

Exploring Effectiveness of Images in Media and their Ability to Capture Attention and Engage Consumers about Climate Change

By

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Dedication

This thesis is dedicated to my family, especially my daughter, Alyssa Seaton. Also, my fiancé Wes Dulaney; my parents Shawn Chant, Don Chant, Joel Seaton, and Terri Seaton; and lastly, my grandparents Whitney Seaton and Charlie Seaton for always nurturing a sense of curiosity and a love of learning within me. Without them, and others, my education, and this thesis, would not be possible. Thank you for always loving and supporting me throughout my largest endeavors in life.

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Abstract

To raise awareness of climate change, the media must become masters at engaging consumers with MCCC [media communication about climate change] and ensure the images shared induce feelings of saliency (importance of climate change) and self-efficacy (feeling like personal actions will affect climate change). To make positive changes within the environment, the public has to be made aware of how their votes can help create pro-environmental policies and their lifestyle choices can be an effective force against climate change. This research provides an overview of existing research on MCCC, including journalistic practices and the use of images. It has been found that images attached to stories about climate change can determine if a story captures attention and if it will have a lasting impact on the consumer.

Preface

The amount of knowledge I have gained during the process of writing this thesis is invaluable and I would like to take a few pages to acknowledge it. Originally, my thesis was to be an experiment, designed by myself, using a mock Facebook page to analyze the effectiveness of images within MCCC. As a transfer student, I was given two years to complete my thesis, and for two thirds of that time I was intending to conduct my original experiment. After encountering countless small issues getting IRB approval, I eventually had to make a very hard decision to shelf my experiment and proceed with a literature review instead. The decision to move forward without conducting my experiment felt like a betrayal to all of my academic intentions, and therefore was one of the hardest decisions I have been faced with during my academic career. After finally making the decision and moving forward with the literature review, I realized how beneficial it would actually be to me. In doing this literature review, I have learned an enormous amount about the ways in which the media communicates with the public about climate change. After completing my thesis, I am sure that when I finally do carry out my initial experiment, it will be immensely better for having done this literature review first.

I also learned a great deal about how to do research while completing this project. As a nontraditional student, the methods of doing research online using databases was something that was completely foreign to me before coming to university less than two years ago. This experience will assist me in every future academic endeavor for the rest of my life, and for that I am thankful no matter how difficult of a challenge it was. As it

turns out, when you don't know what you need help with, you don't know how to ask for help. Now I will at least know how to ask for help in the future.

Lastly, I realized a great deal about myself and the way I work while completing this thesis. Although I am forever thankful for the deadlines set for me and the individuals who spent their own energy holding me to them, I have realized that I work best on my own schedule. I am not the type of person who writes something for years, I am the type of person who needs to have uninterrupted thoughts on a subject for an extended period of time in order to get things completed. For this reason, this thesis has taught me that I need to stand up for my own learning and creating style of doing everything at once, while also making a conscious effort to assure my supervisors that I am on track. I would like to say that this thesis has taught me better time management, but I honestly think it has taught me my own style of time management, which does not match most others.

Alas, I am thankful for this opportunity and look forward to moving forward with researching the ways the media communicates about climate change so I can be an effective voice for our planet. This is the beginning.

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Section I: Framing

The Third National Climate Assessment (U.S. Global Change Research Program [USGCRP], 2014) defines climate change as the average, long-term temperatures and variations in the earth's climate over a period of several decades. The NCA goes on to assert that the rapid climate change that has been evident throughout the globe since the mid-20th century is a result of human activity. In response to the steady rise in temperature that has occurred over the past 115 years, the *Climate Science Special Report: Fourth National Climate Assessment, Volume I* (USGCRP, 2017, p. 16) states “Thousands of studies conducted by researchers around the world have documented changes in surface, atmospheric, and oceanic temperatures; melting glaciers; diminishing snow cover; shrinking sea ice; rising sea levels; ocean acidification; and increasing atmospheric water vapor.” In addition to these documented changes, NASA (2018) points out that this alteration of the climate is already producing observable effects on the environment such as longer, increased heat waves and drought; stronger storms and flood waters; trees blooming earlier; and increased erosion and wildfires.

Despite the scientific consensus on the role of humans in climate change, according to *Climate Change in the American Mind* (Leiserowitz, Maibach, Roser-Renouf, Rosenthal, & Cutler, 2017) only a little over half of Americans agree that climate change is mostly human-caused, and only about one in seven Americans understand that approximately 90% of climate scientists are in agreement that human-caused global warming is occurring. In the face of climate change, many may feel the anxiety that comes along with the awareness of it, but they will also likely house a resentment toward

the lifestyle and behavior changes they think go along with the burden of the knowledge that humans are the cause of climate change (Stoll-Kleemann, O’Riordan, and Jaeger, 2001). This leaves a further disconnect between the audience and the issue of climate change. In the words of Corner and Groves (2014, p. 744): “The instant that science leaves the laboratory (as it must, if it is to have any bearing on the world beyond) a different set of norms kicks in.”

