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## "IT'S HARD TO GET YOUR HEAD AROUND SOMETHING LIKE THIS": FIGURATIVE AND INTENSE LANGUAGE FOR SENSEGIVING DURING SEVERE WEATHER COVERAGE

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“IT’S HARD TO GET YOUR HEAD AROUND SOMETHING LIKE THIS”:  
FIGURATIVE AND INTENSE LANGUAGE FOR SENSEGIVING DURING SEVERE  
WEATHER COVERAGE

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THESIS

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A thesis submitted in partial fulfillment of the  
requirements for the degree of Master of Arts in the  
College of Communication and Information  
at the University of Kentucky

By

Robert W. Prestley

Lexington, Kentucky

Director: Dr. Jeannette Sutton, Associate Professor of Communication

Lexington, Kentucky

2019

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## ABSTRACT OF THESIS

### “IT’S HARD TO GET YOUR HEAD AROUND SOMETHING LIKE THIS”: FIGURATIVE AND INTENSE LANGUAGE FOR SENSEGIVING DURING SEVERE WEATHER COVERAGE

During high-impact weather events like Hurricane Harvey, broadcast meteorologists take on the role of sensegiver, as they develop frameworks to help their viewers make sense of the storm. These frameworks are communicated through rhetorical choices evident in the language the meteorologists use to describe the storm’s threat and impact. This study investigates the rhetorical choices of KHOU broadcast meteorologists during Hurricane Harvey in order to make sense of the disaster, using an inductive thematic analysis. The results indicate that the KHOU broadcasters framed Harvey figuratively as an all-encompassing monster and a heat-seeking machine. The meteorologists used emotionally intense language to emphasize their concern about the forecast, to compare the event to previous flooding disasters, to describe Harvey’s catastrophic impact, and to express disbelief regarding the situation unfolding around them. These results show how sensegiving can be articulated rhetorically via specific language features like describing Harvey as a monster, or comparing Harvey’s impact to Hurricane Katrina. These specific language features identified here should be tested for their effectiveness in order to allow meteorologists across the weather enterprise to speak about threats and impacts in a more consistent manner.

KEYWORDS: Broadcast Meteorology, Sensemaking, Sensegiving, Figurative Language, Fear Appeals, Hurricane Harvey

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Robert W. Prestley

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05/22/2019

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Date

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## TABLE OF CONTENTS

ACKNOWLEDGMENTS .....	iii
LIST OF TABLES .....	vi
LIST OF FIGURES .....	vii
Chapter One: Introduction .....	1
Chapter Two: Theoretical Framework.....	6
Role of Broadcast Meteorologists.....	6
Sensemaking and Sensegiving.....	8
Rhetorical Strategies .....	13
Figurative language.....	14
Intense language.....	19
Chapter Three: Methods .....	24
Case Description.....	24
Data Collection .....	27
Data.....	29
Coding.....	31
Analysis .....	33
Reflexivity .....	34
Chapter Four: Analysis and Findings .....	36
Figurative Language .....	37
Harvey as Lovecraftian horror .....	38
Harvey as machine .....	40
Figurative descriptions of storm elements .....	41
Waves of blinding rain.....	42
Rowing a boat to create a tornado.....	42
Dirty side of the storm .....	43
Vertical structure as cake .....	43
Intense Language .....	44
Concern .....	45
Life-threatening flooding: Description of impact.....	45
Allison looks like child’s play: Comparison.....	46
Coffin corner: Personal expressions of concern .....	47

Disbelief.....	49
Absolutely incredible: Descriptions of impact .....	49
It’s hard to get your head around something like this: Personal expressions of disbelief.....	49
Change in intense language over time .....	51
Chapter Five: Discussion .....	53
Figurative frames are used to “other” the hazard .....	54
Figurative frames are flexible.....	55
Specific figurative language becomes more novel and extended over time.....	56
Language became more intense and personal as the storm evolved.....	56
Figurative framing informs usage of intense language.....	58
Sensemaking was evident in the rhetorical choices of the meteorologists .....	58
Chapter Six: Conclusions.....	62
Theoretical Implications .....	62
Practical Implications .....	63
Limitations and Next Steps.....	65
References.....	69
Vita.....	82

LIST OF TABLES

Table 1. Summary of Key Themes Related to Figurative Language and Intense Language..... 36

## LIST OF FIGURES

Figure 1. A timeline of Hurricane Harvey's intensity (in terms of Saffir-Simpson category number – the colored boxes on the bottom), the intensity of rainfall in the Houston metro area (denoted by the colored arrows, where green denotes light rain, yellow moderate rain, and red heavy rain), and timing of the four KHOU videos included in the analysis (black arrows). .....	26
Figure 2. A thematic map showing how basic-level concepts related to figurative language (e.g. grabbing, stubborn, exploding, and recharging) link together to form the core figurative concepts of Harvey as Lovecraftian horror and Harvey as a machine. ....	38
Figure 3. A famously Photo Shopped image of a Cthulhu-like cloud formation (Snopes Staff, 2015). .....	39
Figure 4. A thematic map showing how basic-level concepts related to figurative language (e.g. catastrophic, life-threatening, coffin corner, and Hurricane Katrina) link together to form the core intense language concepts of disturbing forecasts, comparison, concern, and disbelief. ....	45

## Chapter One: Introduction

Broadcast meteorologists are the public face of the weather enterprise. Instead of creating their own weather information, they rely on “observations, analyses, computer-model guidance, and warnings that are collected, generated, and/or distributed by the National Weather Service” (Henson, 2010, p. 45). The role of the broadcast meteorologist is to act as a sensegiver by “supplying a workable interpretation” (Gioia & Chittipeddi, 1991, p. 443) of this information so that non-expert audiences can make sense of the information themselves. This is an important role, especially given the advantage broadcast meteorologists have over the National Weather Service (NWS) in terms of popularity and usage for information (Lazo, Morss, & Demuth, 2009).

They do so by relying on rhetorical strategies like figurative language and intense language. Figurative language and personification of threats can be used to structure, organize, and explain the nature of a risk. Broadcast meteorologists might describe a wildfire as a monster in order to emphasize the wildly destructive nature of the threat (Matlock, Coe, & Westerling, 2017) or give a name to a winter storm in order to organize discussion about the event (Rainear, Lachlan, & Lin, 2017). Broadcast meteorologists may also manipulate language to be more intense in order to bolster the perceived severity and potential impact of a risk. For instance, a message might include frightening information about the impact of a threat (Perreault, Houston, & Wilkins, 2014) or appeal to the social consequences of not taking action (Murdock & Rajagopal, 2017) in order to heighten risk perceptions in message receivers. By heightening risk perceptions, broadcast meteorologists can lead viewers to take the threat seriously and take appropriate protective action (Ajzen, 1991; Brewer et al., 2007).

In general, the use of these language strategies by broadcast meteorologists is successful, as evidenced by the trust they continually garner as providers of weather information and science communicators (Henson, 2010; Wilson, 2008). Even in the social media age, broadcast meteorologists are relied on for weather forecasts (Hickey, 2015), especially during extreme events like Hurricane Harvey (Rasmussen Reports, 2017). High-impact weather events also give meteorologists unparalleled access to provide information through “wall-to-wall” or continuous coverage, during which “weathercasters are typically front and center” (Henson, 2010, p. 157) for days at a time.

Given the access broadcast meteorologists are afforded and the degree of trust in the information they provide, broadcasters carry an especially heavy burden in ensuring that the publics they serve are able to accurately make sense of weather events. This is especially the case during high-impact events like Hurricane Harvey, which tested the sensemaking and communication abilities of Houston broadcasters in several ways. First, Harvey was an unprecedented flooding disaster. The NWS has described Harvey as “the most significant tropical cyclone rainfall event in United States history, both in scope and peak rainfall amounts” (Blake & Zelinsky, 2018, p. 6). First, by dumping up to 60 inches of rain over parts of Houston, Harvey tasked broadcasters with making sense of an event they had never before experienced. Second, Harvey had a direct impact on Houston area broadcast meteorologists. As the storm progressed, the studio of KHOU, Houston’s CBS affiliate, took on water as the nearby Buffalo Bayou rose out of its banks. The KHOU staff first attempted to broadcast from a make-shift studio in their second-floor conference room but eventually were required to evacuate (Hlavaty, 2017). These circumstances likely impacted the ways the KHOU meteorologists made sense (or failed

to make sense) of the storm, resulting in changing rhetorical choices as the storm progressed.

Events like Hurricane Harvey, which took 105 lives despite very good forecasts and consistent messaging from the NWS (National Weather Service, 2018), offer an opportunity to reflect on how broadcast meteorologists fulfill their role as sensegivers. In particular, high-impact weather events test the ability of broadcasters to communicate sensemaking frameworks in ways that general publics will understand. Private sector meteorologists, including broadcasters, have even called for such research that would “help present messages in ways that are understandable and actionable and that can influence people to take action during life-threatening weather” (National Academy of Sciences, 2017, p. 36). In order to assess which types of messages can fulfill this task, researchers first need to understand how broadcast meteorologists currently use rhetorical strategies such as figurative language and intense language in order to help viewers make sense of high-impact weather events.

