciting behavioral responses (Gifford & Comeau, 2010; Kolandai-Matchett, 2009). Although previous research has examined bias and weak climate change reporting in news media, most of these studies have been conducted within communications and environmental areas of research, and have not taken actual individual reactions to the articles into account (Boykoff & Boykoff, 2004; Kim, 2010).

Specifically, this study examined whether news media is actually as weak at eliciting public responses as has been previously suggested, yet not directly studied, in past work (i.e. is it comparable to a control condition, in relation to advantage and disadvantage framing methods?) (Weber & Stern, 2011). Therefore, the current research fills a gap; this study examined affective and behavioral responses to news and other media, while taking into account social identities. As there are potential implications for various social identities in predicting collective guilt and behavior, the current study was concerned with measuring environmental identity (Clayton, 2003). Collective guilt, in this study, was targeted towards identification as an American, as it related another prominent social identity to environmental action. The current research was unprecedented in this context as well, as individual differences in the salience of these groups

had never been explored explicitly in relation to environmental guilt and behavior (they were explored somewhat implicitly in Ferguson et al., 2011).

**Main effect hypotheses.** In this study, participants read either an article about the social and financial advantages of behaving environmentally, about the disadvantages of adopting more sustainable changes, or a recently published news article. The news article was considered a control, as it was not expected to elicit any change in individual reactions. My first hypothesis (H1) was that those who have high environmental identity would report greater willingness to engage in environmental behaviors than those with lower environmental identity. The second hypothesis (H2) was that people who had high environmental identity would experience more collective guilt than those with low environmental identity. I did not expect that there would be any main effects for the article on collective guilt or behavior, as group differences (i.e. high or low environmental identification) would interact with the media message to influence predictions. I also hypothesized there would be a main effect for the positive and negative affect measure (PANAS), as emotions elicited were expected to vary with the article condition. My third hypothesis (H3) was that those who read the advantage article would experience more positive affect than those in the control condition. Fourth (H4), those who read the disadvantage article would experience more negative affect than those who read the control article.

**Interaction hypotheses.** While the advantage article would make the topic salient in a manageable way and would influence positive responses, the disadvantage article would make low identifiers feel overwhelmed and unable to make reparations, effectively preventing them from accepting collective guilt (Schmitt et al., 2008). In addition, those with low environmental identity may feel overly pressured by the disadvantage framing to behave in ways that are inconvenient and costly, and feel their American identity was threatened (the collective guilt

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scale appeals to American identity). Therefore, they would block feelings of collective guilt, as Doosje et al. (1998) demonstrated that salience of a threatened identity can prevent collective guilt. Not only this, but people with low environmental identity may think the disadvantage article verifies their beliefs that behaving sustainably is too hard, and therefore would not accept collective guilt. However as evidenced by previous research, those with high environmental identity hold self-identification with the environment as more self relevant, and would not feel as verified by the disadvantage article nor as targeted by the collective guilt scale (i.e. American identity is not as salient) (Ferguson et al., 2011). Therefore, they would accept collective guilt because an important part of their identity lies with protecting the environment, even if the behavior is time consuming and costly. They may also perceive themselves as distinct from the American ingroup targeted and will not feel as though their identity is as threatened, making them more likely to experience collective guilt (i.e. they are probably already doing something environmental, unlike their perception of other Americans) (Doosje et al., 1998; Simon & Klandermans, 2001).

The article condition and environmental identity were expected to interact to predict changes in the dependent variables. The fifth and sixth hypotheses (H5 for behavior, H6 for collective guilt, respectively since they are expected to show the same pattern) were that for high environmental identifiers, the article condition would not affect collective guilt and behavior significantly. As those who have high environmental identity likely already know the current state of environmental affairs and react to them behaviorally and affectively, I did not anticipate the article would have a significant effect. However, I hypothesized that people who had low environmental identity and read the advantage article would report higher collective guilt and higher willingness to engage in environmental behaviors than those in the control condition.

Therefore, their collective guilt would be the statistically the same as those with high environmental identity. Low identifiers in the disadvantage condition were expected to report lower collective guilt and environmental behavior than those in the advantage condition, thus less collective guilt than high identifiers in all conditions. There would be no difference between low identifiers in the disadvantage condition and the control condition on collective guilt.

My seventh hypothesis (H7) was that there would be an interaction for the article and environmental identity on the negative affect measure. For high environmental identifiers, reading about an issue relevant to their identity should elicit a momentary response. I hypothesized that high identifiers who read the disadvantage article would experience more negative affect compared to the control group. This is expected because the disadvantage article may make them feel somewhat helpless and distressed about people how would respond to this type of information, which will be shown in their affective responses. I hypothesized that low identifiers in the disadvantage condition would experience lower negative affect than those control condition. This is because those who have low identification with the environment do not innately feel as much pressure to protect the environment; therefore, the disadvantage article would essentially verify their perceived inability to do anything substantial (Kaiser et al., 2008). Low identifiers would be influenced by the disadvantage article, stressing that doing something to prevent climate change is difficult for everyone and few individuals can feasibly do the behaviors mentioned. The eighth (H8) and last hypothesis was that there would be an interaction for positive affect as well. High identifiers who read the advantage article would experience more positive affect compared to the control group, based on the article's positive relevance to a prominent identity, while there will be no differences for those with low environmental identity .

## Method

### Participants

Participants ( $N=333$ , 144 men and 189 women, all over 18 years in age) were recruited by Amazon Mechanical Turk's requester program and the College of Wooster's Sona Systems participant program. The first pool of participants ( $n=270$ , 123 men, 147 women) were recruited by Amazon Mechanical Turk, where they were compensated \$0.17 for their participation. Only Mechanical Turk users in the U.S. and with approval ratings of 88% or higher were permitted to complete the study. Mechanical Turk participants were asked to provide a matching code on the survey and when redirected back to the Amazon page in order to ensure only those who fully completed the study were included in the analysis. The second participant pool ( $n=63$ , 21 men, 42 women) was recruited from the College of Wooster's Sona Systems where students received course credit for their participation. All participants who spent less than 4 minutes on the study (recorded through the surveymonkey.com results) were deleted in order to ensure the accuracy of the data used in the analysis ( $n=38$ ). Altogether, these deletions reduced the entire number of participants ( $n=295$ , 119 men, 176 women, 232 Amazon users, 63 Wooster students) included in the analysis. The participants were distributed among the news (control) condition, A ( $n=104$ ), the advantage condition, B ( $n=102$ ), and the disadvantage condition, C ( $n=89$ ).

### Materials

The study focused on environmental identity and news frames' influence on environmental behavior and collective guilt. The participants were primed with one of three page-long articles depending on the condition in which they were randomly assigned (shown in Appendices A, B, and C). Condition A, or the news article, served as a control condition; conditions B and C were the advantage and disadvantage conditions, respectively (the articles are

described further in the procedure section). Participants were asked to indicate their gender, age group, and political affiliation. The scales used were the environmental identity scale (Clayton, 2003), the environmental behavior scale (modified from Gifford and Comeau, 2011), the collective guilt scale (modified from Branscombe & Doosje, 2004 and Ferguson & Branscombe, 2010), and the positive and negative affect schedule scales (PANAS) (Watson et al., 1988) (Appendix D, E, F, and, G respectively). There was also one question which asked, in regards to the environmental behavior scale, why one would not engage in some (if any) of the behaviors listed. The potential answers included cost, inconvenience, and lack of resources.

**Environmental identity.** Environmental identity measures the degree to which people self-identify with the natural environment. Its formulation was based on social identity theory and one's agreement or disagreement with typical beliefs held among those who define themselves within an environmental ingroup (Clayton, 2003; Tajfel & Turner, 1986). The scale is used to understand an individual's perceived importance of a healthy environment and the degree to which one appreciates nature (the complete scale is included in Appendix D). It also asks about the morality of behaving in sustainable ways and spirituality in natural settings. Participants made ratings on a 12 item Likert-type scale ranging from 1 (*not true of me at all*) to 7 (*completely true of me*). High scores indicate high environmental identity and low scores indicate low environmental identity. One item states, "I feel that I have a lot in common with other species." The scale was sufficiently reliable in previous research ( $\alpha = .85$ ), and in the current study ( $\alpha = .90$ ) (Clayton, 2003; Nunnally, 1978).

