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INFORMATION ENABLING ACTION: AGENCY-FOCUSED SOCIAL MEDIA FRAMES
AS A WAY TO PROMOTE WILLINGNESS TO HELP AND PREVENT COMPASSION
FADE IN RESPONSE TO NATURAL DISASTERS

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ABSTRACT

This study explores whether the framing of social media posts related to natural disasters influences an audience's responses to a natural disaster. After reading a news story about a recent tornado, participants were randomly assigned to one of three experimental social media feed conditions (victim-focused, agency-focused, and weather-focused control) and responded to a series of questions assessing their feelings of empathy, retention, and willingness to donate. The study found that framing influences empathy and willingness to donate. In addition, providing evidence consistent with a novel hypothesis, findings indicate that providing information about how to help predicts helping in conditions marked by numbing and a lack of emotion, like compassion fade. Because knowing how to help is as important as being motivated to do so, these findings can be used to shape more effective social media strategies in a time of need to ensure audiences are informed about how to give and do not feel overwhelmed or numb to dire situations.

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ACKNOWLEDGEMENTS

This thesis was inspired by my own experiences living in New Jersey during the aftermath of Hurricane Sandy in 2012. As a 14-year-old recently introduced to social media, I was intrigued with the ways the internet and social media were used to spread information of all types, noting devastation, rallying support, or simply providing weather updates. Often, I wondered why people posted about the storm in such different ways and how that could potentially affect the communities. Little did I know that eight years later, these questions would be the foundation of my college honors thesis. Although social media has changed substantially since my days of reading tweets on an iPhone 4s, our behaviors have remained more or less consistent, and the natural disasters have seemingly worsened somehow, as the 2017 hurricane season, which brought those questions back to mind for me, demonstrated. I hope this thesis provides clarity to better ways we can use social media as a tool in response to natural disasters. Further, I hope it highlights the crossover between my two majors that have fascinated me over the last four years. I believe so many problems can be solved by combining an understanding of the human condition with excellent and strategic communication skills.

I would like to thank my advisors Theresa Vescio and Heather Shoenberger for their support and guidance throughout this process. Having never completed lab research before this year, this project was certainly a learning experience, but with their help, I'm proud to look back on all the ways I have grown while working on it. Additionally, I'd be remiss not to thank my family for always encouraging and reminding me of why I took on these challenges four years ago as a Paterno Fellows aspirant determined to be part of the Schreyer Honors College.

Introduction

During the record-breaking hurricane season of 2017, more than 9 million tweets about Hurricanes Harvey, Irma, and Maria were sent in a span of 29 days (Alam, Ofli, Imran, & Aupetit, 2018); that is more than 215 tweets every minute. These tweets brought to light victims' suffering, rallied social support by providing information about how to help, and provided updates on weather patterns and damage. In doing so, they demonstrated how social media could be leveraged as a tool to connect people during times of crisis by providing safety updates, coordinating relief efforts, and raising awareness.

The goal of this work is to examine whether the way in which information about natural disasters is framed on social media influences the empathy people feel, the information they retain, and the degree to which they are willing to help. To examine these possibilities, I developed three more specific research questions. First, I considered whether framing condition affects empathy and one's willingness to help. Second, I considered the possibility that framing condition might affect one's retention of information for details about a natural disaster. Third, I examined whether framing conditions that provide information on how to help may influence helping in situations that might otherwise cause compassion fade (Markowitz, Slovic, Västfjäll, and Hodges, 2013). As I considered each question, I reviewed the relevant literature and the answers I derived to the questions provide the basis of the hypotheses tested, including a novel hypothesis referred to as the information-action hypothesis.

How does the framing of social media posts influence empathy and helping?

To consider potential answers to this question, I first will discuss the importance and consequences of social media, as well as the way messages are framed. I then will discuss the conceptualization of empathy and review central findings, noting the relation between empathy and helping.

Social Media's Power to Inform

As opposed to single-source, traditional news media (e.g., Wall Street Journal, CNN, local news), social media provides “two-way mediated communication” and has become a ubiquitous channel for sharing information during natural disasters by creating ongoing conversations (Houston, Pfefferbaum, & Rosenholtz, 2012). Now, like news organizations, average users can influence the framing of natural disaster communications, public opinion, and behavior. In fact, both traditional and social media show similar abilities to attract and maintain audiences' attention (Neuman, Guggenheim, Jones-Jang, & Bae, 2014). Underscoring the latter's prominence in directing public attention, both traditional and social media have been shown to influence each other's framing agenda by dictating what is seen as newsworthy (Guggenheim, Jang, Bae, & Neuman, 2015). “Given the ease with which information is posted and shared,” there is little control over the content and accuracy of social media posts (Chen, Sin, Theng, & Lee, 2015). Instead, without much say on the end of owners of social media accounts, their feeds, expressed opinions, behaviors, and possible well-being are subject to what others share (Chen et al., 2015).

Researchers have modeled the influence and transmission of social media posts as a game of telephone, during which each user affects the content, meaning, and impact of messages transmitted from person –to person (Carlson, 2018). Because social media lacks rigorous quality

control, more people than ever before have this power (Chen et al., 2015). In contrast, in the past, a small group of traditional journalists and reporters regulated public information with their shared educations, employers, and perspectives.

Media Framing

A media frame is “an organizing principle to the structure of a news story;” how it is crafted and what it focuses on can “shape people’s understanding of and thinking about political, economic, and social topics” (de Vreese, Boomgaarden, & Semetkol, 2010). In the example of a natural disaster, media organizations and social media users alike can choose from a variety of frames while crafting their messages; these frames can include focusing on a personal, emotional angle (human interest), the political disagreement involved (conflict), who is to blame (attribution of responsibility), and the resulting economic impact (economic) (An & Gower, 2009). How a disaster is framed in news coverage and social media conversation may quite powerfully influence an individual’s knowledge of, attitudes toward, and behavior in response to a disaster (Houston, Hawthorne, Perreault, Park, Goldstein-Hode, Halliwell, & Turner, 2015). Media frames mediate an audience’s evaluations of the importance of “issues that are subject to different presentations and interpretations” by influencing their emotional responses and perceived risk (Otieno, Spada H, & Renkl A, 2013; de Vreese, Boomgaarden, & Semetko, 2010). In one study about audience responses to issues related to immigration, emotions were shown to mediate framing effects; when the frame elicited positive emotions such as compassion, participants reported more favorable opinions about immigrants; comparatively, when the frame elicited negative emotions such as fear, participants reported less favorable opinions (Lecheler, Vos, & Vliegenthart, 2015).