Yet, this question has not been subject to academic inquiry. Within the broader weather enterprise, much more attention has been paid to the sensemaking and communication efforts of government agencies like the NWS. For instance, studies have investigated how NWS flood forecasts and warnings are communicated (Carr et al., 2015), the role of impact-based warnings (Casteel, 2016), the organizational culture of the NWS (Fine, 2007), and the social media engagement strategies of NWS offices (Olson et al., 2018, under review). The literature that does exist on the communication tactics of broadcast meteorologists is primarily confined to their role as science communicators (Wilson, 2008), particularly how they can serve as advocates and

educators of climate science (Maibach et al., 2017; Nese, Najjar, & Murgo, 2012; Zhao et al., 2014). The few rhetorical studies on broadcast meteorologist communication take a critical perspective on how weather discourses make “weather a cultural commodity” (Meister, 2001, p. 425; Vannini & McCright (2007). Only one study identifies the rhetorical practices used by broadcast meteorologists to make sense of weather events, such as the personification of weather features and an assertion of control over the weather (Doherty & Barnhurst, 2009). However, this study did not investigate the usage of intense language, and it only examined rhetorical strategies used during day-to-day weather.

Thus, this study seeks to fill this active research need by investigating the ways in which broadcast meteorologists make sense of a high-impact weather event and communicate their understanding to viewers through rhetoric. Specifically, this study investigates how broadcast meteorologists at KHOU, Houston’s CBS affiliate, used figurative language and intense language during Hurricane Harvey. In order to answer these questions, an inductive thematic analysis of live broadcasts was conducted.

The following literature review begins with a brief overview of the role broadcast meteorologists play as high-profile risk communicators. Next, the study proceeds with a review of sensemaking and sensegiving during crisis, followed by a review of the literature on two rhetorical strategies that have been used to make and give sense during disasters: figurative language and intense language (including fear appeals). The rationale for choosing KHOU coverage during Hurricane Harvey is presented, along with details on how data was collected and analyzed in line with an inductive, thematic approach. The results offer a description of how the broadcast meteorologists made sense of Harvey

figuratively as a Lovecraftian horror and a machine and how the meteorologists appealed to concern and disbelief, using intense language, to underscore Harvey's incredible impact. The discussion provides further explanation of the results and ties the results back to previous studies and theories that relate to the concepts investigated. Finally, the conclusion provides implications for theory and practice, along with this study's limitations and suggestions for future research that could extend this study's results.

## **Chapter Two: Theoretical Framework**

This study relies on literature from three areas of research. The first area is the literature specifically related to the role broadcast meteorologists play during disaster coverage. The second area is the literature on sensemaking and sensegiving during disaster. Finally, this study pulls from the literature on rhetorical strategies used for sensemaking and sensegiving. Specifically, this study focuses on figurative language and intense language as sensemaking strategies.

### **Role of Broadcast Meteorologists**

Coverage of disasters like Hurricane Harvey highlights the value and importance of broadcast meteorologists as high-profile sensegivers who attempt to describe and explain weather risks in ways viewers can understand. As such, broadcast meteorologists engage in risk communication, defined most narrowly as intentional or directed messages about environmental risks delivered by scientists and technical experts to nonexperts through designated channels (Plough & Krimsky, 1987). The goal of risk communication is to shift an individual's risk perceptions, or their intuitive judgements about a risk (Slovic, 1987). These perceptions and attitudes serve a key role within the risk communication literature because they lead to changes in risk-related behaviors (Ajzen, 1991; Brewer et al., 2007), such as information seeking (Griffin, Dunwoody, & Neuwirth, 1999).

Language about a risk is often filtered through the news media, which act as a bridge through which real-world events are mediated (Binder, Cacciatore, Scheufele, & Brossard, 2015). This is because news media act as a "social amplification station", taking in risk "signals" from expert and industry sources and either "amplifying" or

“attenuating” them (Kasperson et al., 1988, p. 181). News organizations are motivated to provide risk information for a number of reasons, including informing audiences, acting as a watchdog over governments and industry, telling a good story, and drawing ratings (Mebane, 2005).

Broadcast meteorologists play a dual role as trained risk experts and public-facing members of the news media. The success of their communication efforts suggests that they reap the benefits of wearing both hats. Their knowledge and experience give them an “aura of scientific credibility” (Henson, 2010, p. 2) that drives interest in weather information from viewing publics (O’Malley, 1999; Smith, 2000; Wilson, 2008). Even in the social media age, broadcast meteorologists are relied on for weather forecasts (Hickey, 2015), especially during extreme events like Hurricane Harvey (Rasmussen Reports, 2017).

Broadcast meteorologists gain additional success as a result of their “intensely local orientation” (Henson, 2010, p. 2) within their communities. They act as community ambassadors, “making appearances at countless community events, managing blogs, maintaining a presence on station Web sites, and even showing up on digital subchannels entirely devoted to news and/or weather” (Henson, 2010, p. 24). The combination of “their intensely local orientation, their links to public safety, and their aura of scientific credibility” leads broadcast meteorologists to be “among a city’s most celebrated and trusted personalities” (Henson, 2010, p. 2-3).

As such, they are among the most high-profile science communicators that many individuals will come in contact with on a consistent basis (Wilson, 2008). Viewers can even develop para-social relationships with their favorite TV meteorologists, in which

they feel that they have a relationship with the meteorologist despite zero history of face-to-face interactions. Such relationships come with an enhanced level of trust which “can predict the likelihood of taking shelter during severe weather” (Sherman-Morris, 2005, p. 201). These results indicate just how much power broadcast meteorologists can exercise over the risk perceptions and behavioral intentions of their viewers.

### **Sensemaking and Sensegiving**

During high-impact, low-certainty events like natural disasters, individuals attempt to make sense of the events going on around them. This is the process of sensemaking, which Weick, Sutcliffe, and Obstfeld (2005) describe as “the ongoing retrospective development of plausible images that rationalize what people are doing” (p. 409). Sensemaking begins when an individual is alerted to environmental cues that signify that their prevailing mode of reasoning is no longer valid (Weick, 1995; Maitlis & Sonenshen, 2010). Sometimes these cues arise gradually, as in the case of a nurse who concludes that an infant is ill after several interactions (Weick et al., 2005). However, environmental cues can suddenly and irrevocably plunge individuals towards situations in which their preconceived notions are incorrect, and their previous experience offers no guidance on how to escape the present crisis. Such was the case during the Mann Gulch fire, in which firefighters operated under the preconceived notion that the fire could be contained quickly. When they were suddenly surrounded by flames and cut off from each other, sensemaking based on past experience and established protocols broke down, and rational decision-making was next to impossible (Weick, 1993). Weick (1993) describes this situation as a “cosmology episode”, in which individuals “suddenly and deeply feel that the universe is no longer a rational, orderly system” (p. 633).

Sensemaking is characterized by seven properties, as described by Weick (1995) and summarized by Thurlow and Mills (2009) and Mills, Thurlow, and Mills (2010). I will highlight these properties in the context of Hurricane Harvey. The first aspect of sensemaking is that it is grounded in identity construction, meaning that an individual will make sense of a situation in line with how they feel someone of their identity should respond. For instance, individuals who identify with the city of Houston may have been less likely to evacuate, as leaving the city could be seen as an abdication of their identity. Second, sensemaking is retrospective, which means that it is informed by previous events and experiences. Residents affected by Hurricane Harvey, for instance, may have initially made sense of Harvey's threat in terms of previous Houston flooding disasters, including Tropical Storm Allison in 2001 and the Tax Day Floods of 2016. Third, sensemaking is social, meaning that individuals use interactions with others to help them make sense of a situation. Houston residents during Harvey may have turned to their friends, families, and neighbors for advice or tuned in to broadcast coverage for cues on when and how to take action. Fourth, sensemaking is ongoing. While cosmology episodes and "breaks in the routine" (Mills et al., 2010, p. 186) offer moments when sensemaking is most prominently on display, individuals are constantly engaged in sensemaking. For instance, Houston residents would have been making sense of Harvey before, during, and after its impact on the region.

Sensemaking is important because it allows individuals to "deal with [the] anxiety and fear that may accompany" a disaster while also allowing the individual to "figure out what to do next" (Mills et al., 2010, p. 184). However, sensemaking is often irrational, based more on preconceived notions and assumptions than cold facts and logic. This is

often the case because of the fifth and sixth properties of sensemaking: the focus on extracted cues and the prioritization of plausibility rather than accuracy. When making sense of an event, individuals will construct a narrative by picking and choosing the most plausible elements while ignoring others (Thurlow & Mills, 2009). The most plausible elements are the elements that “make most sense when there are no better alternatives, other individuals seem enthusiastic about the alternative, other individuals or organizations have taken the same perspective, and/or this explanation resonates most closely with existing identities and perceptions” (Thurlow & Mills, 2009, p. 462).

Weick et al. (2005) describes this process as bracketing, which is “guided by mental models acquired during work, training, and life experience” (p. 411). For an expert, like a nurse making sense of an infant’s symptoms (Weick et al., 2005), these mental models will likely be effective in making rational choices as a result of an expert’s “more detailed understanding of the technical aspects of a risk” (Boase, White, Gaze, & Redshaw, 2017). However, non-experts may rely on mental models that are based on faulty external sources or anecdotal personal experience (Boase et al., 2017). As such, there is often a mismatch between the most plausible explanations offered by experts and non-experts (Boase et al., 2017). For instance, an individual in Houston may have evacuated for a previous hurricane that ended up sparing their neighborhood. Their previous experience would lead to a mental model of hurricanes that emphasizes their unpredictability. During Harvey, the most plausible explanation for this individual might be that Harvey would not be as severe as forecast. As such, they may have focused on information that downplayed Harvey’s severity in order to satisfy their mental model that they shouldn’t evacuate during hurricanes.