**Environmental behavior.** The environmental behavior scale used in this study (modified from Gifford and Comeau (2011)) measures willingness to engage in environmentally sustainable behaviors. It includes some behaviors as minimal as switching off the lights when



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they are not in use and turning down the heat, but also consists of more drastic behaviors, like buying a fuel efficient vehicle and committing to vote for climate change-correct officials (the full scale is included in Appendix E). The scale asks participants to rate the extent to which they would engage in each of the environmental behaviors in order to reduce their greenhouse gas “footprint”. Ratings were made on a 14-item Likert-type scale ranging from 1 (*very unlikely to do this*) to 7 (*absolutely would do this*). High scores on the scale signify high willingness to engage in environmental behaviors and low scores indicate low willingness to engage in such behaviors. One example item asks participants to rate the extent to which they would be willing to eat vegetarian meals more often. The modified scale was reliable in the current study ( $\alpha = .88$ ) (Gifford & Comeau, 2011; Nunnally, 1978).

**American collective guilt.** Branscombe and Doosje (2004) and Ferguson and Branscombe’s (2010) collective guilt scales were used to create a new measure examining American collective guilt for bad environmental outcomes. This scale, generated with the current study in mind, measures the extent to which Americans feel guilty and regretful about their group’s harmful actions towards the environment and other groups hurt by poor environmental conditions (the full scale is included in Appendix F). It asks participants to indicate the extent to which they agree with 9 statements on a Likert-type scale ranging from 1 (*completely disagree*) to 7 (*completely agree*). High scores (after reverse-coding items numbered 7 and 9, see Appendix F) indicate high collective guilt and low scores indicate low collective guilt. An example (recode) item states, “It is not my group’s responsibility to change our lifestyles to diminish climate change effects.” The new American collective guilt scale was reliable in the current study ( $\alpha = .91$ ) (Nunnally, 1978).

**Positive and negative affect schedule scales (PANAS scale).** The PANAS scale, developed by Watson et al. (1988), measures positive and negative moods by asking people to rate the extent to which they experience a certain emotion momentarily (the full scales are located in Appendix G). Participants made ratings on a 20-item (10 positive and 10 negative) Likert-type scale ranging from 1 (*very slightly or not at all*) to 5 (*extremely*). Both the positive ( $\alpha = .89$ ) and negative ( $\alpha = .85$ ) affect scales had sufficient reliability in previous work when measuring emotions momentarily (reliabilities vary slightly for mood measurement over longer time periods) (Nunnally, 1978; Watson et al., 1988). Total negative and positive PANAS scores were computed separately. High scores on the positive affect items indicate high positive affect, low scores indicate low positive affect. It was computed with the following 10 items: interested, excited, strong, enthusiastic, proud, alert, inspired, determined, attentive and active; the composite values were sufficiently reliable ( $\alpha = .90$ ) (Nunnally, 1978). High scores on negative affect signify high negative affect and low scores indicate low negative affect. The items used to describe negative affect were as follows: distressed, upset, guilty, scared, hostile, irritable, ashamed, nervous, and afraid. The “jittery” item was deleted because reliability improved upon its removal (after deletion,  $\alpha = .89$ ) (Nunnally, 1978).

### **Procedure**

Participants were asked to complete a survey and reading regarding the environment, their feelings, and sustainable behavior, which was titled, “Environment and Action”. After giving consent, they completed survey condition A, B, or C, which were randomized on Amazon Mechanical Turk by alternating the surveymonkey.com survey links periodically. The survey conditions were switched approximately once per day and about ten surveys were posted at a time for ten different participants. The surveys were also posted at various times throughout the

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day to ensure a diverse participant pool. For the College of Wooster participants, all conditions were posted on Sona Systems at once and the students chose either A, B, or C to complete. They could only see the condition's letter label until they began the survey itself and were restricted from completing more than one of the three conditions to ensure there would be no repeats in the data.

The purpose of the three priming articles was to expose participants to varied news-framed stimuli in order to measure differences in behavior and collective guilt elicited by the articles. Each article was approximately one page long (single-spaced) and was given a title, date “published”, and story highlights. The story highlights were used to mention important points early in the reading, as this way participants could grasp the main purpose even if they missed some parts of the full story. Condition A, the “news” article (hypothesized to be a control, as it should be too weak to elicit emotional or behavioral change), was modified from an article titled, “Can we blame global warming of hurricane Irene?”, acquired from the Alaska Dispatch (online) and written by Charles H. Greene, September 12, 2011 (see Appendix A). This article was chosen because it embodies a fairly typical news article which weakly relates natural disasters (Hurricane Irene) and climate change. It was modified to begin with the same introductory paragraph as articles in conditions B and C (written for the current study). Worth noting, this article ultimately concludes that people should decrease greenhouse gas emissions in order to lessen the frequency of natural disasters. However, twice throughout the article (in the original version, this statement is bolded and underlined both times; in the current study's version it is included in the story highlights) the author writes, “the simple answer is no, we cannot attribute global climate change as the cause for any one of these disasters.” As the clarity of the article is, like many news articles, somewhat compromised by these types of mixed

messages, I deemed it relevant to establish what types psychological reactions occur in response (likely, no significant reactions are elicited, making it a control) (Greene, 2011).

Article conditions B and C, the advantage and disadvantage conditions respectively, were both written with the current study in mind (see appendices B and C). They were written in the same format, where they first mentioned a relatively recent natural disaster (Hurricane Irene) and then related it to climate change. Then, the articles explained a few environmental behaviors people can engage in to mitigate climate change. While the advantage condition stressed the financial and community benefits to adopting new behaviors, the disadvantage condition highlighted the financial and time sacrifices required for behavioral change. The advantage condition had approximately the same number of advantage words as the disadvantage condition had sacrifice words.

After reading the article, the participants completed the PANAS scale, the environmental identity scale, the environmental behavior scale, and the American collective guilt scale, in the preceding order. All items on all scales were randomized. The single question on why one may not engage in certain behaviors was asked just after the environmental behavior scale. Lastly, participants were asked to indicate their political affiliation, gender, and age (within an age range provided). Participants were not allowed to skip questions, in order to voluntarily continue the survey. Those completing the survey through Amazon Mechanical Turk were asked to provide a 5-digit code at the end of the survey and again when redirected to Amazon, in order to ensure full participation.

## **Results**

The purpose of the current study was to examine collective guilt and environmental behavior as a result of environmental identity and news priming. In order to examine

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environmental identity, a median split was performed between high and low environmental identifiers (where low=1 ( $n=147$ ), high=2 ( $n=148$ )), creating two groups to analyze along with the three condition groups.

### **Environmental Behavior**

A 3 X 2 Univariate Analysis of Variance (ANOVA) was conducted to examine the main effects and interactions of environmental identity and article condition on environmental behavior. Because data was obtained from both Amazon Mechanical Turk users ( $n= 232$ ) and College of Wooster students ( $n=63$ ), I screened for differences based upon group (Amazon users= 1, Wooster students= 2). For environmental behavior, there were no significant differences between Amazon Mechanical Turk users and College of Wooster students,  $F(1, 289)= 1.12, p>.05$ , demonstrating that data obtained from both samples generalize. However, I did find significant gender differences for environmental behavior,  $F(1, 289)= 6.98, p<.01$ , where women were more willing to engage in the various behaviors ( $M=75.13, SD=1.11$ ) than men ( $M=70.53, SD=1.35$ ).

The first hypothesis (H1) was that people who had high environmental identity would be willing to adopt more environmental behaviors than those who had low environmental identity. The hypothesized main effect for environmental identity on environmental behavior was significant,  $F(1, 289)= 129.02, p<.001$ . People who had high environmental identity were willing to engage in more environmental behaviors ( $M=80.35, SD= .95$ ) than those with low environmental identity ( $M=63.82, SD= 1.10$ ). There was no main effect for article condition on environmental behavior,  $F(2, 289)= 1.76, p>.05$ , as expected. I did expect an interaction for environmental behavior depending on the article participants were randomly assigned to read and their high or low environmental identity (H5). However contrary to this hypothesis, the results

demonstrated that the interaction was nonsignificant,  $F(2, 289) = 2.25, p > .05$  (see Figure 1 and Table 1).