This body of work will focus on the viability of the aforementioned human-interest frame. Human-interest-focused frames are more vivid and are easier to understand than those focused on statistical information or political interviews that might require some interpretation (Brosius & Bathelt, 1994). In journalism, exemplification theory suggests that human-interest frames facilitate the reader's use of personal experiences as "exemplars," which illustrate larger issues (Zillmann & Brosius, 2000). More specifically, the human-interest frame "puts a human face and emotional angle to the presentation of an event, issue, or problem, so it makes people regard the crisis as serious, urgent, or dangerous" (Cho & Gower, 2006). In that study, compared to participants in the non-human-interest frame condition, those in the human-interest frame condition in two different scenarios reported higher empathy and showed an overall higher emotional response, which more strongly predicted blame and helping (Cho & Gower, 2006). As a result, manipulating frames in this way has been shown to influence participants' emotional response significantly, attract more attention, be easier to comprehend, and be more accessible when people make judgments about the situation or about what to do (Lefevere, De Swert, K., & Walgrave, 2012; Chow & Gower, 2006). For instance, in one study, the use of human-interest frames in a story about a political issue drove people to increase their attribution of responsibility to the government and decrease their support for its plans because of the emphasis placed on individuals affected (Boukes, Boomgaarden, Moorman, & de Vreese, 2015).

Empathy

Empathy refers to people's natural abilities to perceive others' emotional states and care for their well-being (Decety, 2011). As a construct, empathy has been shown to encompass a wide spectrum of items that range "from feelings of concern for other people, experiencing emotions that match another individual's emotions, knowing what another is thinking or feeling,

to blurring the line between self and other (Decety, 2011). Empathy has cognitive and affective components. For instance, Davis (1983) defined empathy as “the reactions of one individual to the observed experiences of another,” with the cognitive component being perspective-taking and the affective component referring to peoples’ subjective feelings of the emotion of empathy (i.e., kind, softhearted, warm, tender, and moved; see Batson & Coke, 1981). Others have suggested that empathy has three components. From this perspective, empathy is a result of the interplay of one’s (a) ability to discriminate and label affective states in others, (b) ability to assume the perspective and role of another person, and (c) emotional capacity and responsiveness (Feshbach & Kuchenbecker, 1974). Regardless of whether the former or the latter conceptualization of empathy is used, empathy is comprised of cognitive factors – either perspective-taking or perspective-taking and the accurate perception of the emotions of others – and affective factors, like the subjective experience of empathy. Prior research has shown that these feelings are heightened when messages have human-interest frames because they elicit greater emotional responses, as described earlier in this work. For instance, in one study, when people consumed a news story through virtual reality and 360-degree video, they were more empathetic to the people in the story than those who had simply read about it, demonstrating the importance of people being able to relate to others when studying empathy (Sundar, Kang, & Oprean, 2017).

In the current research, for the experimental condition of traditional interest to empathy researchers, social media posts were presented in human-interest framing that focused on the effects of a natural disaster – a tornado; I refer to this condition as the victim-focused condition. These frames had the greatest human-interest focus, and past research has shown that humanizing a cause (Ahn, Kim, & Aggarwal, 2013), even by drawing a face on a cup asking for

donations, resulted in increased feelings of empathy. Compared to a neutral control condition – in which information is only provided about the details of the weather event –

I predict that the use of victim frames will elicit greater empathy.

Empathy and Helping

Empathy is a feeling that humans, like all mammals, are “genetically hardwired” to exhibit; as a result, they “evaluate and respond unconditionally and readily to threatening or nurturing, unpleasant or pleasant, and appetitive or aversive stimuli by using specific response patterns that are most adaptive to the particular species and environmental condition” (Decety, 2011). This predisposition manifests itself in how individuals share emotions and feelings and express alarm, fear, or empathic concern (Decety, 2011). The difference, though, is humans “can intentionally ‘feel for’/ and act on behalf of other people whose experiences may differ greatly from their own” (Decety, 2011), which is why people donate to causes with which they are unfamiliar. Empathic helping is a naturally occurring, adaptive behavior and has been suggested to have evolved over time as a way to promote genetic fitness (Wilson, 1988).

Batson (2009) has proposed that empathic concern is associated with prosocial behaviors and altruism – referred to as the empathy-altruism hypothesis – that facilitate social cohesion and group functioning (Vescio, Sechrist, & Paolucci, 2003). The empathy-altruism hypothesis states that feeling empathic emotions leads to an altruistic motivation to help others, as opposed to an egoistic motivation to serve the self (Toi & Batson, 1981). The hypothesis has been studied extensively and, according to this theory, altruistic helping occurs when people help others out of genuine concern for them and regardless of whether they have anything to gain. In one study, researchers examined whether empathy-induced helping is egoistically or altruistically motivated and found further support for the empathy-altruism hypothesis, as empathic concern mediated

helping (Dovidio, Allen, & Schroeder, 1990). Conversely, the social exchange theory states that people help only when the benefits of doing so outweigh the costs (Thibaut & Kelley, 1959).

Although an assessment of the egotistic vs. altruistic motivations is beyond the scope of the present work, empathy should be a determining factor of helping behavior – either because of a sincere motivation to help others or reduce self-distress (Cialdini, Schaller, Houlihan, Arps, Fultz, & Beaman, 1987).

Media frames may also be expected to have varied effects on experiences of empathy. For example, in one study, Batson and his colleagues varied conditions in terms of high vs. low empathy and ingroup vs. outgroup; when measuring how willing participants were to unexpectedly help someone in need, they found a significant relationship between empathy and helping (Batson, Sager, Garst, Kang, Rubchinsky, & Dawson, 1997). Replicating prior research, I expect empathy to influence the degree that others help (or donate money). For instance, Toi and Batson (1982) studied what motivates helping behavior by manipulating whether people were in low- or high-empathy conditions and then measuring how willing they were to help a victim escape distress. They found that people in the low empathy condition helped more when escape was difficult – out of a motivation to reduce their own distress (Toi & Batson, 1982). Based on the relationship between empathy and helping behavior, which previous research has shown, mainly through Batson's empathy-altruism hypothesis, I am predicting framing condition should influence empathy and helping. Specifically, empathy and willingness to help should be greater in the victim-focused framing condition than the weather-focused, neutral condition. In addition, if empathy promotes helping, consistent with Batson's empathy-altruism hypothesis, then empathy and willingness to help should be correlated, particularly in the victim-focused condition. Most importantly, if Batson's empathy-altruism hypothesis holds in the current data,

empathy should mediate the relationship between framing condition (victim-focused vs. neutral) and willingness to help. This set of predictions is consistent with prior findings. For example, both Wayment (2006) and Piferi, Jobe, & Jones (2006) found that empathy predicted helping behavior. In Wayment (2006), participants who exhibited more helping behaviors reported greater empathy ($M = 4.36$, $SD = .57$) than those who exhibited fewer helping behaviors ($M = 3.87$, $SD = .93$). Piferi et. al (2006) found a similar relationship in the connection between empathy and donations, when levels of emotional affectedness and giving both decreased significantly a year after the 9/11 attacks, compared to the period immediately following the attacks. Although the current work's willingness to help variable is not defined operationally the same way that Wayment (2006) and Piferi et. al (2006) did, all three behaviors seem closely enough related that I can base my predictions on their previous research.