Finally, sensemaking is enactive of the environment. Weick (1988) describes this “enactment perspective” as the idea that “when people act, they bring events and structures into existence and set them in motion” (p. 306). In doing so, individuals often fall prey to self-fulfilling prophecies, in which an environment is created as a result of action, and action is a result of preconceptions (Weick, 1988). The idea of enactment is in direct contrast with previous models of understanding crisis that viewed organizations and individuals as insulated from their environments (Maitlis & Sonenshen, 2010). As such, the enactment perspective allows crises to be understood in terms of their “small, volitional beginnings in human action” (Weick, 1988, p. 309). For instance, an individual in Houston may find themselves in the midst of a crisis as a result of a benign decision to drive to the grocery store. They may have made this decision based on preconceptions of Harvey that its impact would not be severe and that roads would be clear. However, if their mental models of Harvey were inaccurate, they may create a crisis for themselves and others by driving through high water or finding themselves cut off as waters rise around them.

Sensemaking is foundational in understanding how individuals react to disasters. However, it is also clear that the disparity in mental models between experts and non-experts poses a challenge for risk communicators. Within risk communication theory, the mental models approach to risk communication (MMARC) has been developed as a way of understanding differences in mental models between experts and publics and crafting messages designed to bridge the divide (Boase et al., 2017). However, the MMARC is not a sensemaking theory, per se. It relies on the idea of mental models but does not pull from any of the other literature on sensemaking.

Within the sensemaking literature on organizational change, the concept of sensegiving has been developed to describe situations in which organizational leaders attempt to make sense of a change not for themselves, but for others. In this context, the changes are advocated by the organizational leaders and the goal of the communication is to “provide a viable interpretation of a new reality and to influence stakeholders and constituents to adopt it as their own” (Gioia & Chittipeddi, 1991, p. 443). In other words, sensegiving is a persuasive process in which organizational leaders seek to move stakeholders towards a “preferred interpretation” of an organizational change in order to establish buy-in (Stieglitz, Mirbabaie, Schwenner, Marx, Lehr, & Brunker, 2017, p. 1333). A similar process, in which “a new vision or mental model of the given business environment must be developed and communicated to others to gain their support,” (Hill & Levenhagen, 1995, p. 1058) occurs for entrepreneurs starting new businesses.

While it may not seem that risk communicators would have much to learn from corporate leaders and entrepreneurs, Maitlis and Sonenshen (2010) point out that the sensemaking literatures in crisis and organizational change, while poorly integrated at the moment, actually share quite a bit in common. Both contexts are “characterized by ambiguity, confusion, and feelings of disorientation” (Maitlis & Sonenshen, 2010, p. 552) and both crisis and change are disruptive enough to lead to sensemaking. As such, the theory of sensegiving could reasonably be applied to studies of risk communication. For instance, broadcast meteorologists broadcasting during crisis perform a very similar role to corporate leaders. Both are valued members of the community, both are tasked with communicating through change, and both seek to establish buy-in from stakeholders. For corporate leaders, those stakeholders are employees and stockholders. For risk

communicators, those stakeholders are members of the public who need to take action to mitigate their risk.

As such, this study seeks to understand how broadcast meteorologists act as “sensegivers”, attempting to make sense of a complex crisis situation in order to help their viewers make sense of the crisis themselves. Specifically, this study focuses on the language used by broadcast meteorologists during Hurricane Harvey. As Weick et al. (2005) note,

The image of sensemaking as activity that talks events and organizations into existence suggests that patterns of organizing are located in the actions and conversations that occur on behalf of the presumed organization and in the texts of those activities that are preserved in social structures (p. 413).

Thus, it is crucial to understand the ways in which high-profile risk communicators enact their environment through communication. The following sections highlight two language strategies that have been used consistently within risk communication to make sense of hazards: figurative language and intense language.

### **Rhetorical Strategies**

Hurricane Harvey was an intense and devastating hurricane, which spawned a wide range of hazards (including inland flooding, coastal flooding, high winds, and tornadoes) and led to dire impacts across the Houston area. In addition, the KHOU broadcast meteorologists were faced with their own set of challenges as they grappled with the flooding of their studio and subsequent evacuation from the building. As such, it stands to reason that the KHOU meteorologists relied on multiple rhetorical strategies

when making sense of Hurricane Harvey's threat and impact. This study focuses on two types of rhetoric used to make sense of risks: figurative language and intense language.

**Figurative language.** Figurative language refers to the “comparison of concepts or systems of concepts” (Sopory & Dillard, 2002). This comparison relies on a base and a target, where the base is the knowledge domain that information is transferred from and the target is the knowledge domain to which information is transferred (Gentner, 1982). The transfer of knowledge between base and target allows for the “understanding and experiencing of one kind of thing in terms of another” (Lakoff & Johnson, 1980, p. 5).

There are many types of figurative language, including metaphor, simile, analogy, and personification. Metaphor describes language which compares two things literally in order to compare the objects implicitly. Simile is similar to metaphor, except that it compares objects explicitly through the words “like” or “as.” Metaphor and simile are often used in order to make sense of situations that would otherwise be difficult to describe (for instance, describing the immune system as a body's defenses; Casarett et al., 2010). Analogy also describes one object in terms of another. However, analogy is used more frequently to describe commonalities between some property of both objects (for instance, describing a lung mass as quarter-sized; Casarett et al., 2010).

Figurative language is used for a number of reasons, in conversational and scientific discourse. For instance, figurative language might be used to make language more elegant or humorous, to protect the self, to provoke thought, to get attention, or to emphasize a point (Roberts & Kreuz, 1994). Different types of figurative language are used to accomplish different discourse goals. For instance, metaphor is more often used to draw interest than simile (Roberts & Kreuz, 1994). As an example, stating that

“cigarettes are time bombs” garners more interest than “cigarettes are like time bombs” (Roberts & Kreuz, 1994, p. 159).

Analogies, meanwhile, are more often used as a way of making sense of complex risks by translating the unfamiliar to the familiar (Gentner, 1983). Provided that the speaker and the recipient share similar bases of knowledge, analogy “enables the speaker to be more efficient and more precise than they could if they used literal language” (Glucksberg, 1989, p. 141). Gifted political speakers like Ronald Reagan often take advantage of this efficiency. For instance, describing the Federal budget as a baby allowed Reagan to

convey an emotional message, evoke a particular experience, provoke admiration in the listener for one’s cleverness, structure and organize information, provide a new perspective on a topic by making us see it in terms of something else, and do it all so concisely (Read, Cesa, Jones, & Collins., 1990, p. 146).

The ability of figurative language to make sense of complex information is quite useful in health and risk communication, where scientific experts and the news media often attempt to communicate complex scientific information for lay publics. Health communication is replete with examples of figurative approaches to understanding, such as in the description of bodies as “fortresses” with “defenses” or through the framing of illness treatment as a “fight” or a “war” (Casarett et al., 2010; Hauser & Schwarz, 2015). Recently, the rise in obese Americans has prompted a number of metaphors to make sense of the obesity “epidemic”, which range from highly external (e.g. obesity as a result of societal factors) to highly internal (obesity as a result of sinful behavior) (Barry, Brescoll, Brownell, & Schlesinger, 2009). Disease outbreaks are also frequently framed

in terms of analogies, such as the “nation as a body” analogy used during the Zika outbreak (Lu & Schuldt, 2018).

Risk communication relies on its own figurative approaches to understanding threats, especially approaches based around personification. Personification is useful as a figurative strategy because it “permits abstract traits to be clothed in recognizably human garb” (Stern, 1988). As an example, natural hazards like wildfires are often described as “monsters” with “human-like abilities” such as “the ability to travel, to consume, and to destroy” (Matlock et al., 2017, p. 6). The naming of hurricanes and winter storms is another example of how hazards are personified. Storms can even be personified derogatorily based on their gender, such as the description of Hurricanes Katrina and Sandy as bitches (Skilton, 2013). Such naming conventions may not have an impact on risk perceptions (Raine et al., 2017) but they are useful for organizing information about the threat, especially on social media platforms like Twitter (Palmer, 2013).

The framing of risks via figurative language is not simply an innocuous way of presenting and organizing risk information. Rather, sensegivers and risk communicators can impact attributions of risk responsibility by framing a risk thematically or episodically. Episodic frames explore risk issues in terms of specific instances or specific people involved, whereas thematic framing casts risks within a broader historical, geographical, or political context (Iyengar, 1991). When health and risk issues are presented episodically, viewers are more likely to attribute blame and responsibility towards the individuals involved. Thematic framing can “override these dispositions” and lead to more global attributions of blame directed towards governments and societies (Iyengar, 1991, p. 69). For instance, framing obesity figuratively as a sinful behavior (an

episodic frame) leads individuals to favor policies that punish obese people for their actions, compared to individuals who instead see obesity framed figuratively as a societal issue (Barry et al., 2009). Similarly, the framing of wildfires as “monsters” focuses media coverage on the wildfires as “evil and destructive volitional agents” that must be “overtaken and destroyed before they cause further damage” (Matlock et al., 2017, p. 8). Such coverage ignores the contribution that humans make in starting fires and making fires more numerous and deadly through their contribution to climate change.