Due to the contrasting nature of the two existing narratives about climate change, urgent messages coming from scientists, and the lack of political and public response to the issues, there have been calls for those in climate science to improve their communications about their findings (Corner & Groves, 2014). Perhaps though, it is not the job of the scientists to improve communication, but mass media’s job instead. Despite scientific evidence backing climate change and its negative effects, discussion of climate change in mainstream media is oftentimes met with criticism and easily dismissed by media consumers. Unfortunately, individuals who are not engaged in climate research likely get the majority of their information about climate change from media coverage and interpersonal communication (Smith & Joffe, 2009), leaving them uninformed on the issue if they dismiss media coverage of it.

For this reason, it is important that media outlets know the most effective and accurate ways in which to communicate crucial information to the public. Climate change is a significant subject—such as public health (Chapman, 2001)—that, despite years of effort, continues to struggle in gaining effective public buy-in, which reflects the need for more compelling media coverage. It becomes the job of journalists to give people correct scientific information to make fact-based decisions on the matter of climate change.

Additionally, they must do so in a creative and entertaining manner to captivate the audience and make the matter relatable to the point that changes in society can stem from it. Corner and Groves (2014) acknowledge that effective climate change communication must involve more than a simple presentation of climate science facts. Many scholars have begun research to discover which forms of media communication about climate change [MCCC] are most effective in relaying the imperativeness of the topic.

To understand which forms of media are most effective, the different ways climate change is framed in the media must be discussed. Framing is the way an issue is organized and presented to assist in the way audiences make sense of media messages (Reese, 2001). Because of the increased availability of facts about climate change, and the still-present polarization of the issue, it is likely that disagreements about climate change stem from the general public's values (Corner, Markowitz, Pidgeon, 2014). Communication is not simply a translation of facts but a negotiation of meaning, and science and its policy implications need to be communicated in ways that address an intended audience's values, interests, and worldviews (Nisbet, 2009). Addressing individual frames is important because personal values and experiences shape what people perceive and understand, and framing contextualizes an issue to resonate with an intended audience (Krantz & Monroe, 2016). As Chapman (2001) argued, based on public health advocacy, climate change advocacy and communication also need to emphasize a rhetoric of advocacy that aligns with the values of the audience and will remind them what is fundamentally at stake.

According to the Center for Research on Environmental Decisions (Center for Research on Environmental Decisions [CRED], 2009, p. 6), "frames can help

communicate why an issue might be a problem, who or what might be responsible, and, in some cases, what should be done.” Krantz and Monroe (2016, p.109) also state, based on their analysis of the CRED guide, that climate change should be framed as follows:

1. Local;
2. Important now, rather than in the future;
3. As more than just an environmental problem that only environmentalists would be concerned with;
4. Experiential, using vivid, emotive imagery.

Applying these factors to the discussion of climate change allows consumers to feel a sense of homophily—or the ability to perceive themselves similar to the speakers—and thus, aids in the consumers’ ability to trust those delivering the messages about climate change, allowing them to see how climate change will affect them in a more personal way (Krantz & Monroe, 2016).

Messages are most effective at inspiring environmental action when local effects of climate change are emphasized and those receiving the message connect their local environments as being at risk (Altinay, 2017), and the more tangible—local—the threat of the impact is, the more likely it is to be covered by news outlets (Smith & Joffe, 2009). Local frames added to messages about climate change improve communication of the negative consequences by making them more relatable and comprehensive. Individuals with a strong place attachment should be targeted to help mitigate local impacts as they are more emotionally attached to their places of residence and care more about negative impacts from climate change (Scannell & Gifford, 2013).

Climate change is, in some ways, an abstract concept that is difficult for many to understand as something that will directly affect them. This makes it more difficult for media to communicate about the issues in a manner that will inspire consumers to change their behaviors or act in a way that will slow the effects of climate change. Audiences may be more likely to make behavioral changes if climate change action is framed as something that might make them lose a little now, but will keep them from losing much more in the future (CRED, 2009).