### **Collective Guilt**

I also hypothesized a main effect and interaction for environmental identity and article condition on collective guilt, which was examined by way of a 3 X 2 Univariate Analysis of Variance (ANOVA). While I did not see any group effects (Amazon Mechanical Turk participants versus College of Wooster participants) for the environmental behavior dependent variable, there were significant differences for group on collective guilt,  $F(1, 289) = 7.49, p < .01$ , which should be considered when interpreting the results. In general, Amazon users experienced less collective guilt ( $M = 38.40, SD = .72$ ) than College of Wooster students ( $M = 43.00, SD = 1.52$ ). In addition, there were significant gender differences for collective guilt,  $F(1, 289) = 4.31, p < .05$ . Generally, women experienced more collective guilt ( $M = 41.22, SD = .91$ ) than men ( $M = 38.23, SD = 1.11$ ).

People with high environmental identity were hypothesized to experience more American collective guilt for climate change than those with low environmental identity. This hypothesis (H2) was supported by the results, demonstrating a significant main effect for environmental identity on collective guilt,  $F(1, 289) = 106.44, p < .001$ . Participants with high environmental identity experienced more American collective guilt for climate change ( $M = 44.65, SD = .85$ ) than those with low environmental identity ( $M = 34.14, SD = .99$ ). As expected, there were no significant main effects for article condition on collective guilt,  $F(2, 289) = .88, p > .05$ , as individual differences (i.e. high or low environmental identity) interact with media messages to influence collective guilt.

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There was a significant interaction for article condition and environmental identity on collective guilt,  $F(2, 289) = 3.31, p < .05$ , as hypothesized (H6; Table 3 shows a summary of the means and standard deviations for all significant interactions, Figure 2 shows collective guilt as a function of environmental identity and article condition). Post-hoc Tukey's HSD tests showed that people with high environmental identity experienced more collective guilt than low identifiers across both the advantage and disadvantage article conditions; there was no difference between high and low environmental identifiers in the control condition. Initially I expected that low identifiers' collective guilt would be highest in the advantage condition and lower in the disadvantage and control conditions based on perceived feasibility of making reparations, contrary to the results.

### **Negative Affect**

The article condition was hypothesized to influence negative affect as well, which was examined by way of a 3 X 2 Univariate Analysis of Variance (ANOVA). There were no significant differences for gender on negative affect,  $F(1, 289) = .06, p > .05$ . However, there was a significant main effect for group (Amazon users versus Wooster students) on total negative affect,  $F(1, 289) = 8.06, p < .01$ . Overall, Wooster students experienced more negative affect ( $M = 18.60, SD = .82$ ) than Amazon Mechanical Turk users ( $M = 15.98, SD = .43$ ).

I expected the disadvantage article to increase negative affect from the control condition. This hypothesis (H4) was supported, as there was a significant main effect for article condition on negative affect,  $F(2, 289) = 4.41, p < .05$ . Overall, people in the disadvantage condition experienced more negative affect ( $M = 17.87, SD = .68$ ) than those in the control condition ( $M = 16.80, SD = .66$ ) or the advantage condition ( $M = 15.12, SD = .64$ ). In addition, I hypothesized (H7) that the interaction would show that high environmental identifiers experienced greater

negative affect in the disadvantage condition compared to the control condition. I also anticipated that low environmental identifiers would experience less negative affect in the disadvantage condition compared to the control condition, as it verifies their beliefs that acting to prevent climate change is reserved only for those with the proper resources (financial, socially, etc.). There was a significant interaction,  $F(2, 289)=3.38, p<.05$ , demonstrating that environmental identity moderates the effect of the article on total negative affect (see Figure 3 and Table 3). Post-hoc Tukey's HSD tests show that those low in environmental identity generally had the same degree of negative affect, regardless of the article they read, contrary to the hypothesis. As hypothesized, high identifiers experienced more negative affect in the disadvantage condition than in the control condition. They also experienced more negative affect in the control condition than in the advantage condition, as expected, although it was nonsignificant.

### **Positive Affect**

A 3 X 2 Univariate Analysis of Variance (ANOVA) was conducted to examine article condition on positive affect. There was no effect for gender on positive affect,  $F(1, 289)= .00, p>.05$  nor was there a significant effect for group on positive affect (Amazon users versus Wooster students),  $F(1, 289)= 2.36, p>.05$ . I hypothesized that those who read the advantage article would experience more positive affect than those in the control condition (H3). This hypothesis was supported by the results as there was a significant main effect for article condition on positive affect,  $F(2, 289)= 4.05, p<.05$ . People who read the advantage article experienced more positive affect ( $M=22.30, SD=.70$ ) than those in the control condition ( $M=19.47, SD=.71$ ). Also, people in the disadvantage condition ( $M=21.18, SD=.74$ ) experienced more positive affect than those in the control condition, yet less than those in the



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advantage condition. There was also a main effect for environmental identity on positive affect,  $F(1, 289) = 31.24, p < .001$ . People who had high environmental identity ( $M = 23.29, SD = .54$ ) experienced generally more positive affect than those with low environmental identity ( $M = 18.67, SD = .63$ ). While I also expected an interaction for environmental identity and article condition on positive affect (H8), the results demonstrate it is nonsignificant,  $F(2, 289) = 2.20, p > .05$  (see Table 2 and Figure 4).

### Discussion

The persistence of major environmental crises over recent decades demonstrates the difficulty of implementing large-scale solutions for mitigation. Individual responses to environmental problems are wide ranging and complex, based on many personal and societal factors. Relevant to this dilemma, the present study sought to examine affective and behavioral reactions to different media representations of climate change and whether specific framing methods effectively initiate positive environmental action. Overall, the research's purpose is to fill the gap between mass media studies on climate change's political framing and social psychological studies on identity and collective guilt, as they pertain to environmental issues and action. I hypothesized that different news frames (advantage, disadvantage, and control) and environmental identity would interact to predict collective guilt and environmental behavior. Negative and positive affect were also measured to better understand individuals' immediate affective reactions to the articles. While environmental identity significantly predicted collective guilt, behavior, and positive affect, the interaction effects of the news articles were somewhat different from what was initially expected. There are numerous positive implications for the current study's results in regards to future work, especially for studies on climate change in the news.

### **The Effects of Social Identity and Article Framing on Environmental Behavior**

The results demonstrate that environmental identity significantly predicted intention to behave environmentally, as hypothesized (H1). People who have high environmental identity are willing to adopt more sustainable behaviors in order to decrease their carbon-footprint, than those with low environmental identity, as predicted by social identity theory (Clayton, 2003; Tajfel & Turner, 1986). The theory postulates that people tend to act according to their self-relevant ingroups rather than as independent individuals, which allows them to adopt the group's values as their own. Social identity is important, for it allows individuals to feel as though they are serving a purpose outside of self-interest, by belonging to one or more ingroups (Tajfel & Turner, 1986). In some cases, maintaining this group identity even allows members to devalue outsiders and discriminate accordingly, demonstrating the downfalls of acting in the interest of a group (Oakes & Turner, 1980). Specifically in regards to environmental identity, perceived belonging to an environmental ingroup was previously shown to influence sustainable intentions, demonstrating social identity theory's relevance to this work (Clayton, 2003; Sparks & Shepherd, 1992). Therefore, the results of this study are supported both in theory and in recent research. In order to reasonably sustain such an identity, environmentalists must prioritize preventing further climate change, which is arguably today's largest threat to the natural environment.