The framing of health and risk issues through figurative language is important ultimately because it alters risk perceptions and behavioral intentions. For instance, the use of war metaphors in discussions of cancer risk decreases intentions to engage in behaviors that would reduce cancer risk but would require sacrifices to personal habits (Hauser & Schwarz, 2015). The “nation as a body” analogy increases susceptibility among those who believed Zika was a severe threat (Lu & Schuldt, 2018). Finally, personification of wildfires as “monsters” increases evacuation intentions and leads to greater perceptions of wildfire risks (Matlock et al., 2017). These results exemplify the power of figurative language to shape and structure thought (Lakoff & Johnson, 1980), and highlight its important role in risk and health communication.

Framing and figurative language have also been studied explicitly within the context of sensemaking and sensegiving. Fiss and Zajac (2006), for instance, highlighted the ways in which “framing strategic change and thereby articulating a specific version of reality” allows organizations to “secure both the understanding and support of key stakeholders for their new strategic orientation” (p. 1174). Hill and Levenhagen (1995) describe figurative language as “simplified articulations or representations of a not yet

formalized mental model” (p. 1059). As such, figurative language is key to the sensemaking and sensegiving process, in part because it is useful for reducing uncertainty, coping with ambiguity, and interpreting large amounts of data. In addition, metaphors often evoke emotional responses, which may lead to the type of disruptions and environmental cues that prompt enhanced sensemaking processes. For instance, Hill and Levenhagen (1995) note how Apple used metaphors depicting their organization as the “last force for freedom against big brother IBM” (p. 1064).

One previous study has investigated how broadcast meteorologists use figurative language to make sense of the atmosphere by personifying weather features and asserting control over the weather (Doherty & Barnhurst, 2009). They personify weather features in terms of movement verbs like marching, migrating, sneaking or attempting and failing to move. Additionally, the meteorologists presented themselves as the “controllers” of “capricious or sometimes threatening” weather (Doherty & Barnhurst, 2009, p. 223). For instance, one meteorologist stated that he’d “get you the sun out” by later in the afternoon (Doherty & Barnhurst, 2009, p. 217). However, this study did not examine rhetorical strategies during coverage of a high-impact weather event. Instead, the study focused on fairly ordinary weather coverage. Thus, event-related metaphors and risk frames (such as describing a storm as a monster) were not observed. The study presented here is interested in these event-specific uses of figurative language, as well as a general description of how the KHOU broadcast meteorologists used figurative language to make sense of Hurricane Harvey’s threat and impact and communicate their sensemaking frameworks to viewers. Thus, the first research question is as follows:

RQ1: How did the KHOU broadcast meteorologists make sense of Hurricane Harvey's threat and impact through the use of figurative language?

**Intense language.** Intense language is defined as “emotion-laden words and graphic, precise language that generates perceptions of forceful assertion” (Hamilton, Hunter, & Burgoon, 1990, p. 235). Key to this definition is the concept of emotionality. As such, language that is emotional is stronger and more intense than language that is “emotionally flat” or that relies on “bland” or “vague” language (Hamilton et al., 1990, p. 236). For instance, stating that “the opposition’s plan is frightening” would be stronger than stating that the plan is “disquieting” (Hamilton et al., 1990, p. 235-236).

Using intense language, especially language that appeals to negatively valenced emotions like fear, shame, guilt, and disgust, can be an effective way to make sense of a threat. For instance, studies in political communication have investigated how emotional language is used by politicians as a rhetorical strategy in order to advocate for their positions. de Castella, McGarty, and Musgrove (2009) found that the Australian prime minister appealed to anger and disgust in speeches following the September 11<sup>th</sup> attacks by framing the attacks as an “evil” and “repugnant” attack on Western values (p. 13). Marmor-Lavie and Weimann (2005) investigated the emotional content of political advertising in Israeli elections, noting that advertisements during the 1996 election relied more on appeals to fear as a result of a terror wave sweeping the country, whereas advertisements during the 1999 election relied more on anger, as the opposing party focused on the “frustration of the Israeli public with Netanyahu’s three years in office” (p. 330).

Emotionally intense language has also been used to make sense of health threats. Carcioppolo et al. (2017) created messages designed to evoke guilt in order to increase HPV vaccination rates. To do so, their message featured an image of a couple and the statement, “It didn’t affect me until it destroyed us” (p. 443). Boudewyns, Turner, and Paquin (2013) also developed messages intended to evoke shame and guilt in the context of sexually transmitted diseases (STD). Their guilt message focused on the behavior of transmitting an STD (e.g. a selfish behavior leads to transmission), while the shame message focused on the person (a selfish person leads to transmission). Guilt appeals used the adjectives forgetful, uninformed, and unreliable while the shame appeal used the adjectives immature, selfish, and irresponsible.

Fear appeals in particular have attracted a great deal of interest within persuasive communication, health communication, and risk communication as a result of their ability to succinctly make sense of threatening hazards. Witte (1992) breaks fear appeals into two components – threat and efficacy. The threat component, designed to evoke feelings of fear, is based on susceptibility and severity, which can be manipulated in messages through strong language, graphic visuals, and clear expressions of vulnerability (Mongeau, 2002). For instance, the mayor of Rockport, Texas, advised citizens who were not planning to evacuate for Hurricane Harvey to write their Social Security numbers on their arms so they could be identified if they were to die in the storm (Keneally, 2017).

However, to be effective, fear appeals must also provide efficacy information. Efficacy can be divided into two types – response efficacy and self-efficacy. Response efficacy refers to the effectiveness of a response in coping with fear, while self-efficacy refers to the individual’s ability to employ the coping mechanism (Mongeau, 2012). For

instance, an individual in Rockport may have high perceived response efficacy if they believe that evacuating ahead of the storm would be a good way to avoid putting themselves in danger. However, they may not have viable transportation to leave, they may have nowhere to go, or they may fear that they will be fired from their job if they leave. Thus, they would be low in self-efficacy because they don't believe they possess the individual ability to enact the preventative measure.

Fear appeals have been applied to a diverse array of risk and health contexts. Perhaps the most famous examples of fear appeals are found within campaigns to reduce drug use, such as the "this is your brain on drugs" campaign (Witte, 1992). Fear appeals have also been highly utilized in campaigns to reduce smoking by emphasizing the serious health consequences of smoking, like lung and throat cancer (Wong & Capella, 2009). However, fear appeals have also been applied to the context of road safety campaigns, which typically appeal to fear by presenting "graphic representations of the death and injury that may occur as a result of an RTC [road traffic collision]" (Carey, McDermott, & Sarma, 2013, p. 1). Fear appeals have even been applied in the context of dental hygiene to increase flossing compliance (Bagley & Low, 1992).

Within the weather community, fear appeals have been applied in studies of warning messages. These messages attempt to influence the interpretations of their recipients by bolstering the perceived potential impact of a threat in order to elicit fear and motivate action (Perrault et al., 2014). Previously, fear-based, threatening warning messages were reserved for especially high-impact weather events. For instance, the NWS issued a statement prior to Hurricane Ike in 2008 that guaranteed certain death for non-evacuees (Morss & Hayden, 2010). However, the "impact-based warning" program

has introduced fear-based language to weather warnings on a more consistent and standardized basis by including more frightening information about potential impact. For instance, an impact-based tornado warning included information like “You will be killed if not underground” and “Mass devastation is likely” (Perrault et al., 2014, p. 489). These warnings also include more specific information regarding the hazard (e.g. “developing tornado”), the source of the information (e.g. “radar indicated rotation”) and the impact of the hazard (e.g. “mobile homes will be heavily damaged or destroyed”) (Casteel, 2016, p. 221). As such, the NWS “impact-based warning” program has been viewed as a success as a result of the additional actionable information the impact-based warnings include (Casteel, 2016; Weyrich, Scolobig, Bresch, & Patt, 2018). Fear-inducing weather warning messages continue to be tested for their effectiveness across hazards. For instance, Morss et al. (2016) investigated fear appeals in hurricane warning messages by testing “extreme impacts” messages that include statements such as “if you stay in the area, you may die” (p. 400).

Fear appeals and intense language are useful as a sensegiving tool because of their proven effectiveness in changing attitudes and behaviors. While intense language may have unintended consequences, such as a decrease in the credibility of the message creator (Perreault et al., 2014; Morss et al., 2016) and the stigmatization of those who engage in risky behaviors like smoking (Thompson, Barnett, & Pearce, 2009), several meta-analyses have delivered conclusive results in favor of fear appeals. Witte and Allen (2000) conclude that fear appeals work on most every occasion and for most audiences. In a more recent meta-analysis, Tannenbaum et al. (2015) are even more conclusive, stating that “fear appeals are effective at positively influencing attitude, intentions, and

behaviors; there are very few circumstances under which they are not effective; and there are no identified circumstances under which they backfire and lead to undesirable outcomes” (p. 1178).

Given the power of intense language as a sensegiving tool, it is vitally important to understand how intense language is utilized within the weather community. The study of impact-based warnings and NWS hurricane statements have provided a basis of understanding regarding the use of intense language by the NWS. However, no such inquiry has been performed for broadcast meteorologists. Additionally, studies of fear appeals have primarily focused on single messages. This study intends to address both of these research needs by investigating how broadcast meteorologists use intense language to make sense of Hurricane Harvey’s threat and impact, and to assess how the use of intense language by the meteorologists changed as Harvey’s threat and impact evolved. This leads to a pair of research questions:

RQ2a: How did the KHOU broadcast meteorologists use intense language to make sense of Hurricane Harvey’s threat and impact?