Because action against climate change needs to take place on multiple levels throughout the world for the mitigative initiatives to be effective, there must be enough of a consensus on the matter to point global policy in the direction of proactive solutions. This means it will be necessary to demonstrate the dire nature of climate change, and the consequences it will have, to all citizens—whether they have an innate care for the condition of the earth or not. Liberals and Democrats are more likely than conservatives and Republicans to have concern about environmental issues related to climate change (Dunlap & York, 2008). For this reason, climate change needs to be communicated in a way that appeals to more than just those who already consider themselves environmentalists if it is to be addressed proactively via policy.

Images assist in seeing relationships between concepts quickly and illustrate the connections between reality and the effects of climate change (Aik & Tway, 2004). According to Krantz and Monroe (2016, p.109), “Difficult topics are often better expressed through images, because visual representations can enable learners to grasp complex relationships among variables more quickly than if those relationships are

expressed only in words.” Images arouse emotion and stimulate the viewer, helping to reinforce the message of risk associated with climate change (Smith & Joffe, 2009).

Section II: Journalistic Practices

Salience determines the sense of importance consumers have about the issue of climate change (O’Neill, Boykoff, Niemeyer, & Day, 2013). Chapman (2001, p.1226) says, “If a public health research report is selected as newsworthy by international news syndicates, its salient features in the eyes of journalists will be broadcast to hundreds of millions, and sometimes billions of people.” The same is true of any report or scientific facts that are picked up as newsworthy, journalists decide what they think will capture audience attention, and disseminate the interesting or relevant facts throughout the globe. Wilson (2000, p. 201) points out, “Often what are portrayed in the media are not carefully worded scientific findings, but rather dramatic, eye-catching, entertaining stories that attract audiences but do little to enlighten them about the risks associated with climate change.” But, the freedom resting on journalists to decide the most effective way to communicate crucial information on climate change leaves them with the need to be able to recognize the most salient aspects of reporting on climate change, as well as those aspects that offer the consumer maximum efficacy, or something that promotes feelings of being able to do something (O’Neill, Boykoff, Niemeyer, & Day, 2013) in the face of the large-scale problems posed by climate change. The media and, in effect, journalists serve as a powerful link to the public’s reality and how climate change is discussed by scientists, policymakers, and public actors (Boykoff, 2011).

Because journalists are oftentimes unrestricted in what they say and present to their audiences—as long as it remains unbiased and fact-based—their personal attitudes may affect their decisions on what to report. This could lead to a decrease in the urgency of the politically legitimate event or person being covered (Shoemaker & Reese, 1996). Unfortunately, advocacy of an issue is not always about the surface issue being debated or the best data or evidence to prove or disprove it, sometimes it is more about the values of the speaker instead (Chapman, 2001). For example, right-wing journalists and columnists cultivate a dismissive view of climate change and fuel climate change denial machines (Elsasser & Dunlap, 2013). Science is inherently uncertain because it seeks to evaluate evidence, or lack thereof, to a conclusion rather than confirming its certainty, leaving an opportunity for agents of a particular agenda to accentuate this uncertainty by suggesting alternative possibilities (Bolsen & Druckman, 2015).

There is a thin line for journalists to tread when reporting on issues that are as politically polarizing as climate change. Journalists must consider not only how to keep in line with journalistic norms about the roles the press plays in politics, but they also need to reconcile with professional norms of fairness within the field (Bennett, 1996). Additionally, they must be concerned with the economic norms—advertisers, consumers, owners, etc.—that are present in the way the news business works and how those relate to climate change and the efforts of mitigation. Corner and Groves (2014, p. 744) say, “the same way that climate science is inherently political, communicating about climate change is unavoidably persuasive—not of a particular policy or goal, or in favour of a particular party or outcome, but of the basic assertion that anthropogenic climate change is real, is a serious problem and requires a serious societal response.”

According to Boykoff and Boykoff (2004), reporters can further impede the audience's understanding of climate change by feeding into the "he said/she said" narrative typically utilized within good journalism that aims to tell both sides of the story. In attempting to practice balanced journalism, journalists give a voice not only to accurate scientific research and information but also to climate change deniers to make the stories more interesting to an uneducated audience. In giving an equal platform to the climate change deniers, the journalists give the appearance that each perspective is equally valid when the issue of climate change is in fact unbalanced in favor of science (Boykoff & Boykoff, 2004). Despite having been taught this practice of balancing information in journalism school, within the context of issues such as climate change that are supported by scientific evidence but lack the widespread acceptance that will result in action, it is imperative that journalists begin to report on the issue as fact and not feed into the narrative of deniers. The media coverage of popular discourse that diverges from that of scientists plays a significant role in the lack of concerted international mitigation actions in the face of climate change (Boykoff & Boykoff, 2004). In adherence with the scientific method, climate change should be accepted and reported by journalists as facts until, and unless, there is evidence to the contrary (Corner & Groves, 2014).