Recent research also supports that specific framing methods are especially effective at communicating climate change in a way that elicits a behavioral or affective response (Kolandai-Matchett, 2009; Weber & Stern, 2011). Specifically, in this study I focused on comparing advantage, disadvantage, and control frames in their effectiveness at eliciting sustainable behavior change. As in past work, the news media has weakly, if at all, affected personal

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responses to climate change, the current study set out to identify potentially more effective framing methods (Arlt et al., 2011; Weber & Stern, 2011). While I hypothesized that environmental identity and article condition would interact to predict environmental behavior, the results demonstrated that the interaction was nonsignificant (H5). I initially expected that the advantage article would motivate participants with low environmental identity to adopt more environmental behaviors, as it frames environmental action in a positive and nonthreatening way. However, returning to social identity theory, it is possible that because those with low environmental identity viewed the articles as personally irrelevant, they had no effect regardless of the frame (Hogg, 2006; Tajfel & Turner, 1986). Furthermore, they were probably generally less focused on the articles since they had little to personally gain from reading, whereas those with high environmental identity had the opportunity to read something that they perceived as self-relevant. This was always a possible consideration for the study, bearing in mind that some previous work also found evidence that behavioral change is difficult to predict within the context of media information (Arlt et al., 2011; Kim, 2010).

Also, as the articles' effects on environmental behavior were nonsignificant, it appears that predicting it via framing may be more complex than I had initially hypothesized. This is somewhat unsurprising because climate change's threats have invoked relatively few initiatives worldwide, considering the gravity of the problem. Such an expectation is paradoxical; although motivating people act against climate change is known to be difficult, I also expected that some of the articles may induce an intent to change behavior, even if not to predict long-term behavioral change from a single reading. Regardless, this area of research is still important because climate change is a threat that affects everyone and understanding behavior motivating factors is essential for mitigation. Media on its own is important for understanding climate

change behavioral factors, as evidence suggests it is the primary standard of information for most people (Bandura 2001; Wiegman & Gutteling, 1995).

In addition, there are several other factors that are shown to affect willingness to engage in environmental behaviors. For example, given the little information about participants' backgrounds, it is likely some of their preconceived notions of behaving sustainably were that it is difficult and expensive, and thus dismissed the article after just seeing the general topic. As variables like perceived behavioral control and intention have also been demonstrated to predict the probability of actually changing behavior, it is possible that either of these factors, among others, affected individuals' behavioral engagement, which is important to consider in future work (Bamberg & Moser, 2007; Poortinga et al, 2004).

### **Effects of Social Identity and Article Framing on Collective Guilt**

The results also showed that environmental identity significantly predicts collective guilt for climate change — my second hypothesized main effect (H2). Overall, people who had high environmental identity reported more collective guilt for climate change than those with low environmental identity, as hypothesized. This was predicted based upon previous research, which suggests that in order for collective guilt to be experienced, one needs to feel personally attached to the group (Ferguson et al., 2011; Wohl et al., 2006). Since those with high environmental identity are more strongly involved with environmental issues, they are more likely to accept guilt for their overarching society than those who have little involvement or knowledge to begin with. Moreover, people with high environmental identity are more likely to actually feel that their group is responsible, which is a prerequisite for collective guilt (Ferguson & Branscombe, 2010). This is pertinent to all studies concerning climate change as, counter to scientific evidence, many people believe it is either fabricated or naturally occurring. Therefore,

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it is conceivable that some with low environmental identity avoided guilt because they do not believe climate change is happening, and since it is irrelevant to their identity, they avoid information that suggests otherwise (Bostrom et al., 1994; Weber & Stern, 2011).

The interaction between environmental identity and article condition on collective guilt was also significant (H6). Overall, people with high environmental identity experienced more collective guilt than those with low environmental identity in both the disadvantage and the advantage conditions, but there was no difference in the control condition. While I initially hypothesized that collective guilt, for low identifiers, would be highest in the advantage condition (same as those with high environmental identity) and low in both the disadvantage and the control condition (lower than those with high environmental identity), the results demonstrated a different effect. One possibility for this is that people with low environmental identity may have perceived the most reasonable potential reparations in the control condition. To revisit Schmitt et al. (2008), participants were most likely to accept collective guilt when making reparations was moderately difficult, as opposed to when doing so was either very hard or very easy. Therefore, the *control* condition may have best fit into a “moderate” reparations category, counter to the original expectations that the *advantage* condition would effectively weigh the benefits of environmental action with the potential risks climate change imposes. Potentially, the advantage condition made mitigating climate change too easy and the disadvantage condition made it too difficult, neither which are effective at inducing collective guilt, according to Schmitt et al. (2008). Based on these results, there is evidence that current news articles– like the control– may actually better elicit public responses to climate change than suggested by previous research, as people with low environmental identity were more likely to feel guilty in the control condition (Boykoff & Boykoff, 2004; Reser & Swim, 2011). This also

demonstrates that the use of news articles to impart information about climate change is valid and worthy of future considerations. Therefore, the results have positive implications for comparing news articles' effects on affective responses to environmental issues.

Another factor that could influence collective guilt in response to the articles is the framing strategy used in the scale. As the scale focused on American collective guilt for climate change, clearly another important social identity in addition to environmental identity, was targeted. People who perceive themselves as typical American consumerists (i.e. those fitting more into the low environmental category) may feel more directly accused by the articles and collective guilt scale in itself, than those who perceive themselves as part of an environmental ingroup or those who believe they are helping the problem more than they are creating it. Thus, those with low environmental identity may better block out feelings of guilt because they feel their identity is under attack, regardless of which specific article they read (Ferguson & Branscombe, 2010). It is also difficult to assess the degree to which political identities play a role in the experience of collective guilt for climate change. As politics play a major role in public perceptions of environmental issues, it is likely that a proportion of those with low environmental identity were motivated to suppress collective guilt based on affiliation with political ingroups, and therefore dismissed the scientific basis of climate change described in the articles (Huddy, 2001; Tajfel & Turner, 1986).

### **Effects on Negative and Positive Affect**

The main effect for article condition on negative affect was also significant (H4). As hypothesized, those in the disadvantage condition experienced the most negative affect, which further demonstrates how different frames influence individual affective responses. Moreover, positive affect was also higher, across both high and low environmental identifiers, in the

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advantage condition, as hypothesized (H3). These results imply that both the disadvantage and advantage articles served their correct purpose, in terms of emotional reactions. The different effects of the articles on collective guilt versus negative and positive affect are interesting and worthy of future work on how collective guilt diverges from more straightforward emotional responses. Clearly, collective guilt is a more complex affective response and implies responsibility on the part of the individual, where simple negative and positive affect do not (Ferguson & Branscombe, 2010; Watson et al., 1988).

The interaction for environmental identity and article condition on negative affect was also significant (H7). This specifically demonstrates that only people with *high* environmental identity experienced more negative affect in the disadvantage condition than the advantage condition. In addition, the interaction for positive affect was nonsignificant, demonstrating that both those with high and low environmental identity experienced more positive emotions after reading the advantage article, than the other two articles (H8). Overall, among people with low environmental identity, the articles had little negative effect on their emotional state and had minimal effects on their practices, as shown in the environmental behavior dependent variable. Such results can be explained by returning to social identity theory, where the articles were perceptibly irrelevant to those who do not consider themselves environmentalists (Clayton, 2003; Tajfel & Turner, 1986). Such results have important implications, as increasing environmental responsibility among those who are not as intrinsically inclined towards the environment is difficult and needs further research.

### **Sample Considerations**

I also find it important to address the differences between the two samples (Wooster students versus Amazon Mechanical Turk users), seeing that Wooster students experienced

significantly more negative affect and collective guilt than Amazon Mechanical Turk users. This result is somewhat expected, as Wooster is small liberal arts school that is relatively environmentally-forward in comparison to the general public. Therefore, it is not surprising that they would be more likely to accept guilt for climate change. Because Mechanical Turk users likely comprise a more diverse sample, it makes sense that their responses to the articles would be less homogeneous. Most previous studies that examined collective guilt for environmental issues also used college students as the sample pool, however recruiting Amazon Mechanical Turk users as participants is a relatively new and rising phenomenon in empirical psychological studies (Ferguson & Branscombe, 2010; Ferguson et al., 2011). In this sense, the current study has implications for future work since many researchers today are interested in how participants recruited from Mechanical Turk differ from other sample types frequented in psychology (thus far, using data obtained from Mechanical Turk is shown to be reliable and sufficiently generalizable, which was considered in formulating my methodology) (Buhrmester, Kwang, & Gosling, 2011). Altogether, the differences between samples on collective guilt and negative affect demonstrated in this study should be considered when making conclusions about the results.