RQ2b: How did the use of intense language by the KHOU broadcast meteorologists change as the threat and impact posed by Hurricane Harvey evolved?

## **Chapter Three: Methods**

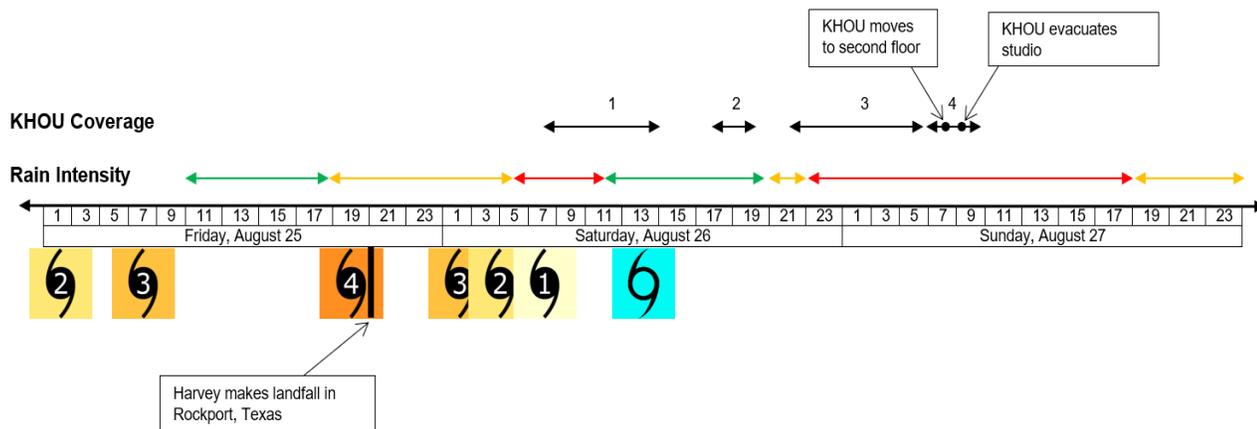
Given the sparse literature on how broadcast meteorologists utilize rhetorical strategies like figurative language and intense language in order to make sense of high-impact weather events, this study interrogates a “new and emerging area in need of investigation” (Corbin & Strauss, 2015, p. 35). As such, this study relies on an inductive, grounded approach to knowledge acquisition. The goal of such an approach is to “examine topics and related behaviors from many different angles – thus developing comprehensive explanations” (Corbin & Strauss, 2015, p. 11). Specifically, this study utilizes an inductive thematic analysis in order to answer the research questions. A thematic analysis is a “method for identifying, analyzing and reporting patterns (themes) within data” (Braun & Clarke, 2006, p. 79). In an inductive thematic analysis, the “themes identified are strongly linked to the data themselves” (Braun & Clarke, 2006, p. 83).

The data for this study comes from KHOU live broadcasts during Hurricane Harvey. This study’s focus on a specific context is emblematic of the case study approach. Case study methodology “investigates a contemporary phenomenon (the ‘case’) in depth and within its real-world context, especially when the boundaries between phenomenon and context may not be clearly evident” (Yin, 2018, p. 15). This study fits the “niche” of case study methodology given its reliance on predominantly “how” research questions and its focus on observation (Yin, 2018, p. 13).

### **Case Description**

Harvey made landfall late in the evening of August 25 as a Category 4 hurricane. The storm made landfall more than 100 miles south of Houston (Blake & Zelinsky,

2018). As such, Houston avoided the worst of Harvey's winds and storm surge, the hazards most commonly associated with hurricanes. However, Harvey's primary threat was its flooding rains, which didn't ramp up in Houston until the evening of August 26. As Harvey moved inland, its center stalled out over central Texas, which allowed for repeated rain bands to set up over the Houston metro area. This was despite the fact that Harvey had weakened to a tropical storm and was still located 50-100 miles to the west of Houston (Blake & Zelinsky, 2018). Over the course of nearly three full days, Houston was inundated with tremendously heavy rain, causing flash flooding on a scale that Houston had never experienced before. By the time Harvey departed the Houston area on August 28, it had deposited widespread rainfall amounts of 36-48 inches, with some areas receiving in excess of 60 inches of rain (Blake & Zelinsky, 2018). The National Hurricane Center describes Harvey as "the most significant tropical cyclone rainfall event in United States history, both in scope and peak rainfall amounts" (Blake & Zelinsky, 2018, p.6). In addition to the rainfall, Harvey spawned many tornadoes throughout the Houston area. However, most tornadoes were weak and caused little in the way of damage (Blake & Zelinsky, 2018). Figure 1 shows how Harvey's storm intensity (in terms of Saffir-Simpson category) and the intensity of Harvey's rains in the Houston area changed for the August 25 – 27 period.



**Figure 1.** A timeline of Hurricane Harvey's intensity (in terms of Saffir-Simpson category number – the colored boxes on the bottom), the intensity of rainfall in the Houston metro area (denoted by the colored arrows, where green denotes light rain, yellow moderate rain, and red heavy rain), and timing of the four KHOU videos included in the analysis (black arrows).

Hurricane Harvey represents an ideal case for analysis given the unique set of sensemaking and communication challenges through which broadcast meteorologists had to navigate. Many of these challenges stemmed from Harvey's unique meteorological development. For instance, the KHOU meteorologists needed to make sense of and communicate the severity of Harvey's flooding threat. This was especially a challenge given some of the inaccuracies in the mental models of Houston residents. For instance, coastal residents perceive hurricane-force winds to be the primary threat during a hurricane, not flooding (Meyer, Baker, Broad, Czajkowski, & Orlove, 2014). Additionally, the delayed onset of the flooding rains in Houston may have led some residents to believe that the worst of the storm was over before it had even started. Finally, the Saffir-Simpson hurricane strength scale, designed to simplify the communication of hurricane threat, may have actually been a hindrance for the KHOU

meteorologists. The Saffir-Simpson scale is based solely on a hurricane's central wind speed, neglecting other hurricane threats like storm surge and flooding (Samenow, 2012). As such, the KHOU meteorologists had to engage in sensegiving in order to align their expert mental models with the mental models of their viewers.

### **Data Collection**

In order to locate live broadcasts from Hurricane Harvey, a YouTube search was completed in late April 2018 for live broadcasts from the four major network affiliate stations in Houston – KRIV (FOX), KHOU (CBS), KTRK (ABC), and KPRC (NBC). Searches used the keywords “\_station name\_ Harvey live” (for example, “KHOU Harvey live”). This search represented a best guess at what would return usable results. In order for a video obtained during the search to qualify for analysis, it was required to be uploaded by the official station YouTube channel (Fox 26 Houston, KHOU 11, ABC13 Houston, or KPRC 2 Click2Houston), had to be longer than a normal, standalone video segment, and had to be relevant to Hurricane Harvey. A normal, standalone video segment refers to videos which only covered one topic (e.g. flooding on Galveston Island). These standalone videos were generally 2-5 minutes long while live broadcast videos covered multiple topics and were on the timeframe of 30 minutes to 8 hours long. The initial search yielded five qualifying videos, four of which came from KHOU and one from KPRC. To be safe, several other search queries were executed, such as “\_station name\_ Harvey broadcast” and “\_station name\_ Harvey coverage.” No additional videos were located.

The KPRC broadcast was seven hours long and took place on August 29, after the rainfall had ended. The content of the broadcast was focused primarily on *recovery* from

Harvey. The four KHOU broadcasts, meanwhile, included 21 hours and 26 minutes of live broadcasts from a 27-hour period between 7 a.m. August 26 and 10 a.m. August 27. This time period corresponds to the brunt of Harvey's impact on the Houston area. Additionally, it became clear after watching through the videos initially that KHOU represented an especially interesting case because the KHOU studio flooded during the storm. The KHOU broadcasters first attempted to broadcast out of a make-shift studio in their second-floor conference room, but eventually they were required to evacuate and go off air (Hlavaty, 2017). As such, this study focuses on the live broadcasts from KHOU. Figure 1 provides a timeline of Hurricane Harvey's impacts in Houston and on KHOU.

Once YouTube videos were located, they were uploaded to the transcription service Temi. Temi (temi.com) is a transcription service that relies on machine learning algorithms in order to parse recorded speech. Temi performed well for speech that was clear and uninterrupted, but struggled for muddled or interrupted speech. Additionally, Temi could not identify most proper nouns, including names of people and places. Given Temi's shortfalls, the completed transcript was manually checked for errors. This consisted of watching and listening to the video provided in Temi's graphical interface while reading along with the provided transcription. When an error was spotted, the video was paused, and the transcript was corrected. Given the length of the transcription and the relative consistency of errors (especially for place names), this process was only completed for segments in which a meteorologist was speaking.

This process also acted as an initial read through of the data, an important initial step in thematic analysis (Braun & Clarke, 2006) which gave me the opportunity to "enter vicariously into the life of the participants, feel what they are experiencing, and

listen to what they are saying through their words or actions” (Corbin & Strauss, 2015, p. 86). Upon completion of transcription quality control, the transcriptions were downloaded as Word files. The final transcript, which included all segments in which broadcast meteorologists were speaking throughout the 21-and-a-half-hour coverage, was 189 pages long.