Section III: Images as Tools in MCCC

The manner in which information about climate change is presented to the public needs to change, along with the changing media environment, in order to be effective. According to Shaw et al. (2009, p. 461), "addressing climate change in a participatory

way, with credible but easily accessible visuals, and at a scale that matters to people, may be critical in building capacity for climate change action.” A photo is more difficult to deny than words, it removes the element of uncertainty from the discussion about climate change, and makes the impacts no longer seem like they are in the future, because they are undeniably present now within the photo (Smith & Joffe, 2009). Images as tools for MCCC hold qualities that text and other forms of communication do not: they are analogical (the meaning is matched to what is known to be similar and doesn’t rely on societal norms, that come as a result of the political nature of the subject matter, to dictate it), lack propositional syntax (the relationship between the cause and the effect has to be implied, rather than stated) and are indexical (they are perceived as direct representations of reality, as opposed to constructions of it) (O’Neill, 2018).

Additionally, images and visuals have a logic and rhetoric that are inherently different than text, and therefore have the ability to transcend languages and lend themselves to ideological interpretations of subjects that may be too difficult to put into words (Popp & Mendelson, 2010). For these reasons, according to Joffe (2008, p. 92)

where once the mass media relied heavily on textual information they have shifted, increasingly, to the use of visual material ... [and] with the increasing presence of such visuals comes a more emotive media environment with which people find themselves forced to engage, and, under certain circumstances, disengage.

According to O’Neill (2018) there are at least 5 different image frames that can be found within MCCC: images containing identifiable people such as politicians and other

public figures; portrayals of climate change impacts; images that show energy, emissions, and pollution; protest imagery; and scientific imagery such as graphs.

Images containing recognizable people are the most-used form of communicating about climate change in the U.S., U.K., and Australia (O'Neill, 2013). These images include politicians signing climate legislation, headshots of politicians engaged in climate debates, celebrities speaking about climate change, and business leaders addressing climate change. O'Neill, Boykoff, Nieymeyer, and Day (2013) conducted an experiment to examine how citizens in the U.S., U.K., and Australia engage with existing climate change imagery within the print media of those countries and found that images with recognizable people as the dominant frame elicited low senses of saliency in all of the represented countries, and made the Australian cohort also feel a lower sense of self-efficacy in regards to climate change. O'Neill et al.'s (2013) study was replicated in Germany, Switzerland, and Austria by Metag et al. (2016) and produced consistent results to that found in the study of the U.S., U.K., and Australia.

Previous research (Metag, Schäfer, Barsuhn, Füchslin, & Kleinen-von Königslöw, 2016; O'Neill et al., 2013; O'Neill & Nicholson-Cole, 2009) has shown that images depicting natural disasters such as floods, droughts, and melting ice caps are more likely to attract the attention of consumers, making them feel as if climate change is an important issue while simultaneously contributing to feelings of hopelessness about the issue. Yet, images depicting natural disasters as a result of climate change play to news values because they are dramatic and attention-grabbing (O'Neill, 2018) and are therefore used commonly within MCCC. Corner, Webster, and Teriete (2015, p.5) state, "Images of climate impacts can prompt a desire to respond, but because they are emotionally

powerful, they can also be overwhelming.” For these reasons, they point out the importance of making the images depicting climate change impacts portray real people in a localized way with enough links to the bigger picture of climate change to make it easier for people to relate the effects of climate change to their everyday lives. It should also be noted that Hart and Feldman (2016) found no effect on salience or efficacy while showing U.S. participants mock-up news stories containing depictions of climate change impacts.

The energy, emissions, and pollution frame of images in MCCC tend to represent industry impacts on the environment by showing photos of smokestacks, solar panels, and other energy futures (O’Neill, 2018). Although images of smokestacks have been shown to attract attention because they are grand in scale, they have also been found to be fear-inducing and likely to make consumers feel overwhelmed while decreasing their sense of self-efficacy (O’Neill et al, 2013; O’Neill & Nicholson-Cole, 2009). Yet, O’Neill and Nicholson-Cole’s research (2009) has shown that images of alternative, “green” resources, such as electric cars and solar panels, are less likely to attract public attention and produce feelings of saliency, but they are more likely to give consumers a sense of efficacy, making them feel that they can personally do something about climate change.

Thus far, although protest imagery is quite common in western media, it has not been found to be an effective form of MCCC and is believed to elicit a feeling of greenwashing and otherness for individuals who do not already perceive themselves as environmental activists (Corner, Webster, & Teriete, 2015). O’Neill et al. (2013) found that protest imagery generated feelings of saliency in the U.K., but not in the U.S. or

Australia. Hart and Feldman (2016) also found that images of protest did not seem to promote feelings of self-efficacy, despite the fact they show people taking action on climate change.