Of particular relevance to the present work are findings showing that media frames influence feelings of empathy and the psychological processes that shape how people consume information and make decisions (Lecheler et al., 2015). For example, when presented with information about an invasive species in a human-interest frame that highlights human reactions to the invasion, people perceived greater risk and felt more negative emotions (e.g., anger, see Otieno et al., 2013). In addition to arousing more empathy, human-interest frames also translated to better learning (i.e., better performance recalling information from the initial article, see Otieno et al., 2013). In addition to answering questions about the invasive species, participants identified what they believed to be the most important information about the situation; participants in the human-interest condition prioritized negative over positive aspects and had an overall more biased perspective of the situation (Otieno et al., 2013). Importantly, it was found that something other than “the emotionalizing nature” of the human-interest frames mediated the

effect of media frames on learning outcomes (e.g., involvement, interest, attitudes) (Otieno et al., 2013). This introduces the possibility that, in addition to feeling empathy, retaining relevant information may be related to one's willingness to help.

Framing and Retention: The More You Understand, the More You Think, Do

Retention is defined in this research as participants' recollection of information from the news story they read at the beginning of the study. They responded to six questions with four possible choices and one correct answer. Retention was scored by counting each correct response. I studied retention as a way to assess what participants recalled about the tornado because of the previously demonstrated relationship between cognitive factors and empathic responses and Otieno et al.'s findings about human-interest framing's effects on learning outcomes (2013). These relationships led us to predict that retention and empathy will be positively correlated. I expect that the more a participant understands an issue, the more they will think about it, which in turn should result in greater empathy, given the cognitive processes involved in producing empathy (Feshbach & Kuchenbecker, 1974).

Beyond Empathy: Framing as a Source of Information About How to Help

Beyond arousing empathy and helping, consistent with Batson's hypothesis, could the effects of social media framing on helping be determined by knowledge of how to help? Stated differently, might framing provide information of how to help? I refer to this novel suggestion as the information-action hypothesis, which is elaborated upon below.

The information-action hypothesis. If your neighbor were to fall unconscious, before you could save their life, you would need to realize their need for help, have the motivation to intervene, and possess knowledge of how to effectively do so. Even if you recognize the need for help and want to provide it, you cannot do much if you do not know that CPR is needed or how to perform it. That same logic applies to this study and when providing aid to those in need after a natural disaster. You can understand the situation and feel empathy for the victims, but without knowing how to help, you likely cannot be as useful and might even feel stifled in trying to figure out what to do. To examine this possibility in the present work, I included dependent measures tapping willingness to help. Specifically, participants were enrolled in a lottery for a chance to win \$25.00 in a raffle and, at the conclusion of the study, participants were asked how much money people would be willing to donate to a relevant charity if they were to win a \$25 gift. Willingness to help is being assessed as a productive behavior employed by people, whose responses will be compared based on differing levels of empathy and retention to see if either element correlates with a greater willingness to donate or does so when paired with a certain condition. Consistent with Batson's empathy-altruism hypothesis, I predict that participants in the victim-focused frame (vs. control condition) will feel more empathy and express a greater willingness to help.

However, I further suggest that knowing how to help may importantly influence helping during natural disasters. This can be done in a number of ways, but an emerging point of focus is constructive journalism, a reporting style rooted in positive psychology and aimed at boosting public sentiment and activism (McIntyre & Gyldensted, 2017). Constructive journalism encompasses many styles of reporting, including solutions journalism, peace journalism, prospective journalism, and restorative narrative. The one most relevant to this body

of work is solutions journalism, which is a method of reporting that places the focus of stories on emerging responses to issues in the world (McIntyre & Gyldensted, 2017). For instance, rather than reporting on just the damage, constructive journalism would likely emphasize what people are doing in terms of relief efforts. As shown by research discussed earlier, the lines between traditional and social media have begun to blur, so average people posting online have similar roles in shaping public discourse and action. As a result, the agency-focused condition in the current research aligns well with the constructive journalism perspective. A study by the Engaging News Project in 2016 revealed several telling trends about the effects of solutions journalism on audiences; as shown below, when readers of solutions articles and non-solutions articles were compared, the former spent more time reading, exhibited higher levels of self-efficacy (Figure 1), felt more inspired (Figure 2), and demonstrated more interest in the stories (Figure 3) (Curry and Hammonds 2014).