**Data.** The KHOU broadcast team consisted of four meteorologists: David Paul, the chief meteorologist; Chita Craft, the morning meteorologist; Brooks Garner, the weekday daytime meteorologist; and Blake Matthews, the weekend meteorologist. David Paul was on-screen or narrating off-screen the most during Hurricane Harvey coverage, with a total of two hours and 15 minutes of coverage, followed by Brooks Garner (one hour, 48 minutes), Chita Craft (one hour, 36 minutes), and Blake Matthews (one hour, four minutes). In total, the meteorologists spoke for six hours and 44 minutes, which was 31% of the 21-and-a-half-hour coverage period.

The first broadcast was 6 hours and 52 minutes long, running from 7:08 a.m. to 1:58 p.m. on August 26. Coverage during this period was fairly standard. The anchors played a dominant role in guiding the newscast by “making conversation that bridged the gaps” between on-field reporters, the traffic reporter, and the meteorologists (Henson, 2010, p. 15). Additionally, the newscast still contained commercials, with an average of seven minutes of commercial time each hour. During this period, Chita Craft provided occasional weather reports between one and six minutes long a few times each hour, for a total of one hour and 36 minutes. Blake Matthews also contributed several reports during this time, for a total of nine minutes. On average, meteorologists spoke for 15 minutes each hour during the first broadcast.

The second broadcast was two hours long, running from 5:00 p.m. to 7:00 p.m. on August 26. Coverage during this period was similar to the early morning coverage, with anchors directing coverage. In fact, this evening news coverage was even more slanted towards the news. David Paul was the only meteorologist to speak during this coverage, and he only spoke for 14 minutes over the two-hour coverage period. There was more time devoted to commercials (19 minutes) than to meteorologists during this coverage.

The final broadcast was 12 hours and 34 minutes long, running from 9:16 p.m. August 26 to 9:50 a.m. August 27. This broadcast was divided between two videos. The first was eight hours and 35 minutes long (running from 9:16 p.m. August 26 to 5:52 a.m. August 27) and the second was four hours and 15 minutes long (running from 5:55 a.m. to 10:10 a.m. August 27). There were three minutes of coverage between the videos (5:52 to 5:55 a.m.) that was not captured. Additionally, the final video ran until 10:10 a.m., but the last 20 minutes of the video did not include any content as the KHOU signal was lost at 9:50 a.m.

Coverage during this period was very different from coverage during the first two broadcasts. First, the coverage did not include commercials. Second, the broadcast meteorologists played a more dominant role in guiding the content of the newscast. They often subsumed the role of the news anchors by directing coverage and interviewing guests. During this period, the meteorologists were on-screen or narrating off-screen for an average of 23 minutes each hour. Coverage was especially focused on meteorologists between 9:16 p.m. and 12 a.m., with meteorologists speaking for 42 minutes per hour on average.

The meteorologists rotated coverage among themselves, although sometimes the meteorologists would appear together and engage in dialogue with each other. David Paul and Brooks Garner rotated coverage or had dialogue among themselves between 9:16 p.m. and 2 a.m., Brooks Garner and Blake Matthews shared coverage between 2 a.m. and 5 a.m., and David Paul and Blake Matthews rotated coverage between 5 a.m. and 8:30 a.m. In total, David Paul spoke for two hours and one minute, Brooks Garner for one hour and 48 minutes, and Blake Matthews for 55 minutes.

Between 6:00 a.m. and 8:30 a.m., the broadcast meteorologists were not on-screen as frequently as the earlier overnight coverage (average of 10 minutes on screen per hour). However, this was due to situations beyond their control. Around 6:00 a.m., water from the nearby Buffalo Bayou began encroaching on the parking lot of the station, with water entering some vehicles. At 6:30 a.m., water began flowing into the first floor of the KHOU building. By 6:35 a.m., the floodwaters had started to inundate the studio. At this point, the KHOU staff began the process of transitioning to a make-shift studio in the conference room on the second floor. During this process, KHOU continued coverage by relying on field reporters to fill more coverage time. At 7:15 a.m., KHOU began airing from their make-shift studio. The last segment in which a meteorologist spoke was at 8:30 a.m. and the last broadcast from the KHOU studio was at 9:00 a.m. The final 50 minutes of coverage were carried by a lone field reporter until KHOU coverage cut out at 9:50 a.m.

### **Coding**

Following transcription quality control, initial codes were generated. Initial codes consisted of “an initial list of ideas about what is in the data and what is interesting about

them” (Braun & Clarke, 2006). In this case, initial codes focused on the rhetorical choices of the broadcast meteorologists. These codes were developed by reading and analyzing line-for-line selected segments from different time periods during the live broadcast coverage, with a focus on the language used by the broadcast meteorologists. Analytic strategies like asking questions of the data and performing constant comparisons between different pieces of data were employed (Corbin & Strauss, 2015). After several segments had been coded at the sentence level, I met with a professor and a graduate student who both specialized in risk communication to discuss the initial codes and assess ways in which codes could be added, grouped together, or eliminated. The inclusion of multiple voices in the early stages of the project allowed for increased sensitivity to the data given the varying professional, gender, and cultural roles of the research team members (Corbin & Strauss, 2015). This process of coding, discussion, and consensus occurred iteratively until I felt comfortable with the initial codes that had been developed.

At this point, I coded the rest of the transcript at the sentence level by searching for particular instances of rhetoric. Coding was performed in line with Corbin and Strauss’s (2015) idea of microanalysis. Microanalysis involves “generating possibilities and at the same time checking out those possibilities against data, discarding those that prove to be irrelevant and revising interpretation as needed” (p. 71). Coding was facilitated through NVivo, a qualitative data analysis program, by “tagging and naming selections of text within each data item” (Braun & Clarke, 2006, p. 89).

In addition to coding, I made use of memos as a way of organizing thoughts and comments about the data. Shorter thoughts and asides were attached to data in NVivo through use of the annotations feature. Longer memos were collected in a separate Word

file or were written/drawn out on paper, and included discussions of how coded concepts linked together, how different words or phrases indicated the presence of certain codes, and how those conceptions changed over the course of coding. The use of memos was intended to “reflect the thinking that goes into analysis” (Corbin & Strauss, 2015, p. 107).

## **Analysis**

Following initial coding, analysis proceeded to what Braun and Clarke (2006) refer to as searching for themes. This involved “sorting the different codes into potential themes and collating all the relevant coded data extracts within the identified themes” (Braun & Clarke, 2006, p. 89). Corbin and Strauss (2015) refer to this process as forming categories from basic-level concepts. In this case, basic-level concepts included the specific instances of rhetoric that were coded for, while categories represented broader conceptual categories that describe how the broadcasters made rhetorical choices to act as sensegivers and how their rhetorical choices changed over time. As part of this process, memos from initial coding were organized into diagrams and thematic maps. These illustrations displayed how basic-level concepts link together to form categories. See Figure 2 and Figure 4 for thematic maps of figurative language and intense language concepts, respectively. Throughout this process, analytic strategies like questioning, constant comparison, and “what if?” and “so what?” questions were utilized to ensure that the concepts themselves and the linkages between them were internally consistent (Corbin & Strauss, 2015, p. 101).

Once themes were located and organized, they were reviewed critically to ensure that they actually fit the data. Step one of this process included “reading all the collated extracts for each theme, and considering whether they appear to form a coherent pattern”

(Braun & Clarke, 2006, p. 91). Extracts that didn't fit an established pattern were either moved elsewhere or used to demonstrate that a theme needed to be reconsidered. The second step involved re-reading the data set and considering the "validity of individual themes in relation to the data set" (Braun & Clarke, 2006, p. 91). When this critical re-reading unearthed data that didn't fit with the developed thematic map, the thematic map was reassessed, and individual data extracts were re-coded. This process continued until the thematic map served as a valid representation of the data.

Finally, themes were "defined and refined" by "identifying the 'essence' of what each theme is about and determining what aspect of the data each theme captures" (Braun & Clarke, 2006, p. 92). In doing so, a narrative was constructed that uses individual coded extracts to explain how themes are defined and how they link together (Corbin & Strauss, 2015).

### **Reflexivity**

Reflexivity is an important part of qualitative research, especially when the author is close to the subject being studied. As such, I feel it important to note that my analysis and findings may be influenced by my life-long passion for meteorology and my knowledge of the subject granted by my bachelor's degree in meteorology from Penn State University. This knowledge base – of meteorological science and of the experience of a broadcast meteorologist – has undoubtedly influenced how I view the subject.

However, this study relies on several steps to mitigate potential bias. First, I consulted with a professor and a fellow graduate student in the University of Kentucky Department of Communication when developing initial codes for this project. Both have experience studying how weather organizations communicate. Neither have specific

meteorological experience. They were able to offer insights that I likely would have missed otherwise (for instance, noting that “dirty side of the storm” is a form of figurative language). Second, a grounded, thematic approach already contains “some built-in checks and balances” against bias (Corbin & Strauss, 2015, p. 47). Analytic techniques like constant comparison required a critical questioning of the ways themes were conceptualized and data was organized. Additionally, the process of drafting memos allowed for reflections on personal influence to be logged and considered when creating themes.

Finally, it should be noted that my position as a meteorological “insider” is not necessarily a negative. In fact, there are substantive positives to approaching this topic with a wealth of meteorological knowledge. Berger (2015) notes that bringing previous knowledge to a study allowed her to “address certain topics more easily or even be aware that I should address them” (p. 223). This is undoubtedly true for this study as well. For instance, my (limited) experience as an amateur broadcaster for Penn State’s Campus Weather Service gives me some license to appreciate the intense difficulties of trying to convey complex information to an unknowable variety of viewers in ways that they will understand and with which they will emotionally connect. As such, there are likely aspects of this analysis I was able to understand or find important that other communication scholars without my background wouldn’t be able to appreciate.