According to O'Neill, Williams, Kurz, Wiersma, and Boykoff (2015), scientific images are thought of as fitting into a frame of "settled science," and Schneider (2012) says scientific graphics play an important role in the discourse about climate change because they make the invisible effects of climate change visible. Yet, Metag et al. (2016) found no link between scientific images such as graphs and feelings of saliency of self-efficacy. Schneider (2012) also found that although scientific imagery is inherently intended to be unbiased, at times it can elicit emotive responses in individuals by use of color or other methods of presentation. Additionally, Harold, Lorezoni, Shipley, and Coventry (2016) found that the use of certain colors and design elements within scientific portrayals of climate change can capture and redirect attention, but the colors and orientation of graphs and graphics need to take into consideration personal and cultural perceptions such as color blindness and which direction a graph will be read (from left to right or right to left). They also found that graphics should not be complex, use design to support inference-making, and integrate texts and graphics in a coherent manner in order to be the most effective.

Section IV: Discussion and Future Research

Given the current availability of studies and literature on the subject, it is clear that image choice within the context of MCCC carries a heavy weight in regard to if the

media consumer will pay attention to the story and/or if it will leave them with a sense of self-efficacy in the face of climate change. Given this knowledge, it is critical that journalists, as well as climate scientists, continue research on which images convey the message about climate change in the most effective manner and adhere to the suggested methodology.

Thus far in the research, there have been no images found that increase saliency and self-efficacy in regard to climate change (O'Neill et al., 2013). O'Neill (2018), an expert on the subject of images used within MCCC, concluded that if the goal is to interest people who have little previous engagement with MCCC then salient images are the most effective, but if the goal is to get individuals already interested in climate change to feel a sense of self-efficacy in regards to their own life choices, then images of renewable images, such as electric cars and solar panels, are the best choice because they have the greatest ability to make individuals feel as if they can personally do something about climate change.

According to O'Neill (2018), future studies would benefit from further analyzing the feelings of efficacy consumers feel when they are shown an image of an identifiable person, particularly a politician, as the dominant type of imagery within MCCC. Further research on why scientific imagery becomes politically charged after leaving the lab would also be beneficial to determining which images are the best choice within MCCC.

It would also be beneficial to do more research on the ways new media, such as social media, give voices to a new array of content producers, such as bloggers, on the subject of climate change and how they are then given an opportunity to shape the public's agenda in regard to it (Boykoff, 2011). Future studies should also focus more

attention on multimodal methodology, such as that using the internet, to more accurately reflect how people in the real world engage with climate change visuals by exploring the complete news item, whether that includes image, headline, and text in the form of a social media feed, blog, or print newspaper page (O'Neill, 2018). There should also be more studies focused on presenting images related to climate change to participants within a real-world setting using mock news stories from all platforms of news delivery.

In addition, most studies done on image use within MCCC have focused on Western countries and would benefit significantly by expanding the research to other countries and cultures (O'Neill, 2018), particularly those of emerging democracies and densely populated regions where climate change will have immediate effects on large numbers of people.

From the consensus of the experts who have devoted their research to analyzing MCCC (Schäfer et al., 2016), when it comes to the ways in which images contribute, there is a gap in the research. There has been extensive research conducted on the time and attention that is lent to MCCC within media: the effects of words and phrases, discourse analysis, narrative analysis, framing analysis, and many more. Visual analysis, multimodal solutions, and focus on TV and social media are still emerging subfields that remain poorly developed, if not largely untouched, by media campaigns (Schäfer et al., 2016). The research to date tends to point to the need, therefore, for increased media attention to visual analysis, multimodal solutions, and social media with emphasis on hopeful approaches toward stabilizing global climate.

Section V: Design for an Experimental Study on Visual Framing of Climate Change

The study detailed below is designed to analyze the media's use of images in the transmission of climate change information, particularly within the context of social media. The study addresses gaps in previous research on images used within MCCC, by using new media, multimodal methodology, and a real-world setting using actual news headlines and photos on Facebook.

In order to fairly analyze the effects of particular images on consumers' thoughts and feelings about climate change, the experiment will begin by giving a questionnaire to the participants (see Appendix A). The questionnaire's goal will be to determine the participants' predisposed thoughts and beliefs about climate change, as well as their demographics and ideological beliefs. Along with a scaled response to determine views on climate change such as their feelings of saliency and efficacy, it will seek to answer questions such as age, income, religion, and political affiliation. The participants will be assigned a computer to fill out the pre-experiment questionnaire.