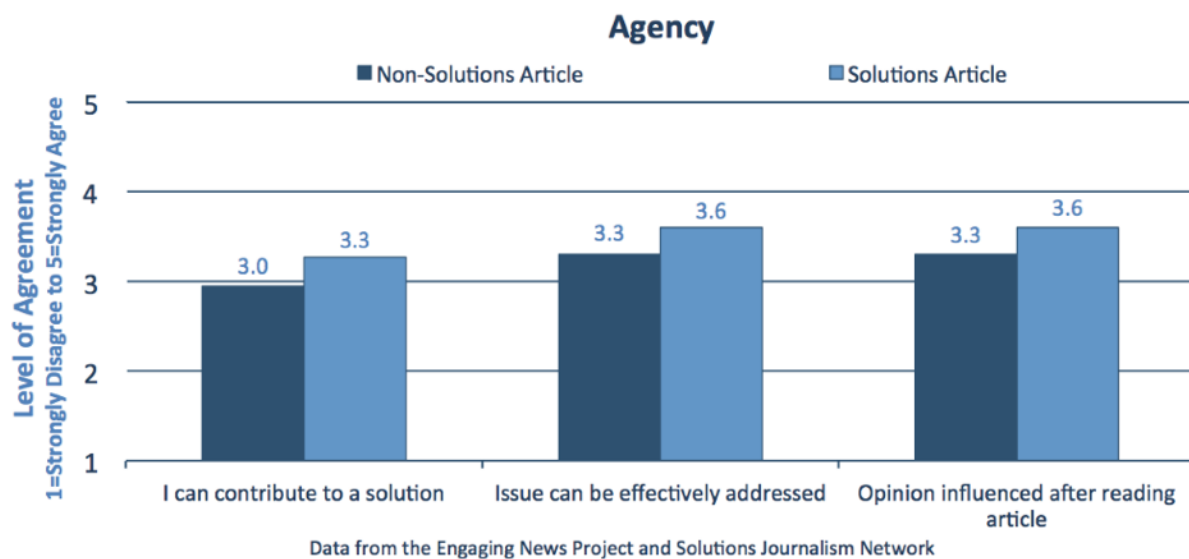


Figure 1. Solutions Journalism's Effects of Self-Efficacy

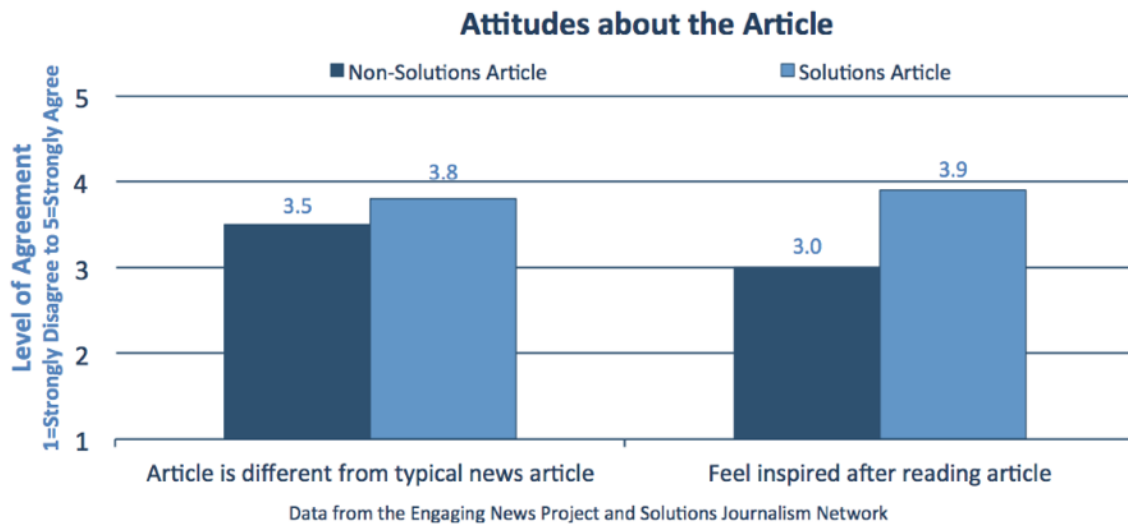


Figure 2. Solutions Journalism's Effects on Feeling Inspired

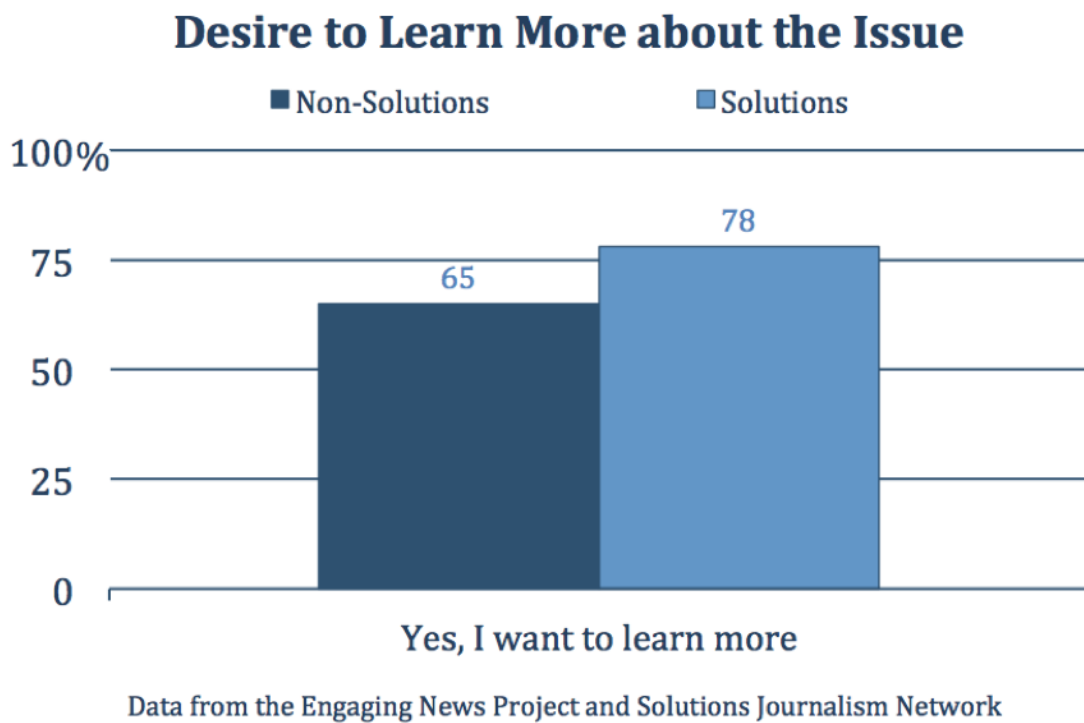


Figure 3. Solutions Journalism's Effect on Participants' Desire to Learn More About a Story

I suggest that conditions that provide knowledge of how to help may facilitate helping in situations where great numbers of people are harmed and observers could otherwise become

“insensitive or ‘numbed’ to the value of a life as its loss is framed against a backdrop of large victim populations” (Fetherstonhaugh et al., 1997, Friedrich et al., 1999). A similar phenomenon, known as compassion fade, is also prevalent when circumstances seem too dire. Compassion fade explains why people feel less willingness to help the more victims there are, donate less when it is hard to identify a specific beneficiary, and feel greater compassion toward one victim than toward two (Markowitz, Slovic, Västfjäll, and Hodges, 2013). In contrast to solutions journalism, hysterical journalism is also common during natural disaster coverage and focuses on “over-hyped, or over-dramatized coverage written in an extreme, frightened, angry, or exciting style, or reporting that expresses the emotions or feelings” (Cho & Gower, 2006). According to them, human interest framing can contribute to the effects of hysterical journalism by “[stimulating] emotion and [exaggerating] our evaluation or perception of crises much more negatively than a different frame might,” as opposed to encouraging productive responses (Cho & Gower, 2006). The victim-focused condition’s emphasis on the people affected by the tornado and how they fit into a vastly damaged location could lead to people in this condition feeling intimidated and less hopeful.

To test this novel prediction, I added a third framing condition, which simply provided information on how to help. I refer to this condition as the agency-focused condition, which specified ways readers could help, such as donating to food banks and buying t-shirts to benefit relief funds.

Overview of the Hypothesis and Research

Due to the importance of not only being motivated to help, but also both knowing how and feeling empowered to do so, I will test both the novel information-action hypothesis and Batson's empathy-altruism hypothesis. These are described below:

- ***Batson's empathy-altruism hypothesis:*** I predict that participants will feel more empathy and be willing to offer more help in the victim-focused framing condition than in the control (weather-focused) condition. In addition, I predict that empathy will mediate the effect of framing condition on willingness to help.
- ***The information-action hypothesis:*** I predict that willingness to help will be greater in the agency-focused condition than in the control (weather-focused) condition.

Predictions will be tested by asking participants to read about a natural disaster that devastated a community. Participants will then be randomly assigned to one of three conditions in a framing condition (victim-focused, agency-focused, or control/weather-focused condition) between-participants design. In each condition, participants will read social media posts framed appropriately to the condition. Participants will then report empathy, retention, and express their willingness to help.