## Chapter Four: Analysis and Findings

The KHOU live broadcast transcripts from Hurricane Harvey were analyzed using a thematic approach, which is a “method for identifying, analyzing and reporting patterns (themes) within data” (Braun & Clarke, 2006, p. 79). The analysis was centered around three research questions related to how KHOU’s meteorologists utilized figurative language and intense language when describing and explaining elements of Hurricane Harvey’s threat and impact. A summary of the key themes is provided in Table 1. First, I will describe how the KHOU broadcasters made sense of Hurricane Harvey via figurative language.

Table 1  
*Summary of Key Themes Related to Figurative Language and Intense Language*

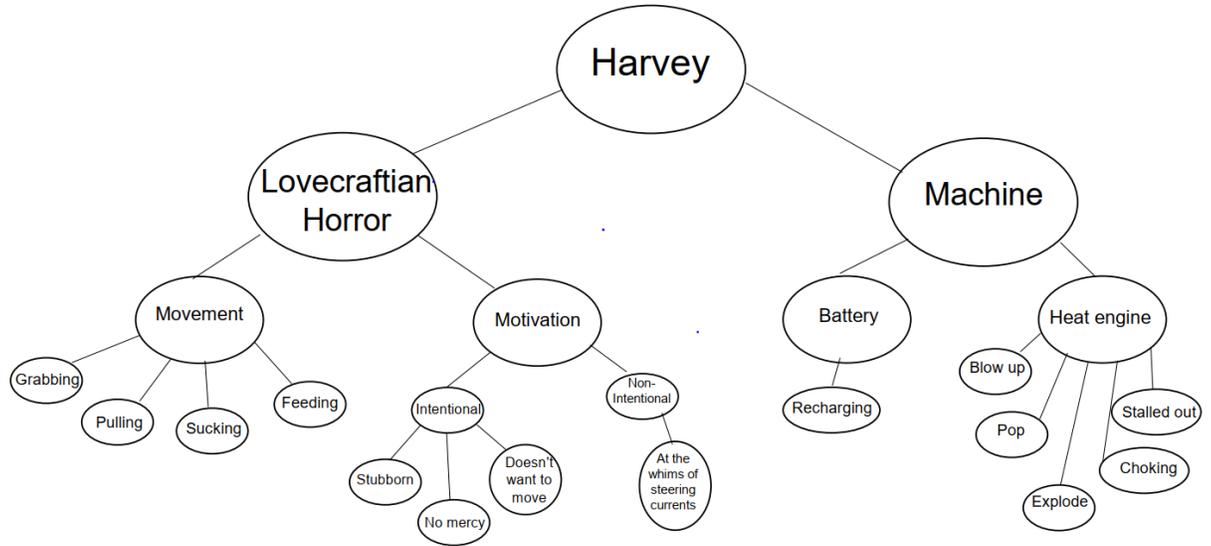
Theme	Description	Examples
<b>Figurative Language</b>		
Harvey as Lovecraftian horror	Harvey described as a monster, grabbing, pulling and feeding. Motivated to continue living and breathing. Persistent and bothersome beast.	“Literally reaching down into the Gulf of Mexico, grabbing the moisture, and pulling it in” “Feeder bands” “Taking in as much moisture as it can to survive” “Showing no signs of quitting”
Harvey as machine	Harvey described as a battery or an engine	“Constantly being recharged” “Like a heat engine” “It’s like if your lawnmower runs out of gas”
Figurative descriptions of storm elements	Descriptions of specific aspects of Harvey’s threat, including heavy rain, tornadoes, and meteorological structure	“Dirty side of the storm” “When you pull the paddle, you see a little twirly-whirl going by. That’s the same thing [as a tornado]” “Picture like a cake, and it’s like kind of tipped over like the Leaning Tower of Pisa”
<b>Intense Language</b>		
<b>Concern</b>		
Descriptions of impact	Primarily adjective descriptions of Harvey’s impact that denote concern or worry	Catastrophic, life and death, emergency, horrible, concerning, dire

Comparisons	Comparing or contrasting Harvey’s flooding impact with other threats or with other events	<p>“Tornadoes are very serious, but this is almost a secondary warning to the flooding emergency we’re facing right now in Houston”</p> <p>“We’re going to see rainfall totals that are above Allison”</p> <p>“It reminds me of . . . when the Lower Ninth Ward experienced a rapid flooding”</p>
Personal expressions of concern	Use of first-person pronouns to express worry or concern about the forecast, to issue dire advice, or to offer an emotional connection	<p>“I cannot stress that enough that this is going to be a really dire, critical situation”</p> <p>“It can be a coffin corner if your home continues to flood”</p> <p>“I’m as concerned as you are about my city”</p>
Disbelief		
Descriptions of impact	Primarily adjective descriptions of Harvey’s impact that denote shock or disbelief	<p>Incredible</p> <p>Tremendous</p> <p>Crazy</p> <p>Unbelievable</p>
Personal expressions of disbelief	Use of first-person pronouns to express shock, disbelief, or awe at observations, forecasts, and the meteorologists’ role	<p>“If you had told me we got 10 inches in an hour and a half, I’d think you’re exaggerating, but it was coming from a trained spotter”</p> <p>“I can’t remember seeing an extended forecast like this ever”</p> <p>“There are certain things in life you think you’ll never see”</p>

### Figurative Language

Risk communicators use figurative language as a way to make sense of complex, technical concepts by providing a framework to organize and understand a topic in terms of more concrete, less complicated concepts (Lu & Schuldt, 2018). RQ1 asked: How did the KHOU broadcast meteorologists make sense of Hurricane Harvey’s threat and impact through the use of figurative language? During Hurricane Harvey, KHOU meteorologists relied on two primary frameworks for making sense of the storm: Harvey as a monster (specifically a Lovecraftian beast), and Harvey as a machine (See Figure 2). In addition,

the broadcasters employed figurative language to describe specific aspects of the storm and its impact, such as its heavy rain, tornadoes, flooding, and structure.



**Figure 2.** A thematic map showing how basic-level concepts related to figurative language (e.g. grabbing, stubborn, exploding, and recharging) link together to form the core figurative concepts of Harvey as Lovecraftian horror and Harvey as a machine.

**Harvey as Lovecraftian horror.** One of the most pervasive figurative frameworks that the KHOU meteorologists relied on involved characterizing Hurricane Harvey as a monster ravaging the Houston area. While showing a radar loop of the storm during the early afternoon on August 26, Chita Craft explained how Harvey was “pulling in all of this deep moisture right out of the Gulf.” Shortly after midnight on August 27, Harvey was described as “literally reaching down into the Gulf of Mexico, grabbing the moisture off the Gulf of Mexico and just pulling it in.” Once Harvey had hold of this Gulf of Mexico moisture, the moisture was “tugged up,” “wrapped around,” and “sucked in.” The goal of this tugging, pulling, sucking, and wrapping was to bring energy towards the storm, or as the meteorologists described it, to “feed” the storm. In fact, “feeder bands”

was one of the most consistently used terminologies to describe Harvey's structure. As Harvey moved over land and lost easy access to its "food," the beast began to "die." In response, Harvey took in "as much moisture as it can to survive" so that it could continue "eating" and "breathing."

These descriptions bring to mind some living, breathing Lovecraftian horror, akin to Lovecraft's (1928) description of Cthulhu as "a monster of vaguely anthropoid outline, but with an octopus-like head whose face was a mass of feelers" (para. 21). Likewise, Harvey was described as a sprawling, multi-armed or multi-tentacled beast that extends itself outward in order to pull resources inward (Figure 3). At times, the meteorologists made this fiction explicit by describing Harvey as a "beast" of an event and by stating that "we're dealing with a monster."



**Figure 3.** A famously Photo Shopped image of a Cthulhu-like cloud formation (Snopes Staff, 2015).

Harvey was not necessarily portrayed as a malevolent beast. At their worst, the KHOU meteorologists noted that “psychologically there’s no mercy in storms.” Instead, Harvey was described as an insistent, stubborn beast that was simply unconcerned with the wants of mere humans. It’s not that Harvey couldn’t move; it’s that it didn’t “want to move,” it wasn’t “going to move,” and it was “showing no signs of quitting.” Paradoxically, Harvey was also described as a passenger, steered by “the rivers of air in the atmosphere.” In this depiction, Harvey had no control over where it was going. It couldn’t help that the rivers had “gone dry” (referring to the slow movement of the atmospheric steering currents which would normally steer Harvey away from Houston quickly).

Regardless of the Harvey beast’s motivations, the KHOU meteorologists made sense of its impact in physical terms. The Brays and Sims Bayous were “hit hard,” the west side of town got “slammed,” and downtown was “hammered” with heavy rain. These continual blows left the Houston area “literally paralyzed.” Houston neither earned nor deserved this punishment; instead, Harvey’s impact was framed as just a case of bad luck. The meteorologists described the weather patterns as “incredibly unfortunate,” referred to the target of heavy rain as the “unlucky bullseye,” and noted that “it’s just literally a bad deal” that “this weather pattern developed at the time when this storm made landfall.” Both depictions of the Harvey beast’s motivations support this framing.