After completing the questionnaire, they will be instructed to switch their screens to a randomly assigned Facebook feed simulation (see Appendix B) to assist in investigating what kind of images capture consumers' attention. The available simulations should each be assigned one of five random conditions. The page will consist of several different headlines, news stories and other social media stimuli as well as a story related to climate change. The only thing within the feeds that will vary is the photo attached to the headline of the story so the presentation of the climate change story will

be different for each participant. The images used will encompass a common theme related to climate change, the rise of sea levels, but will use either images of climate change impacts, alternative resources, environmental protests, an identifiable politician, or scientific imagery paired with the same headline taken from a real-life news article. The news source will be removed from the simulation in order to prevent the known bias of particular news outlets from swaying participants views. The types of images chosen for the study are adapted from those used in previous studies (Metag, Schäfer, Barsuhn, Füchslin, & Kleinen-von Königslöw, 2016; O'Neill et al., 2013; O'Neill & Nicholson-Cole, 2009).

The participants will not be told that they are looking for anything in particular on the page, they will just be given 2 minutes to peruse it. Once the time has elapsed, they will be instructed to change their computer screen to the post-experiment questionnaire. The post-questionnaire is designed to analyze the effect of the simulated Facebook page by re-administering the portion of the survey that asked their views on climate change (see Appendix C) in order to determine if their feelings on the matter have changed. It will also infer as to what the participants remember most about the page. This procedure will provide data on which image/headline combinations are most effective at capturing attention as well as promoting feelings of saliency and efficacy.

Following the experiment, the participants will be given a debriefing (see Appendix D) to acknowledge the deceptive nature of the experiment and to disclose to the participants the precise reason why they took part in the study. Participants of the study will contribute to a body of knowledge within the social sciences that will help in gaining a better understanding of how social media contributes to attitudes about climate

change. After collecting the data from the experiment, the researcher will read the debriefing form of which each participant will receive a copy. The form will give the participants an in-depth description of the experiment they took part in and explain to them why it was designed to function as it did. The participants will be informed that the experiment was specifically designed to analyze how images in social media are associated with consumer's change in attitudes about climate change. It will be explained to them that they were assigned a simulated Facebook feed to study that was identical to the ones the other participants were assigned except for the image that was attached to the story about rising sea levels. The possible images randomly assigned to each feed were images of climate change impacts, alternative resources, environmental protests, an identifiable politician, or scientific imagery. The reason for randomly changing the photo between the participants' feeds was to establish if there was a connection between any particular photo and the ability to engage consumers and change their perceptions of climate change. Some of the questions asked on the pre-questionnaire were designed to be distractors, to keep the participants from realizing that the study was specifically about climate change. The distractors were about things that were present in the feed but were not of direct interest to the researchers. The distractor questions were included because if the participant were to realize from the beginning that the experiment was about climate change, it might have influenced their attention to the climate change information in the simulated feed and thus their responses to the post-test questionnaire. After the participants have been debriefed, they will be asked if they have any questions before being dismissed from the lab.

Once data collection is complete it should be analyzed using SPSS (Statistical Package for the Social Sciences) with ANOVA (analysis of variance) Analysis. Because the experiment will be done within a controlled lab setting, it will allow isolation and manipulation of the visual information that is being presented to participants with the simulated Facebook page. Because the exposure to the Facebook feed will follow and precede the questionnaires, the ANOVA analysis allows us to see if there is a relationship between the responses to the questionnaires and the manipulated images. The analysis will allow us to say with high degree of certainty that the visual differences are what caused the differences in the participant's attention, attitudes, and beliefs to the climate change article. It will also allow us to track to what extent the different images are responsible for different amounts and direction of change in climate-related attention, attitudes, and beliefs.

Society and media practitioners will benefit through a better understanding of how social media image choice may impact beliefs, attitudes, and attention in regard to climate change, giving them a guide to how to better cover the topic in a way that will engage consumers.

Section VI: Project Reflection and Evaluation

My research work contributed greatly to my receiving several scholarships during my time at MTSU. Because of my research I received the Udall Scholarship, an award given to 50 students in the country for environmental stewardship and/or contributions to Native American policy or healthcare. I have also been selected twice for the Critical

Language Scholarship (CLS) so I can learn the Indonesian language in order to continue my research by comparing the results from two different democratic countries so I can fill in more gaps in the research area.

I also now know where the best research being done in my field is. This has helped me significantly in choosing where to consider for graduate school programs, as well as considering what to major. My research led me to look into programs and studies that I probably otherwise wouldn't have looked. I am now considering a change in major for my transition into graduate school, perhaps cultural geography, to continue my research in the most helpful, resourceful environment. I know more about my field now and have been able to narrow my research down to a topic that I now, as many professors would put it, think I am one of a handful of experts.