Methods

Participants

A power analysis revealed that, to achieve a power of .80 at $\alpha = .05$, for a small effect size, using the current design required a sample size of at least 150 participants. To assure an adequate sample size,

150 sign-up opportunities were posted on Penn State's Psychology Subject Pool. In addition, to account for the loss of data and incomplete participation, students enrolled in a 400-level advertising class were also offered extra credit to complete the study. This resulted in the participation of 231 students (women = 149; men = 82), 128 of whom were recruited through Penn State's Psychology Subject Pool and 103 of whom were students in the 400-level advertising class. Participants completed the experiment online via a Qualtrics survey. The responses of participants who failed to answer more than half the items and/or incorrectly answered an attention check (i.e., What disaster did you read about?) were excluded, leaving a working data set comprised of the responses of 187 undergraduate (women = 120; men = 67).

Procedure

Participants who agreed to complete a study about the relationship among social media use, news consumption, and memory opened a Qualtrics survey that contained all of the experimental materials. All participants read the same news article about a natural disaster; a tornado in Lenexa, Kansas was selected because it is neither too isolated for people to feel out-of-touch (i.e., more than 1,000 miles away) nor too close to elicit strong, emotional reactions driven by close personal ties (i.e. a state where many might have family or friends). This consideration was noted in research in which University of Tennessee students rated their feelings of empathy toward people who had lost loved ones in 9/11 (Piferi et al., 2006). In that study, only 25 of the 343 participants in the study reported knowing someone who was from either New York City or Washington, DC, so there was not a strong personal connection to the tragedy (Piferi et al., 2006). Therefore, findings could be considered more representative of the general public's opinion, as the crisis at hand was significant enough to draw their attention, but sufficiently distal to minimize the likelihood of personal connections (Piferi et al., 2006). In

addition to geographic concerns, I thought it was imperative that the disaster in this body of work would be naturally occurring, assuring independence of political affiliations and bipartisan stances on causes.

After reading the news article, participants were assigned to one of three media framing conditions: victim-focused, agency-focused, or weather-focused. A third of the participants were randomly assigned to each condition, which was comprised of four social media posts that differed in terms of their frame. In the victim-focused condition, each tweet included a picture of a victim of the storm amid its damage and included messages like “RIP,” “thoughts and prayers,” and how the storm affected specific people, like an injury. In the agency-focused frame condition, posts included a picture of the various actions participants could take to assist, such as buying a t-shirt to benefit relief efforts. In the weather-focused condition, the posts included maps and diagrams of the tornado. To assure believability of the cover story, the social media posts were based on actual posts in response to recent tornadoes in Alabama, Oklahoma, and Texas, and participants were led to believe that the posts in each condition were authentic. Furthermore, to ensure that tweets were similar in all ways except the manipulated frame, the tweets in each condition included an average of between 33.25 and 36 words, contained four pictures, feature two verified and two non-verified accounts, and included the word “Lenexa” four times. Each condition also contained an additional two neutral tweets (e.g. a horoscope and a bot that tweets simulations of the Old Main bell tower dinging) that were consistent across conditions.

After reading the article and their assigned condition’s social media feed, participants answered questions about what they read and how they felt. First, they responded to an empathy assessment. Then, they moved on to an attention check that asked what disaster they had read

about. The responses of the participants who did not answer this question correctly were removed from data analysis. After the attention check, participants responded to the six-question retention assessment that measured how much they remembered about the news article. After this assessment, participants completed the survey, were debriefed on the purpose of the study, and were thanked for their participation.

Dependent Variables

Empathy. Empathy was measured using Batson (1987)'s empathy scale. Specifically, using 7-point scales (endpoints 1 = Not at all; 7 = Very much), participants indicated how much they were currently feeling moved, soft-hearted, warm, compassionate, and sympathetic after reviewing stimulus materials. These six empathy items were embedded among 10 other emotions, which including two additional empathy items (i.e., touched, tender) and eight items intended to assess personal distress (Cialdini, Schaller, Houlihan, Arps, Fultz, & Beaman, 1987); (i.e., alarmed, sorrowed, bothered, worried, distressed, anxious, upset, disturbed, troubled).- Responses to all 16 items were also submitted to a principle-components factor analysis using a varimax rotation. The scree plot indicated a two-factor solution. Six personal distress items loaded on the first factor, which accounted for 45.75% of the variance. I created a personal distress variable by averaging across these six items – troubled, anxious, bothered, distressed, disturbed, upset ($\alpha = .81$); higher numbers indicate more personal distress. Six items – sympathetic, compassionate, soft-hearted, touched, sorrowed, and warm – loaded on the second factor, which accounted for 11.57% of the variance. I averaged across these items to create an empathy variable ($\alpha = .81$). In addition, four items cross-

loaded and were, therefore, not included in the aforementioned variables. Instead, these four items – alarmed, moved, worried, and tender – were analyzed separately.

Retention. Retention was assessed via participants' correct identification of basic information provided in the news article that they read about the tornado. Using a multiple-choice format, participants answered seven questions about the basic content of the article, like where the tornado occurred and how many people died.

Willingness to donate. At the end of the study, participants believed that they were entered into a raffle for a \$25 gift. They were then asked to indicate on a sliding scale how much money they would be willing to donate to a tornado relief charity if they were to win the raffle.

Results

Analyses were performed in three steps. First, each dependent variable – empathy, personal distress, sympathy, the individual emotions (alarmed, moved, tender, worried), retention, and willingness to donate – was submitted to separate one-way framing condition (victim, agency, weather) between-participants Analyses of Covariance (ANCOVAs), controlling for participant gender. No significant effects emerged on tender or worried; therefore, these variables will not be further mentioned. The findings on the other variables are discussed below. Second, I estimated correlations among variables both collapsing across conditions, as well as within conditions. Finally, I performed mediation analyses to examine whether framing condition aroused different levels of empathy that, in turn, predicted helping – the Batson prediction – versus the notion that agency-focused frames would elicit greater helping.

Does Framing Condition Affect Empathic Emotions, Retention, and Willingness to Help?