### **Limitations**

Although the current study successfully explored many important behavioral and affective factors relevant to climate change mitigation, this research is not without limitations. First and foremost, because this study had significant time constraints for which data had to be collected within, my design had to refrain from more complex or longitudinal analyses. Ideally, for future work I would like to explore more types of framing and use a larger variety of news articles. The sample was also somewhat limited by both time allotted to collect data (more



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participants could be recruited in the future) and the sample pools chosen. While using undergraduate students is widely accepted within psychological research, since they are an easily accessible population, it does limit external validity. The larger portion of the sample, Amazon Mechanical Turk users, also restricts us from generalizing the results to some degree. Researchers are still unsure about how representative Amazon Mechanical Turk truly are of the larger U.S. population, however there is evidence they are more generally diverse than college students typically recruited (Buhrmester et al., 2011). Nonetheless, by using Amazon Mechanical Turk the study was restricted in the type of media content presented to participants; if I did not have to consider these restraints, television or internet clips may have been an alternative to the news articles ultimately used.

Moreover, although the control condition did not explicitly suggest what can be done to prevent climate change, the need for action may have been more implicitly suggested than I initially believed, based on the interaction results for collective guilt. This should be considered in future work concerned with framing the issue, as the articles were not pre-tested in this study and maybe should be in the future. Lastly, based on the study's cross-sectional design, it was limited by measuring behavioral intention rather than actual behavior change. As behavioral intention accounts for approximately 27% of variance in actual behavior, there is still some degree of variation left to factors outside the scope of this, and most climate change research studies', designs (Bamberg & Moser, 2007).

### **Benefits and Real-World Applications**

Despite limitations, the current study is applicable to real-world news representations of climate change and environmentalism on a larger scale. While recent work has focused on climate change in the media, it was usually either in an analysis of discourse (via communication

studies) or mentioned briefly in environmental psychological reviews (Boykoff & Boykoff, 2004; Hook et al., 2011; Reser & Swim, 2011; Weber & Stern, 2011). Thus, this study is the first of its kind that seeks to understand how typical media representations of climate change actually affect individuals' affective and behavioral responses. Relative to the news articles tested, future studies may benefit from relating these results to current trends in climate change news stories. Specifically, as the news control article actually elicited the most collective guilt in participants with low environmental identity, it would be useful to further analyze why this article worked in my study and how future real-world articles may be written to have similar effects. Also relevant to the same finding, current news stories may actually be better at eliciting collective guilt and other affective responses, than suggested by previous work (Arlt et al., 2011; Boykoff & Boykoff, 2004). Moreover, why framing mitigation as personally and communally advantageous was ineffective at influencing people with low environmental identity to change their behaviors, is also relevant to future work and the real world, as many previous studies indicate that advantage framing *can be* effective (Gifford & Comeau, 2010; Kolandai-Matchett, 2009).

Considering the issue from a broader perspective, having effective climate change stories is important as the media strongly affects people's perceptions of issues and what resolutions are available (Bandura, 2001; Reser & Swim, 2011). Thus, understanding how the media depicts climate change and whether such representations actually help people comprehend the problem, is important for any behavior change to incur. As climate change's effects are potentially devastating worldwide, it is imperative to now alter the conditions that generate it (e.g. greenhouse gas emissions, deforestation) (IPCC, 2007; NOAA, 2011). Therefore, it is crucial to

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continually analyze how variables like identity can be intertwined with what people hear and see on a daily basis, via media.

Moreover, my focus on collective guilt is most explicitly relevant to up and coming research, as there is a current trend in connecting it to environmental issues (Ferguson & Branscombe, 2010; Ferguson et al., 2011). Much previous work supports that collective guilt is dependent on both the degree of group identity and whether one believes that their group has actually done harm (Ferguson & Branscombe, 2010; Ferguson et al., 2011; Schmitt et al., 2008). Such concepts are inherently applicable to climate change in the form of environmental identity and whether one agrees that climate change can and should be mitigated. This is the first study in which the environmental identity directly predicted collective guilt, which is useful for future work looking to use the measure. In addition, the American collective guilt scale created within the current study, was demonstrated to be reliable measure and is beneficial to future work concerned with such issues. More implicitly related to the real world, many people in the U.S. still do not believe climate change is even an issue that requires concern, which has interesting implications for the study of collective guilt and its relevance to climate change attitudes and behavior (Kim, 2010).

### **Future Directions**

Altogether, the many benefits of this study should allow it to influence future work on the effects of the media and identity on responses to climate change. Specific to the target sample, in this study I chose to analyze American collective guilt for climate change. However, in future work, I plan on entering China into the equation; specifically, if Americans should feel guilty for the state of the environment, should the Chinese as well? As China is responsible for the highest emissions overall (the U.S. has the highest emissions per capita), it is essential to compare how

people perceive the two societies and whether China's industrialization plays a role in attribution of blame or acceptance of collective guilt (Vandenbergh, 2008). Framing, a major factor in this study, could also be carried on into a China and U.S. experiment, as whether framing China as a superpower versus an unindustrialized nation may affect responses about what China should have to do mitigation-wise, compared to the U.S.

Future work should also focus on other types of framing, as clearly the current study was limited in how few news articles could realistically be compared. Specifically, framing climate change as a health issue would be interesting to explore in terms of guilt and behavioral engagement (Hook et al., 2011). In addition, since the current study had some unexpected collective guilt effects from the different articles (different interaction direction for collective guilt than initially hypothesized), it would be useful to further define how framing devices may induce guilt. Furthermore, using articles and scales that include more ingroups would also be beneficial to future work, as identity and collective guilt are interrelated (Ferguson et al., 2011). Exploring environmental identity *within* framing (i.e. environmentalists considered as separate from the American ingroup) could potentially produce interesting results relevant to guilt from the environmental ingroup, versus that of the outgroup.

Also, although the articles' effects on environmental behavior were nonsignificant, it is still important to continue this line of research since climate change mitigation efforts are seriously needed worldwide (IPCC, 2007). In particular, further studying personal variables like belief in climate change and perceived control may be valuable in predicting environmental behavior from within psychological research. For example, it may be of use to study individuals' current stress levels (e.g. financial, health, and other stressors combined) and how they affect one's ability to attend to climate change consequences. Because climate change is

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usually seen as a far off problem, irrelevant in comparison to everyday struggles, it would be interesting to study it in this regard (Poortinga et al., 2004). Moreover, understanding climate change behavioral factors should not be limited to only psychological behavior studies and ought to be considered in other fields (i.e. sociology, political science) as well. Because climate change is, in itself, confounded within political and social constructions, it could potentially be very useful to include relevant considerations in research across disciplines (Ferguson & Branscombe, 2010; Huddy, 2001; Simon & Klandermans, 2001).

### **Conclusion**

In conclusion, the current study demonstrated the influence of news media on willingness to engage in environmental behaviors and its significant effect on collective guilt for climate change. It also demonstrated that environmental identity plays a large role in accepting collective guilt and willingness to act, as predicted by social identity theory. Overall, such results and analyses have wide implications for future work on climate change perceptions, behavior, and affective responses. As climate change is becoming a reality across the globe, it is crucial to motivate mitigation behaviors and the affective responses that influence them. Moreover, this study asked the unprecedented question of how the media reports we see daily and identity interact to predict real, individual behavioral and affective responses to climate change. This is important to consider because, although such results were collected within a psychological study, the results are intended to generalize to real media encounters and resulting individual perceptions. Although not all of the hypotheses were supported, the real-world news sources used and the existing social identities reported make the interpretations relevant to worldwide feelings and mitigation responses to climate change. Furthermore, the research presented is important to the psychological study of climate change, as it not only effectively

uses social identity theory to define and predict environmental action and guilt, but also transcends multiple disciplines to identify real-world responses to media representations of climate change.