The thesis research also prepared me to do future research within a graduate program. I now know how to do research, and the best ways to do it. Without having actively done research, I would never have learned how to properly use databases, references, and DOI's (digital object identifiers). I now know the quickest, most effective ways to find reliable, peer-reviewed articles to forward my research.

I also learned more about what kind of time management works best for me. The keys to finishing this thesis was setting a lot of small goals, being flexible, recognizing my limitations, and identifying what was possible for me to do within the time frame, and what was not.

As simple as this sounds, I learned that when writing long research articles such as this one, it is important that once the topic is identified, it works best not to try to start from the beginning and write the project to the end. As a writer, I usually do things this

way, but for research projects such as this, it is not the best way. I advise to use a working citation list while working on the project and keep notes on citations as they come up. It's better to make note of the citations and where they come from as you come upon them and worry about working them into the writing and finding back-up texts at a later time. I also realized that when doing research, it is sometimes acceptable to wander outside of your discipline in order to explain broader concepts within the text.

An extremely important, perhaps the most important, realization I came to while working on this thesis is that you can get funding to do research and continue research on something you are already interested by thinking outside of the box. The resources to do it exist and there are people and organizations that will recognize you for your work and support you in furthering your research by helping you meet the right folks along the way.

I took what I know and what I wanted to know more about and combined it with what I'm interested and passionate about and used that information to identify a relevant gap in existing research.

Lastly, I did run into my fair share of problems throughout the research process. For example, my thesis proposal was originally to carry out the experiment detailed in Section V but problems getting IRB approval put a halt in those plans. I spent countless hours working on IRB paperwork and trainings for none of them to be used for this project. This was extremely discouraging to me for several months until I eventually decided to abandon the experiment and focus on a literature review because of my personal time restraints and inability to spend enough time working out the IRB issues. The IRB issues were small, technical problems that I did not have time to straighten out

and resulted in me not being able to carry out the experiment. For purposes of future undergraduate thesis research, I believe the process should be much simpler.

The experience was not easy, but I would not make a different decision. Even so, I thought constantly about changing the project – mostly because I was sad because I wasn't able to put enough of my creativity into it – but the research made me see all of the opportunities that come with it. I realized if I continue with it, I will have the chance to use my creative energy more on the research in the future.

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Appendix A

Sample Beginning Questionnaire

Do you use social media?

Yes

No

Do you believe BuzzFeed quizzes produce accurate results?

Definitely do not produce accurate results

Probably do not produce accurate results

May produce accurate results

Probably produce accurate results

Definitely produce accurate results

Do you think BuzzFeed headlines are effective at capturing consumer's attention?

Definitely not effective at capturing consumer's attention

Probably not effective at capturing consumer's attention

May be effective at capturing consumer's attention

Probably effective at capturing consumer's attention

Definitely effective at capturing consumer's attention

Do you think BuzzFeed is a trustworthy news sources?

Definitely not a trustworthy news source

Probably not a trustworthy news source

May be a trustworthy news source

Probably a trustworthy news source

Definitely a trustworthy news source

Do you want to see political content on your social media feed?

Definitely do not want

Probably do not want

May want

Probably want

Definitely want

Do you believe climate change is caused by humans?

Definitely not caused by humans

Probably not caused by humans

May be caused by humans

Probably caused by humans

Definitely caused by humans

Do you believe climate change is contributing to rising sea levels?

Definitely not contributing

Probably not contributing

May be contributing

Probably contributing

Definitely contributing

Do you believe humans can take steps to reduce the effects of climate change?

Definitely not

Probably not

Maybe

Probably

Definitely

Do you think Mark Zuckerberg should be held more accountable for the controversies surrounding Facebook?

Definitely should not be held accountable

Probably should not be held accountable

Maybe should be held accountable

Probably should be held accountable

Definitely should be held accountable

What is your preferred social media platform?

Instagram

Twitter

Facebook

Reddit

Pinterest

Snapchat

Do you pay more attention to photos or words on your social media feed?

Photos

Words

Do not know

Do you believe memes have a significant role on social media?

Definitely do not have a significant role

Probably do not have a significant role

May have a significant role

Probably have a significant role

Definitely have a significant role

What do you prefer to see on your social media feed?