Empathic Emotions: empathy, alarmed, moved, or distress. Main effects of framing condition emerged on empathy, sympathy, and moved; gender was not a significant covariate in any of these analyses. There was a main effect of condition on *empathy*, $F(2, 180) = 5.67, p = .004, \eta_p^2 = .04$. Consistent with Batson's empathy-altruism hypothesis, empathy was higher in the victim-focused condition ($M = 5.10, SD = 1.15$) than in the weather condition ($M = 4.40, SD = 1.13$), $p = .005$. Interestingly, empathy was also higher in the agency-focused condition ($M = 4.96, SD = 1.34$) than the weather-focused, control condition, $p = .037$, but empathy did not differ in the victim-focused and the agency-focused conditions, $p = 1.00$. Gender was not a significant covariate in this analysis. The same pattern emerged on *alarmed*, $F(2, 180) = 3.11, p = .047, \eta_p^2 = .033$, and *moved*, $F(2, 180) = 5.09, p = .025, \eta_p^2 = .027$. Consistent with Batson's empathy-altruism hypothesis, participants in the victim-focused (vs. weather-focused, control) condition felt more alarmed ($M_s = 4.90$ and $4.10, SD_s = 2.01$ and 1.88 , respectively) and more moved ($M_s = 4.82$ and $3.75, SD_s = 1.92$ and 1.79 , respectively). Interestingly, in the agency-focused (vs. weather-focused) conditions, participants also felt more alarmed ($M_s = 4.87$ and $4.10, SD_s = 2.09$ and 1.88) and more moved ($M_s = 4.82$ and $3.75, SD_s = 1.89$ and 1.79), but expressions of alarm and moved did not differ between the victim-focused and agency-focused conditions. No significant effects emerged from analysis of distress.

Retention. A marginally significant condition effect indicated that retention was poorer in victim-focused ($M = 3.65, SD = 1.16$) and agency-focused ($M = 3.57, SD = 1.40$) conditions than in the weather-focused control condition ($M = 4.12, SD = 1.51$), $F(2, 179) = 2.87, p = .059$.

Willingness to help. Gender was a significant covariate on willingness to help, $F(2, 178) = 3.83, p > .052, \eta_p^2 = .02$. Men ($M = 14.45, SD = 9.46$) donated more than women ($M = 11.62,$

$SD = 9.51$). However, over and above gender, there was a marginally significant main effect of condition emerged on willingness to help, $F(2, 178) = 2.41, p = .093, \eta_p^2 = .03$. Participants were more **willing to help** in the victim-focused condition ($M = 13.88, SD = 10.04$) and the agency-focused condition ($M = 13.51, SD = 9.46$) than in the weather condition ($M = 10.46, SD = 9.19$). Stated differently, consistent with Batson's empathy-altruism hypothesis, willingness to help was greater in the victim-focused condition than in the weather control. Importantly, and in addition, consistent with the information for action prediction, willingness to help was (a) greater in the agency-focused condition than in the weather-focused control condition and (b) equally high in the agency-focused and victim-focused conditions.

Are Empathy, Retention, and Helping Correlated?

I estimated correlations between empathy, retention, and willingness to help collapsing across conditions. I also estimated those correlations within each condition. All correlations are presented in Table 1.

Consistent with Batson's empathy-altruism hypothesis, as shown in the top panel of Table 1, empathy and willingness to help were positively correlated, while collapsing across conditions ($r = .27, p < .001$). As empathy increases, one's willingness to help also increases. Contrary to predictions, however, empathy was not significantly associated with willingness to help in the victim-focused condition (see second panel of Table 2). Instead, as shown in the bottom two panel of Table 1, empathy was associated with willingness to help in the agency-focused condition and the weather-focused condition, but not the victim-focused condition.

Table 1. Correlations between empathy, retention, and willingness to help across and within conditions.

Variables	Media Framing Condition		
	Retention	Empathy	Willingness to help
Across Conditions (N = 182)			
Retention	1		
Empathy	.049	1	
Willingness to help	.007	.266**	1
Victim-Focused Condition (N = 61)			
Retention	1		
Empathy	.127	1	
Willingness to help	.211	.068	1
Agency-Focused Condition (N = 61)			
Variables	Retention	Empathy	Willingness to help
Retention	1		
Empathy	-.068	1	
Willingness to help	-.109	.323*	1
Weather-Focused Condition (N = 60)			
Retention	1		
Empathy	.246 ^M	1	
Willingness to help	.024	.322*	1

Note: * indicates significance at $p < .05$. ** indicates significance at $p < .01$.

Finally, contrary to predictions, retention was unrelated to the other variables.

Discussion

The goal of this research was to assess whether the way in which natural disasters are discussed on social media, or framing, changes how audiences feel and act in response to natural disasters. This research was designed to explore whether different frames affect people's willingness to help and if that relation is consistent with Batson's empathy-altruism hypothesis or the novel information-action hypothesis. To test these two predictions, I manipulated what media frames participants saw in experimental social media feeds about a tornado that devastated a community. I then measured peoples' empathy, retention of information, and willingness to donate money to a decimated community. Consistent with Batson's hypothesis, I found that empathy and willingness to help were both higher in the victim-focused condition than in the control (weather-focused) condition. Additionally, overall, empathy and willingness to help were correlated. Contrary with what Batson's empathy-altruism hypothesis suggests, however, that correlation was not found in the victim-focused condition. Instead, it was present only in the agency-focused and control conditions – not when I was specifically trying to incite empathy.

Consistent with my novel information-action hypothesis, the agency-focused condition elicited higher levels of helping than the control, suggesting that informing people about how to help can increase helping behavior. An interesting finding observed is that increased empathy was also aroused under the agency-focused condition. I did not predict empathy to be affected by the agency-focused frame; however, it was correlated with helping in this condition. Further, the levels of empathy and helping in the agency- and victim-focused conditions were similar, indicating similar affective and behavior outcomes regardless of frame. However, the varying levels of strength noted above suggest that while emotion-arousing messaging can trigger empathy and lead to helping, the relationship is not always reliable. These differences between

agency- and victim-focused frames can be because of compassion fade and psychosocial numbing, phenomena previously discussed and that occur when devastation is at such a scale that people feel hopeless and become “insensitive or ‘numbed’” (Fetherstonhaugh et al., 1997, Friedrich et al., 1999, Markowitz et al., 2013).

Another consideration is the type of emotion produced by arousing frames. For instance, in the ANOVA analysis, distress was not shown to have any significant effects, while the composite score of empathy and the six variables comprising it did, challenging Cialdini’s theory that people help as a way to relieve their own personal distress. To avoid these types of effects, informing audiences about a situation should be balanced with establishing hope and informing them about what can be done – like the agency-focused frame did – as opposed to triggering emotional responses or making audiences uncomfortable. Although this research confirmed my predictions that framing would influence feelings of empathy and willingness to help, it did exhibit the expected relationships between retention and the other dependent variables. Retention was not significantly correlated with either empathy or willingness to help, and it had only a marginally significant condition effect, whereas participants in the weather-focused condition had slightly higher outcomes. Across conditions, participants’ retention scores ranged from about 60% to 70%, demonstrating neither exceptional nor poor learning. This outcome could be attributed to the variable not measuring retention of the right information – such as about how to help or the visual recognition of memorable visuals like the people hugging in the victim-focused condition, rather than the content of the article.