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Table 1

*Summary of Means and Standard Deviations for Environmental Behavior by Article Condition and Environmental Identity (nonsignificant interaction).*

Article Condition	<i>n</i>	High environmental identity	Low environmental identity
		<i>M(SD)</i>	<i>M(SD)</i>
Control	104	80.08(1.50)	65.49(2.02)
Advantage	102	80.61(1.63)	59.78(1.83)
Disadvantage	89	80.37(1.81)	66.19(1.87)

Table 2

*Summary of Means and Standard Deviations for Positive Affect by Article Condition and Environmental Identity (nonsignificant interaction)*

Article Condition	<i>n</i>	High environmental identity	Low environmental identity
		<i>M(SD)</i>	<i>M(SD)</i>
Control	104	21.43(.85)	17.51(1.15)
Advantage	102	25.79(.92)	18.80(1.04)
Disadvantage	89	22.65(1.03)	19.70(1.06)

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Table 3

*Summary of Significant Interactions for Collective Guilt and Negative Affect by Article Condition and Environmental Identity*

Measure		High Environmental Identity			Low Environmental Identity			<i>F</i> (2, 289)
		Control	Advantage	Disadvantage	Control	Advantage	Disadvantage	
Collective guilt	<i>M</i>	43.16 <sup>ac</sup>	44.67 <sup>a</sup>	46.13 <sup>a</sup>	37.38 <sup>bc</sup>	31.82 <sup>b</sup>	33.21 <sup>b</sup>	3.31*
	<i>SD</i>	1.34	1.45	1.62	1.81	1.64	1.67	
Negative affect	<i>M</i>	17.16	13.93 <sup>a</sup>	19.07 <sup>b</sup>	16.43	16.31	16.67	3.38*
	<i>SD</i>	0.79	0.85	0.95	1.06	0.96	0.98	

*Note.* Means with different letters within a row indicate post-hoc significant differences at  $p < .05$ . Only interactions with significant *F*-ratios are shown.

\* $p < .05$

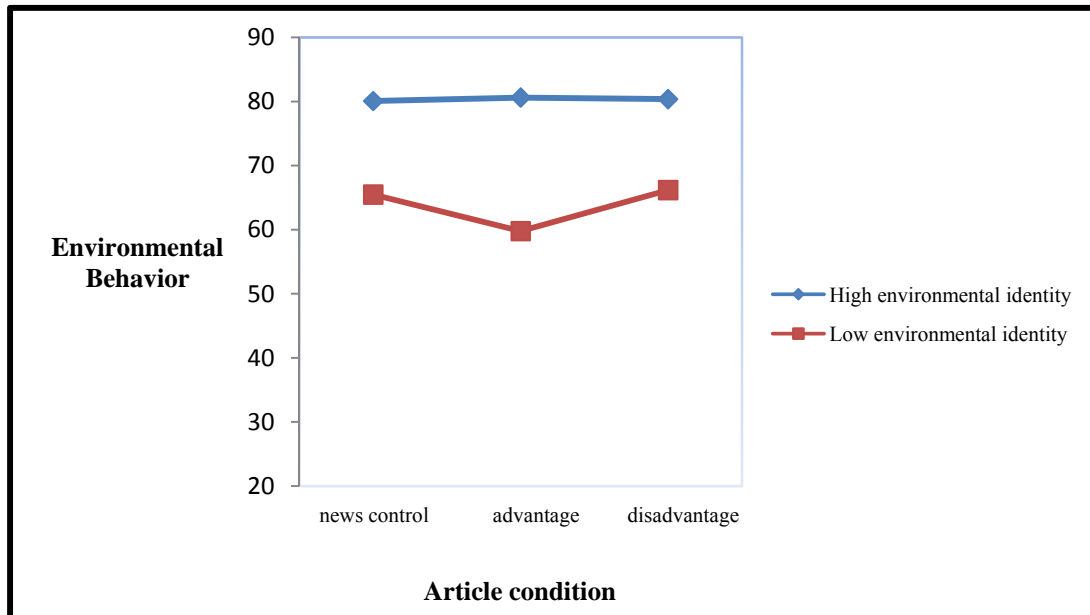


Figure 1. Interaction of environmental identity and article condition on willingness to engage in environmental behaviors (nonsignificant interaction).

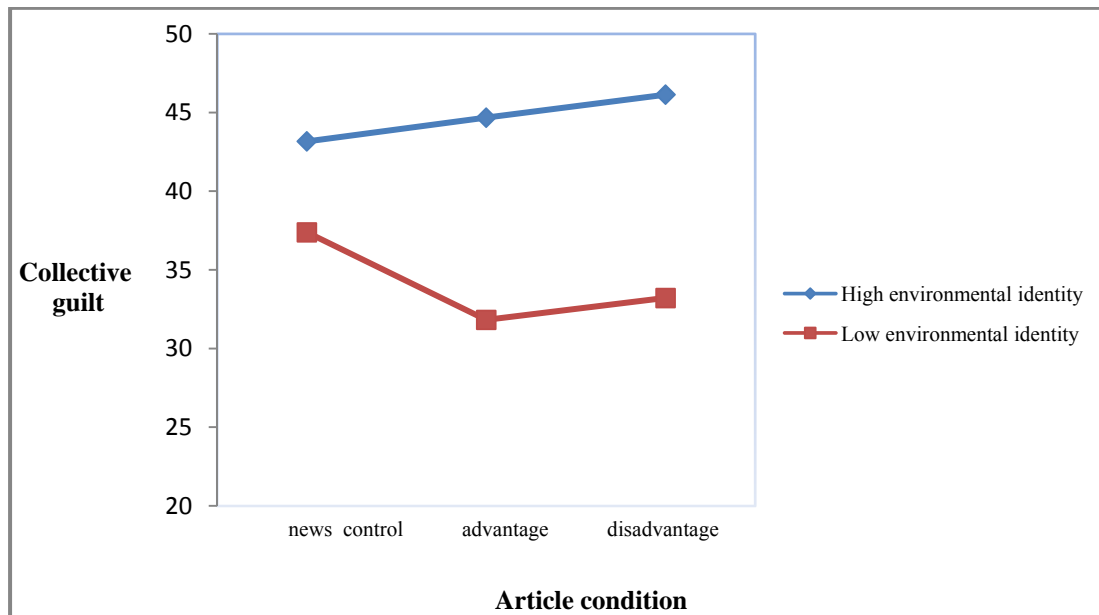


Figure 2. Interaction of environmental identity and article condition on collective guilt.



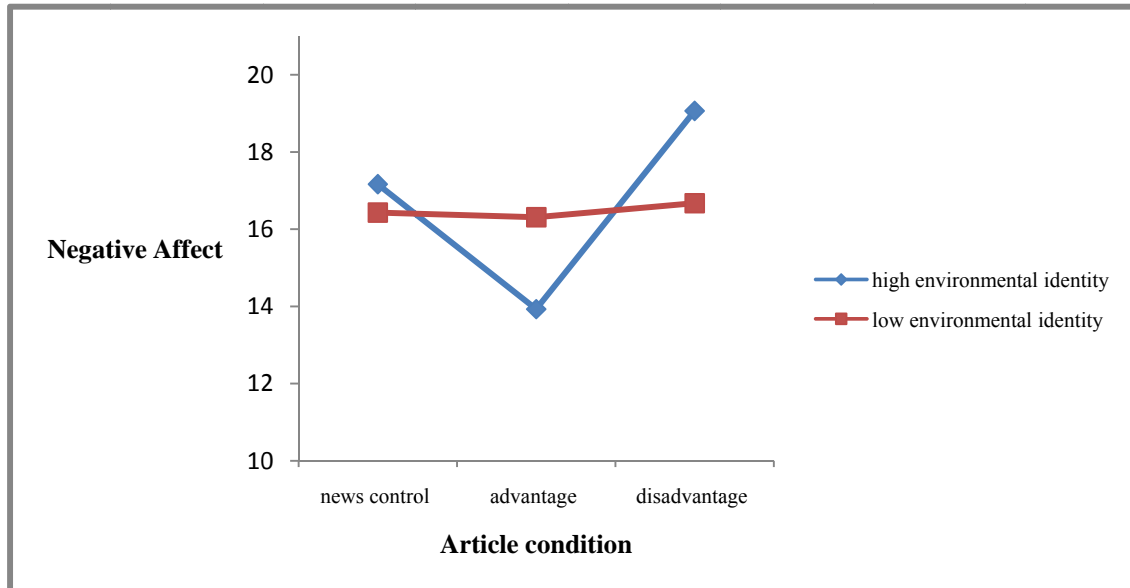


Figure 3. Interaction of environmental identity and article condition on negative affect.