Quizzes

News

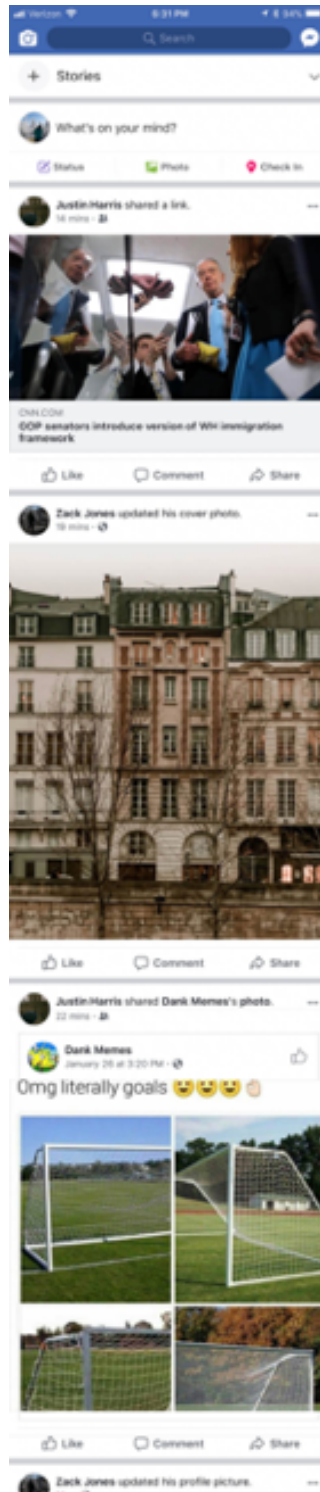
Photos

Memes

Status updates

Appendix B

Visual Stimuli: Facebook Feed Simulation Example





Connect With Facebook



Mark Zuckerberg
Founder and CEO at Facebook
102,781,385 followers

Follow

Bring Making t



Jade James shared a link.
4 hrs · 🌐



Jakarta Is Sinking So Fast, It Could End Up Underwater
Countless human-made troubles in the Indonesian capital...

👍 Like 💬 Comment ➦ Share

Zack Jones shared a link.
1 hr · BuzzFeed.com · 🌐



BUFFEED.COM
This Short Quiz Will Reveal Your Dream City
You could search the globe...or just take this quiz.

👍 Like 💬 Comment ➦ Share

Brittany Alexander shared Meme Supreme's post.
39 mins · 🌐

Meme Supreme
Monday at 8:51 PM · 🌐

Me trying not to post memes every 5 seconds



👍 Like 💬 Comment ➦ Share

📧 🏠 📺 🔔 ☰

Appendix C

Sample Ending Questionnaire

How old are you?

What is your highest level of education?

High School

Vocational School

Some College

Associate Degree

Bachelor's Degree

Graduate Degree

What is your major?

What city and state are you from?

What gender do you identify with?

Female

Male

Other

What race do you identify with?

White non-Hispanic

African American

- Asian
- Hispanic
- Pacific Islander
- African
- American Indian or Alaska Native
- Other

What religion do you identify with?

- Christian-Protestant
- Christian-Catholic
- Judaism
- Islam
- Buddhist
- Hindu
- Nonreligious
- Other

Which political party do you identify with?

- Republican
- Democrat
- Independent
- Other

Do you have children?

Yes

No

Which would you consider your family?

Working Class

Middle Class

Upper Class

What most stood out to you on the page you just studied?

Profile picture changes

Quiz results

Article about rising sea levels

Cover photo change

Memes

Political Article

Do you believe climate change is caused by humans?

Definitely not caused by humans

Probably not caused by humans

May be caused by humans

Probably caused by humans

Definitely caused by humans

Do you believe climate change is contributing to rising sea levels?

Definitely not contributing

Probably not contributing

May be contributing

Probably contributing

Definitely contributing

Do you believe humans can take steps to reduce the effects of climate change?

Definitely can not take steps

Probably can not take steps

Maybe can take steps

Probably can take steps

Definitely can take steps

Appendix D

Sample Debrief

The experiment you took part in was specifically designed to analyze how images in social media are associated with consumer's change in attitudes about climate change. You were assigned a Facebook feed to study that was identical to the ones the other participants were assigned except for the image that was attached to the story about rising sea levels. The possible images randomly assigned to each feed were images of climate change impacts, alternative resources, environmental protests, an identifiable politician, or scientific imagery. The reason for randomly changing the photo throughout the participant's feed was to establish if there was a connection between any particular photo and its ability to engage consumers and change their perceptions of climate change. Some of the questions asked on the pre-questionnaire were designed to be distractors to keep you from realizing that the study was specifically about climate change. The distractors were about things that were present in the feed but were not of direct interest to the researchers. The distractor questions were included because if you were to have realized from the beginning that the experiment was about climate change, it might have influenced your responses on the post-experiment questionnaire.