Several limitations affect the external validity of this research. For one, the sample used was not representative of the global population. For simplicity’s sake, only college students from one university and within two course subjects were studied, affecting how generalizable my

findings are. Additionally, the willingness to donate variable is very artificial, as participants selected how much money they would be hypothetically willing to donate to a fake charity after reading about a fake cause. This struggle is consistent with what other researchers have documented as there are few simple, reliable ways to measure helping behavior in an experiment. Another concern regarding the generalizability of this research is the social media feeds. Although the experimental posts were based on real posts shared in the wake of destructive tornados, again for simplicity's sake, the feeds consisted of only six total posts, with four being experimental and two being neutral. No social media feed is only six –posts long, and the subject I was studying may have been too salient, compared to real feeds that are ever-changing and comprised of hundreds of people's posts about a range of topics.

Despite the fact that this is the first examination and there are obvious limitations, work on this topic is important because of the impact it can have on shaping how organizations communicate about natural disasters effectively to maximize relief efforts. These insights could shape social media strategy to ensure the information that is shared leads to productive responses, not just feelings of empathy, or worse, compassion fade when situations appear too dire and too personal. In sum, these results demonstrate that while humanizing causes to induce empathy is an effective way of motivating people to help during a crisis, it is not the only way. In fact, this research showed that informing people on how to help with basic information (agency) elicits both empathy and helping more reliably than triggering emotional reactions. And at a time where another disaster, although not naturally occurring, is both affecting most of the world and dominating social media, these findings can be particularly helpful to ensure money is raised, food banks are stocked, and empathy is not induced without the desired response by providing information that enables action.

Appendix A

News Story

Death Toll Reaches 12 After Tornado Rips Through Kansas, Leaves Significant Damage

At least 12 people were killed by a tornado that brought damaging winds, large hail and the threat of even more tornadoes when it passed through parts of Kansas on Sunday night. In addition to the fatalities, the storm left a trail of heavy damage, including collapsed buildings and downed power lines.

The National Weather Service confirmed the tornado touched down around 9:30 p.m. Sunday with winds reaching 140 mph. The damage, estimated to have stretched 17 miles long, left more than 45,000 people without power. The most destruction appears to have been Lenexa, Kan. where at least two tornadoes, one of them at least a half-mile wide, touched down, forecasters said.

"We're sustained significant damage," Tom Walker, the mayor of Lenexa, told CNN. "Many homes have been damaged. A shopping center took a direct hit. It's really bad. Right now, Lenexa needs your prayers."

Johnson County Sheriff Jay Jones told WRBL-TV the death toll stood at 12 and that 27 people were in intensive care, according to the Associated Press. The sheriff also told the Associated Press that children were among those dead. He said it was possible the death toll could continue to rise, but authorities were pausing search efforts overnight because conditions were too dangerous in the dark due to massive amounts of debris.

A spokesman for Overland Park Regional Medical Center said Monday afternoon that the hospital had received more than 50 patients as a result of the tornadoes and that other patients had been sent to surrounding hospitals.

On Monday, city crews were assessing the damage from the storm, most of which was in the northern part of Johnson County. Aerial footage showed that the storm had ripped roof shingles and siding off homes, with the powerful winds warping, flattening, and even uprooting fences that were tossed on lawns with other debris.

The storm ripped apart a scoreboard at Lenexa High School's softball field and left a few trees overturned nearby, including one that had fallen across the stands behind home plate, photos from Corinne Diaz at the Garden City Telegram show.

Elsewhere, overturned cars and twisted metal could be seen briefly as intermittent lightning flashed across the sky and the wailing sirens of approaching emergency vehicles could be heard in the distance.

City officials have set up a shelter for residents at an elementary school. Gov. Laura Kelly traveled to Lenexa on Thursday to assess the damage.

“Our hearts go out to those who lost their lives in the storms that hit Lee County today,” she said. “Praying for their families & everyone whose homes or businesses were affected. Assistance is already on the move to the affected towns, and the state will use every available resource to help citizens and local governments rebuild and recover.”

Appendix B

Experimental Stimuli for Each Condition

Victim

Governor Laura Kelly @GovLauraKelly
8:00 AM · Jan 20, 2020
Our prayers are with our friends in Lenexa this morning. We ask everyone to keep them and what they are going through at this tough time in mind. #LenexaStrong
25 Retweets · 116 Likes

Chris Deming @ChrisDeming
9:30 AM · Jan 20, 2020
Very sad to see what happened to #Lenexa following last night's tornado
RIP to the 12 people killed. Please keep their families in your thoughts and prayers. Great to see all of Kansas come together
4 Retweets · 17 Likes

Halley @mhalley
9:42 AM · Jan 20, 2020
You are thankful for your life and want to express your gratitude... More for Virgo <http://bit.ly/A7Cwfs>
0 Retweets · 1 Likes

Kacey Bowen @kacey_bowen
10:30 AM · Jan 20, 2020
"It was a hell of a 15 seconds, I'll tell you that."
The man who was injured in yesterday's EF2 tornado, is sharing his story tonight.
13 Retweets · 62 Likes

OldMainBall @OldMainBall
11:00 AM · Jan 20, 2020
ding! Ding, ding DING* ding* ding ding & ding! ding* ding! #PennState
3 Retweets · 19 Likes

sierra @sierrahjean
12:30 PM · Jan 20, 2020
if you are a person of prayer i ask for you to pray for my town Lenexa and everyone affected by the tornado last night. If you aren't a person of prayer please send good thoughts or vibes, whatever you may turn to for times like this.
9 Retweets · 33 Likes

Agent

Salvation Army Disaster Services @SalArmyEDS
8:00 AM · Jan 20, 2020
After last night's tornadoes, The #SalvationArmy of Central Kansas has deployed a mobile feeding unit and disaster relief workers to support first responders and storm survivors in Lenexa. Think about what you can do to support ongoing relief efforts
25 Retweets · 116 Likes

Halley @mhalley
9:42 AM · Jan 20, 2020
You are thankful for your life and want to express your gratitude... More for Virgo <http://bit.ly/A7Cwfs>
0 Retweets · 1 Likes

Carl @naticarl
9:42 AM · Jan 20, 2020
These LenexaStrong tshirts are to help the community recover from this disaster. 100% of the proceeds go toward disaster efforts. Please purchase one to support our community. itemorder.com
4 Retweets · 17 Likes

Noah Cartwright @Noah_Cartwright
12:30 PM · Jan 20, 2020
A Lenexa tornado relief fund has raised nearly \$20K in two hours. Donate here: <https://gofundme.com/city-of-lenexa-tornado-relief-fund...>
9 Retweets · 33 Likes

OldMainBall @OldMainBall
11:00 AM · Jan 20, 2020
ding! Ding, ding DING* ding* ding ding & ding! ding* ding! #PennState
3 Retweets · 19 Likes