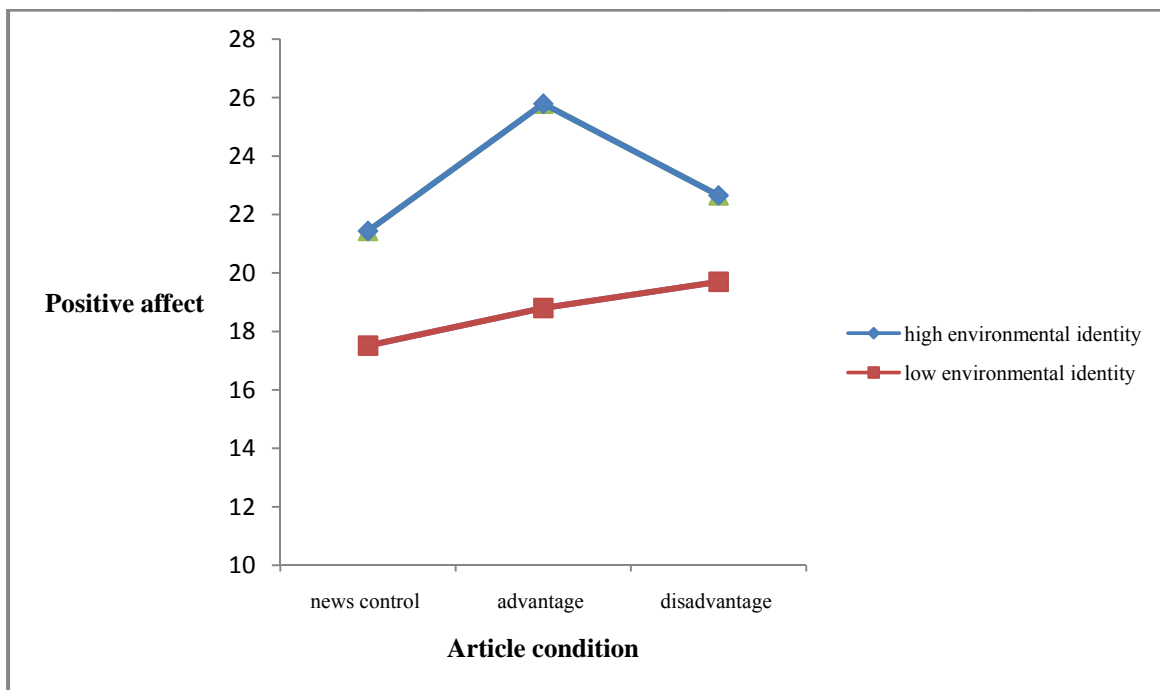


Figure 4. Interactions of environmental identity and article condition on positive affect (nonsignificant interaction).

## Appendix A

Can we blame global warming for hurricane Irene?

Charles H. Greene | Sep 12, 2011 (edited)

## Story Highlights:

\*Global climate change is not proven to cause any particular extreme weather event.

\*Warming waters and air in general, can influence new weather patterns.

\*People should start expecting weather changes.

**Full Story:** As schools, businesses and residents recover from the flooding and other damage caused by Hurricane Irene, there are still lingering questions surrounding the cause of the disaster: are hurricanes getting worse because of human-induced climate change?

These questions remain, as scientists cannot and never will be able to answer them with certainty. The simple answer is that we cannot know with certainty that global climate change caused any particular weather event. However, the science is improving to the point that we can begin to start assigning probabilities to such events as the Earth's climate warms in response to humanity's continuing emissions of greenhouse gases.

For example, in the case of Irene, we cannot say that global climate change bears any responsibility for the havoc wrought by this particular hurricane. On the other hand, we do have the knowledge and scientific tools to predict how greenhouse warming will increase the likelihood of future hurricanes exhibiting Irene's magnitude and track along the eastern seaboard of the United States. We know for instance that the warm oceanic waters of the tropics serve as the heat engine for hurricane development. Therefore, as these oceanic waters are warmed further, a greater number of intense hurricanes like Irene will make landfall in North Carolina. In addition, hurricanes like Irene will be able to strengthen and more frequently carry their destructive forces further north to New Jersey, New York, and New England.

Whether it's droughts and wildfires in Texas and Oklahoma, tornadoes in Missouri and Arkansas, floods in Tennessee and Mississippi, or hurricanes in North Carolina and New Jersey, the lineup of states seeking federal assistance keeps getting longer and longer this year- a trend that is expected to continue.

Can we blame global climate change for all of these extreme weather disasters in 2011? Again, the simple answer is no, we cannot attribute global climate change as the cause for any one of these disasters. However, the more important take-home message is that scientists predict all of these types of extreme weather disasters will become more and more common as the planet warms.

Therefore, it would seem to be more prudent and cost effective to stop ignoring the effects of greenhouse warming on our weather. Wisdom would also have us begin reducing our greenhouse gas emissions and preparing our society for the impending weather disasters already in the pipeline.

*Charles H. Greene is a professor of Earth and Atmospheric Sciences at Cornell University.*

## CLIMATE CHANGE

### Appendix B

Helping the environment can have profoundly positive social and financial impacts

Sep 12, 2011

#### **Story Highlights:**

\*The climate is changing due to human caused climate change, but there is a lot people can conveniently do to change the pattern. Most environmental behaviors save money.

\*People can save thousands of dollars by driving less, composting, and saving electricity, among many other potential household changes.

\*The U.S., as a whole, could save a great amount of money and bring its citizens together by working to have cleaner energy.

**Full Story:** As schools, businesses and residents recover from the flooding and other damage caused by Hurricane Irene, there are still lingering questions surrounding the cause of the disaster: are hurricanes getting worse because of human-induced climate change?

It is very well supported that some of the most recent natural disasters in the U.S. were linked to (although not caused solely by) climate change. Although natural factors are involved, humans are largely causing climate change by emitting carbon dioxide into the atmosphere (heating, driving and flying contribute among other activities). Many people in the U.S. are interested in reversing climate change. Fortunately, there are many community, household, and financial benefits to acting in environmentally friendly ways.

Most everybody knows the benefits of recycling, but composting is another very easy way to decrease the amount of garbage that goes into landfills. A major benefit of composting is that you can essentially make your own gardening material and will never have to pay for packaged soil again. Also, by both composting and recycling, you may even reduce your amount of trash so greatly that you do not need a weekly garbage pickup- a savings of up to \$500 yearly!

By walking or taking public transportation when possible, you can potentially save hundreds, or even thousands of dollars on gas, and contribute to decreased carbon emissions. If you turn down the heat a few degrees in the winter, and choose days to turn off the air-conditioning in the summer, you can save even more on energy bills. Washing dishes by hand, drying clothes on a clothesline, among other strategies, reduce energy expenses as well. When you are planning on buying new appliances, it is best to invest in appliances with an Energy Star label, allowing you to reduce bills most significantly. Eating meat less frequently and buying local food when possible are healthy choices, plus contribute to reducing carbon dioxide. Additionally, buying local food helps keep money in your community and allows you to support local businesses.

Environmental action is a positive movement for communities coming together. People can make a difference by working together locally for a cleaner and more environmentally responsible city and country. The U.S. has great potential to unify itself and become leaders in clean energy. We are fully capable of contributing to solve environmental issues, and can save tons of money while doing so.

## Appendix C

The sustainability paradox: Acting environmentally is difficult to sustain financially and time wise

Sep 12, 2011

**Story Highlights:**

\* The climate is changing due to human caused climate change, but most behaviors the average person can engage in to alter it, require financial and personal sacrifice.

\*In order to truly be “green” you have to buy fuel-efficient cars and other unreasonably expensive products, which is really difficult for the average American. People are also expected to abandon old appliances and energy sources for new energy efficient ones- something most people cannot afford.

\*Americans would also have to give up some degree of personal freedom, which is hard to wrestle with in our society.

**Full Story:** As schools, businesses and residents recover from the flooding and other damage caused by Hurricane Irene, there are still lingering questions surrounding the cause of the disaster: are hurricanes getting worse because of human-induced climate change (Gillis, NY Times)?

It is very well supported that some of the most recent natural disasters in the U.S. were linked to climate change. Although natural factors are involved, humans are largely causing climate change by emitting carbon dioxide into the atmosphere (heating, driving and flying contribute among other activities). Many people in the U.S. are interested in reversing climate change and preventing further environmental changes by decreasing their carbon emissions. However in order to do so, there are many sacrifices that will need to be made in our everyday lives.

Financially, being environmentally friendly is costly. Driving fuel-efficient cars is a very beneficial way to protect the environment; however these cars are more expensive than most other cars and they still do not completely eliminate your gas bills. Even if you do not want to spend so much on a car, there are always opportunities to take the time to walk to a destination or use public transportation (which is often costly, as well). In addition, products that are good for the environment are often made better than other brands, but are usually much more expensive and difficult to find.

Practicing environmentally friendly behaviors in the home is also an excellent way to reduce carbon emissions. Washing dishes by hand and allowing clothes to dry on a clothesline reduces emissions, however both are time consuming, demonstrating the great effort it takes to be environmentally friendly. Not only this, but to truly be environmentally friendly, people are expected to abandon their old sources of energy and appliances for those that are more efficient and clean- something the average person cannot afford, nor can they fit into their schedule (buying new, expensive products is time consuming).

In order to become more carbon-neutral, as a society, each individual will have to make sacrifices and be willing to pay more for the same products. Everyone will experience some decrease in wealth, as energy is going to become more expensive. Realistically, people will have to give up some of their personal freedom (on what type of light bulbs, cars, and other products to buy) in order to live a more sustainable life. While “green” products and actions should be encouraged by society for prevention of climate change, we are not at the point at which the costs of a “sustainable” lifestyle can be sustained by the average American.

## CLIMATE CHANGE

## Appendix D

## Environmental Identity Scale (Clayton, 2003)

Please indicate the extent to which each of the following statements describes you by using the appropriate number from the scale below.

1	2	3	4	5	6	7
Not at all true of me			neither true nor untrue			completely true of me

- \_\_\_\_\_ 1. I spend a lot of time in natural settings (woods, mountains, desert, lakes, ocean).
- \_\_\_\_\_ 2. I think of myself as a part of nature, not separate from it.
- \_\_\_\_\_ 3. If I had enough time or money, I would certainly devote some of it to working to protect the environment.
- \_\_\_\_\_ 4. When I am upset or stressed, I can feel better by spending some time outdoors "communing with nature".
- \_\_\_\_\_ 5. I feel that I have a lot in common with other species.
- \_\_\_\_\_ 6. Behaving responsibly toward the earth -- living a sustainable lifestyle -- is part of my moral code.
- \_\_\_\_\_ 7. Learning about the natural world should be an important part of every child's upbringing.
- \_\_\_\_\_ 8. I would rather live in a small room or house with a nice view than a bigger room or house with a view of other buildings.
- \_\_\_\_\_ 9. I would feel that an important part of my life was missing if I was not able to get out and enjoy nature from time to time.
- \_\_\_\_\_ 10. I have never seen a work of art that is as beautiful as a work of nature, like a sunset or a mountain range.
- \_\_\_\_\_ 11. I feel that I receive spiritual sustenance from experiences with nature.
- \_\_\_\_\_ 12. I keep mementos from the outdoors in my room, like shells or rocks or feathers.

## Appendix E

Anticipated Behavior Scale (modified from Gifford & Comeau, 2011)

Please rate the extent to which you would engage in the following environmental behaviors in order to reduce your greenhouse gas “footprint” (greenhouse gases are the cause of climate change).

1        2        3        4        5        6        7

very unlikely to do this    maybe would do this    absolutely would do this

- 1. Switch off the lights when they are not in use.
- 2. Set the thermostat at 68°F or lower in the winter.
- 3. Buy local foods when possible
- 4. Eat vegetarian meals more often
- 5. Buy appliances with an Energy Star label
- 6. Install energy efficient windows
- 7. Wash and dry only full loads of laundry
- 8. Install low flow shower heads
- 9. Make recycling a priority
- 10. Compost food and yard waste
- 11. Sign up with a power company for energy from renewable resources
- 12. Buy or lease a fuel efficient vehicle
- 13. Get around without a car (carpool, walk, bus)
- 14. Vote for officials who make climate change a priority

What is the major reason you would not engage in some of the behaviors, if any, listed above?

- A. Cost
- B. Inconvenience
- C. I don't care
- D. I don't believe what I do will help
- E. I don't know
- F. I do not have access to the necessary resources

## CLIMATE CHANGE

## Appendix F

## American Collective Guilt Scale

Please indicate the extent to which you agree with the following statements by using the appropriate number from the scale below.

1        2        3        4        5        6        7  
completely disagree    neither agree nor disagree    completely agree

- \_\_\_1. I feel regret for American's harmful actions towards the environment
- \_\_\_2. I feel guilty that the U.S. is contributing so much to climate change.
- \_\_\_3. American consumerism is, to some extent, responsible for climate change.
- \_\_\_4. I feel guilty about producing greenhouse gases by driving and using electricity.
- \_\_\_5. I feel guilty about how climate change is harming other countries more than the U.S., although the U.S. contributes the most greenhouse gases (i.e. other countries have had more climate change related disasters).
- \_\_\_6. I believe that I should repair the damages caused to others by the effects of climate change (extreme weather events, etc.).
- \_\_\_7. It is not the U.S.'s responsibility to change our lifestyle to diminish climate change effects. (Recode)
- \_\_\_8. I can easily feel guilty for bad environmental outcomes brought about the U.S.
- \_\_\_9. Climate change is not the U.S's fault. (Recode)

## Appendix G

The Positive and Negative Affect Schedule scales (Watson et al., 1988)

## Development and Validation of Brief Measures of Positive and Negative Affect: The PANAS Scales

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Southern Methodist University

Auke Tellegen  
University of Minnesota

In recent studies of the structure of affect, positive and negative affect have consistently emerged as two dominant and relatively independent dimensions. A number of mood scales have been created to measure these factors; however, many existing measures are inadequate, showing low reliability or poor convergent or discriminant validity. To fill the need for reliable and valid Positive Affect and Negative Affect scales that are also brief and easy to administer, we developed two 10-item mood scales that comprise the Positive and Negative Affect Schedule (PANAS). The scales are shown to be highly internally consistent, largely uncorrelated, and stable at appropriate levels over a 2-month time period. Normative data and factorial and external evidence of convergent and discriminant validity for the scales are also presented.

### The PANAS

This scale consists of a number of words that describe different feelings and emotions. Read each item and then mark the appropriate answer in the space next to that word. Indicate to what extent [INSERT APPROPRIATE TIME INSTRUCTIONS HERE]. Use the following scale to record your answers.

1	2	3	4	5
very slightly or not at all	a little	moderately	quite a bit	extremely
	_____ interested		_____ irritable	
	_____ distressed		_____ alert	
	_____ excited		_____ ashamed	
	_____ upset		_____ inspired	
	_____ strong		_____ nervous	
	_____ guilty		_____ determined	
	_____ scared		_____ attentive	
	_____ hostile		_____ jittery	
	_____ enthusiastic		_____ active	
	_____ proud		_____ afraid	

We have used PANAS with the following time instructions:

Moment	(you feel this way right now, that is, at the present moment)
Today	(you have felt this way today)
Past few days	(you have felt this way during the past few days)
Week	(you have felt this way during the past week)
Past few weeks	(you have felt this way during the past few weeks)
Year	(you have felt this way during the past year)
General	(you generally feel this way, that is, how you feel on the average)