The University of Kansas @KU
12:30 PM · Jan 20, 2020
Kansas University is collecting food, water and other materials to benefit the Johnson County residents affected by the tornado last night.
How you can help those affected: https://today.ku.edu/newsroom/news_article/2019/02/03/159-severe-weather-statement.php...
13 Retweets · 62 Likes

Weather

NWS Topeka @NWSTopeka
8:00 AM · Jan 20, 2020
We've finished our survey of the Lenexa tornado. Here's everything you need to know:
-Rated as EF3 on the Enhanced Fujita Scale
-75 yards wide at its widest point, on ground for 2.2 miles
-Began around 10:28 pm and lasted only 4 minutes
25 Retweets · 116 Likes

Halley @mhalley
9:42 AM · Jan 20, 2020
You are thankful for your life and want to express your gratitude... More for Virgo <http://bit.ly/A7Cwfs>
0 Retweets · 1 Likes

Bob White @bobwhite
9:30 AM · Jan 20, 2020
Tornado schematic from last night's storm in Lenexa. Winds rotating parallel to the ground become vertical due to the updraft, or strong vertical motion from a thunderstorm. Change of wind speed and direction with height, with unusually cold air aloft, are other ingredients.
4 Retweets · 17 Likes

WeatherNation @WeatherNation
10:30 AM · Jan 20, 2020
NEW: State of Emergency declared in Kansas after deadly overnight tornado in Lenexa. Officials warn current conditions can produce another tornado at any time. Area of concern is eastern part of state.
13 Retweets · 62 Likes

OldMainBall @OldMainBall
11:00 AM · Jan 20, 2020
ding! Ding, ding DING* ding* ding ding & ding! ding* ding! #PennState
3 Retweets · 19 Likes

Noah Cartwright @Noah_Cartwright
12:30 PM · Jan 20, 2020
Just saw the tornado warning has been canceled for eastern Kansas including where it hit in Lenexa
9 Retweets · 33 Likes

Appendix D

Attention Check and Retention Measure

What natural disaster did you read about?

- ☐ Hurricane
 - ☐ Wildfire
 - ☐ Tornado
 - ☐ Tsunami
-

How many people died in the tornado?

- ☐ 3
 - ☐ 12
 - ☐ 25
 - ☐ 42
-

When did the tornado occur?

- ☐ Sunday morning
 - ☐ Sunday night
 - ☐ Monday morning
 - ☐ Monday night
-

Where did the tornado occur?

- ☐ Wichita, KS
 - ☐ Topeka, KS
 - ☐ Lawrence, KS
 - ☐ Lenexa, KS
-

What hospital had a spokesperson cited in the article about the tornado?

- ☐ South Central Kansas Medical Center
 - ☐ Kansas Heart Hospital
 - ☐ Saint Luke's Hospital of Kansas City
 - ☐ Overland Park Regional Medical Center
-

How many tornadoes were reported to have hit the area affected?

- ☐ 1
 - ☐ 2
 - ☐ 3
 - ☐ 4
-

What wasn't one of the types of damage noted in the tornado article?

- ☐ Shopping center direct hit
- ☐ Softball field's scoreboard ripped apart
- ☐ Knocked over statue
- ☐ Overturned trees

Appendix E

Willingness to Donate Measure

Thank you for participating in the survey. To show our gratitude, you will be entered into a drawing for a \$25 gift. If you win, please indicate how much money you would be willing to donate to the "Rebuilding Lexexa" tornado relief effort using the below scale.

0 2.5 5 7.5 10 12.5 15 17.5 20 22.5 25



Appendix F

Debriefing

This study was intended to assess how social media affects an audience's response to a natural disaster. The tornado was a fictionalized account of multiple real storms in different parts of the country. The other articles you read on the news website were also based on real events and real articles from a variety of news outlets, but do not accurately represent current, up-to-date events.

You were assigned to one of three conditions for the types of social media posts you saw about the natural disaster: either victim-focused, agent-focused, or weather-focused. Your retention, affective response, and willingness to donate were all assessed.

By participating in this survey, you have the option to enter a drawing for a \$25 Amazon gift card. If you'd like to enter the drawing, please provide your email address, so you can be contacted if you win. Your email address will in no way be linked to your survey responses. If you have any questions, please contact head researcher Anthony Colucci at ajc6482@psu.edu.

Because the natural disaster was fake, if you chose to opt in to the gift card in our drawing, you will receive the full amount and not need to donate your specified amount.

Thank you again for your participation in our study.

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Education

The Pennsylvania State University

Graduation: May 2020

Schreyer Honors College

Bachelor of Arts in Psychology

Bachelor of Arts in Advertising/Public Relations

Experience

Onward State, University Park, PA

Managing Editor

Sept. 2016 – May 2020

- Lead staff of 60 writers, photographers, and videographers to coordinate daily coverage for world's most-followed student media outlet
- Report on Penn State & local news by writing 6-8 articles and editing 60+ articles per week
- Work cited by ESPN, Fox News, USA Today and Yahoo! Sports

Past roles: **News Editor, Social Media Manager**

- Grew Twitter audience by 30% & Instagram audience by 80% in 18 months
- Introduced daily Instagram story series based on popularity of channel among users
- Identified relevant social media trends to capitalize on by posting relevant content
- Led Twitter campaign to bring ESPN's College GameDay to campus & generated more than 700 hashtag posts in one week

IBM, New York, NY

Marketing and Communications Intern

May 2019 – Aug. 2020

- Developed end-to-end communications plan by synthesizing research, designing/planning campaign and giving final, new business-style presentation
- Supported communications team with internal and external projects including conducting media audits, creating multimedia press releases, pitching journalists, planning press events and filming/editing intranet videos

Signify, formerly Philips Lighting, Somerset, NJ

Consumer Channel Marketing Analyst Intern

May 2018 – Aug. 2018

- Conducted competitive analyses & consumer behavior research using Nielsen & Stackline sales data
- Researched keyword and customer data to write strategic advertising copy while creating product pages and onboarding more than 60 SKUs for WayFair.com
- Audited & helped account managers maintain product pages on Amazon.com & HomeDepot.com

Munich Reinsurance, America Inc. Princeton, NJ

Strategic Communications Intern

May 2017 – Aug. 2017

- Developed & executed communications & marketing plans for internal & external use

- Ghostwrote blog posts for CEO & other C-Suite leaders, wrote articles for internal website to inform employees & promote camaraderie & drafted press releases about company news
- Created video series & Instagram takeover series highlighting the internship program for internal & external promotion

Honors/Awards

- Paterno Fellow- Full-tuition scholarship & Liberal Arts Honors Program including advanced academic coursework, thesis, study abroad &/or internship, ethics study & leadership/service commitment
- The Presidents' Freshman Award
- Deans' List: Fall 2016, Spring 2017, Fall 2017, Spring 2018, Fall 2018, Spring 2019, Fall 2019