**Harvey as machine.** KHOU meteorologists also made sense of Harvey by comparing it to a machine. This comparison took two similar forms – Harvey as a battery, and Harvey as an engine. The Harvey as a battery framework involved descriptions of Harvey as “constantly recharging.” For instance, David Paul described the

state of the atmosphere as “constantly being recharged with fresh moisture off the Gulf of Mexico, feeding into the system.” This depiction is also similar to the figurative description of Harvey as a feeding monster, underlying the ways in which the figurative frameworks interacted with each other to make sense of the situation.

The Harvey as an engine framework was a bit more developed and distinct. The KHOU meteorologists began by describing Harvey as a “heat engine” that was “like a lawnmower engine but instead of internal combustion it gets its fuel from warm water.” If Harvey was the engine, then individual storms were the spark plugs, given their tendency to “pop,” “explode,” and “blow up.” The storms ignited an “up and down motion,” similar to the role pistons play. As Harvey’s forward motion slowed and eventually came to a near halt, the KHOU broadcasters described Harvey as “stalled” and “put in park with the engines revving.” The engine metaphor also provided explanations as the storm moved inland and lost its source of warm, moist air necessary for survival. In one of the more labored metaphors of the broadcast, Brooks Garner described the situation:

It’s like if your lawnmower runs out of gas and starts choking and it’s going to try and stay alive and it’s pulling in all this deep tropical moisture from the Gulf to wrap into its center to try and maintain its heat engine and that’s what we’re under and that’s where we’re getting all this rain.

**Figurative descriptions of storm elements.** In addition to the broader figurative frameworks that the KHOU broadcast meteorologists worked from, they also employed figurative language to describe and explain specific elements of Hurricane Harvey and its impact. Specifically, they employed metaphors to describe Harvey’s heavy rain as

“blinding” and arriving in “waves,” to explain Harvey’s tornado potential as similar to creating “whirly-twirls” when rowing a boat, to make sense of the location of the heavy rain on one side of the storm by referring to it as the “dirty side of the storm,” and to attempt to help viewers make sense of Harvey’s vertical structure by comparing it to a wedding cake.

*Waves of blinding rain.* Given the intense threat posed by Harvey’s flooding rains, it is unsurprising that they frequently used figurative language to make sense of the threat. For instance, Brooks Garner described heavy rain as the result of “a ton of tropical humidity and a force that makes rain in a very efficient way interacting with a weak frontal boundary to the north,” which acted to “ring out that wet washcloth.” Heavy rain arrived in “sheets,” “batches,” “waves,” and “buckets,” and its impact was “blinding.” With each successive batch of rain, a new “layer” of accumulation was tacked on to the previous layers. With enough layers, the ground became saturated and you could “push through it like it’s pudding putty, Jell-O.” The rain ran off into the streets, which became “rivers” and “lakes.”

*Rowing a boat to create a tornado.* The tornado threat had its own set of metaphors. Around 11:45 p.m. on August 26, Brooks Garner described how tornadoes are formed with an analogy that those familiar with rowing a boat might understand:

Have you ever been out on a lake in a canoe or a rowboat? And when you pull that paddle, you see a little twirly-whirl going by? You pull the paddle when you’re sitting on a lake and you see a little whirl, whirlpool go by. It’s the same thing. The force is you pulling on that oar, or the paddle, and that force creates in a fluid. Fluid is water, obviously and the fluid here we’re talking about is air, but

it creates those whirly winds. That's what's happening here. The tropical storm has so much force it's, it's ripping these rain bands into it, just ripping the moisture out of the Gulf. It's trying to take a breath so it can stay alive and that's where and why the rotation begins.

The rotation that Garner describes is but one among several "ingredients you need to make a tornado."

*Dirty side of the storm.* A set of metaphors existed in order to describe complex meteorological dynamics. For instance, the KHOU meteorologists frequently referred to the "dirty side" of the storm to allude to the quadrants of the storm that favored rain and storm development, where "we've got that thermodynamic lift in the atmosphere."

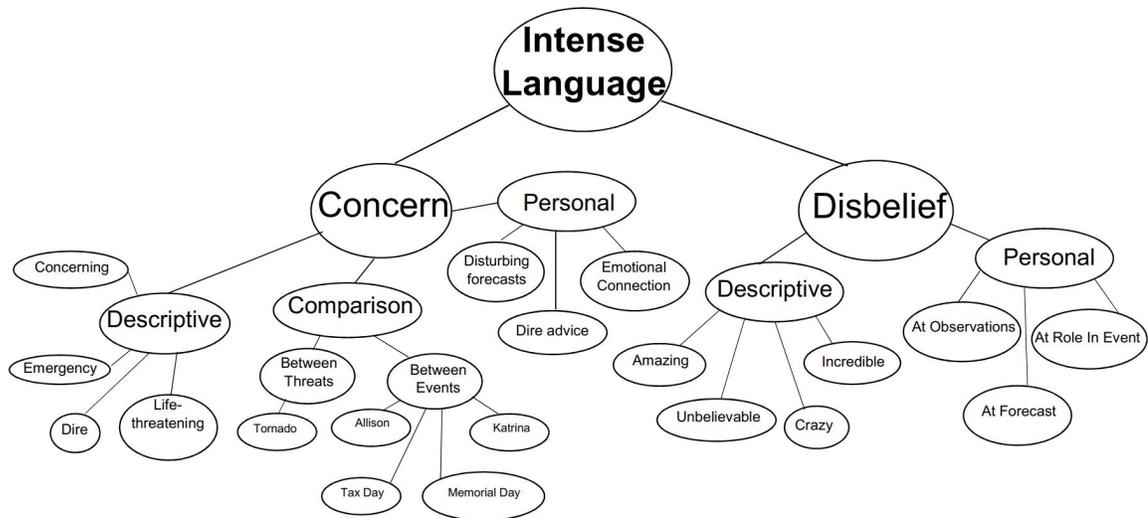
Brooks Garner simply described the "dirty side" as a "weather slang term to describe all of this mess," referring to the area of heavy rain over Houston. Regardless of definition, the KHOU meteorologists made it clear that the "dirty side" is the last place to be in a hurricane. The "dirty side" is "where all the flooding threat is" and Houston's placement on the "dirty side" explained why they were "getting all the heavy rain." Alternatively, those on the "clean side" to the west of the circulation were dry and doing just fine.

*Vertical structure as cake.* The KHOU meteorologists also used metaphors to explain the vertical structure of Hurricane Harvey. The vertical structure of the hurricane describes how the center of the storm changes as you rise vertically up through the storm. In mature tropical cyclones, the center of low pressure is in the same location as the center of low pressure aloft in the atmosphere. Decaying cyclones, however, may begin to slant or tilt because their upper level low pressure center has drifted away from the surface low pressure center. This is important, because a drifting upper level low pressure

center can bring rain to areas far from the low-level pressure center. In attempting to describe this complex meteorological process, Brooks Garner suggested that viewers try to “picture like a cake, like a big, tall wedding cake and it’s like kind of tipped over like the Leaning Tower of Pisa.”

### **Intense Language**

Intense language is defined as “emotion-laden words and graphic, precise language that generates perceptions of forceful assertion” (Hamilton et al., 1990, p. 235). Within risk communication, intense language is used to make sense of the severity and potential impact of a threat in order to elicit fear and motivate action (Perrault et al., 2014). RQ2a asked: How did the KHOU broadcast meteorologists use intense language to make sense of Hurricane Harvey’s threat and impact? During Hurricane Harvey, KHOU meteorologists described Harvey’s impact by appealing to concern and disbelief. They appealed to concern by using intense descriptions of impact (such as dire and life-threatening), through comparison with current and historical threats, and through the use of personal expressions facilitated by first-person pronouns. These personal displays allowed the meteorologists to emphasize Harvey’s threat, to offer dire advice, and to emotionally connect with their viewers. Similarly, the meteorologists appealed to disbelief through intense adjectives like “unbelievable” and “incredible” and appealed to personal expressions of disbelief in order to make sense of the storm unfolding around them. For a thematic map of intense language, see Figure 4. The use of intense language changed over the course of the storm by becoming more intense and personal.



**Figure 4.** A thematic map showing how basic-level concepts related to figurative language (e.g. dire advice, crazy, disbelief at forecast) link together to form the core intense language concepts of concern and disbelief.

**Concern.** One of the primary ways the KHOU meteorologists intensified their language in an effort to make sense of Harvey was by appealing to concern. They appealed to concern by using descriptive adjectives such as “life-threatening” and “dire,” they compared Harvey’s flooding threat to current and historical threats, and they expressed concern personally via first-person pronouns in order to emphasize Harvey’s flooding threat, offer dire advice, and emotionally connect with their community.

***Life-threatening flooding: Description of impact.*** As the rain began to pick up and serious flooding began in Houston, intense language became descriptive instead of predictive. The KHOU meteorologists relied on figurative descriptions of intensity, such as “blinding rain” that came down in “sheets” and “buckets.” The heavy rain led to “very serious” flooding, which was part of “a significant, dangerous flooding event.”

Once residents were forced to retreat to their attics for safety, the meteorologists used even more concerning language to describe the situation, such as “terrible,” “scary,”

“life-threatening,” “life and death,” “emergency,” “catastrophic,” and “dire,” some of which came directly from official NWS statements such as “flood emergency” and “catastrophic flood and significant weather advisory.” Brooks Garner even reflected on the situation, stating, “you can imagine the, uh, the horrible situation where you have to go to your attic to escape the floodwaters.”

*Allison looks like child’s play: Comparison.* In addition to severe descriptions of Harvey’s flooding threat, the broadcasters also made sense of the threat by comparing it to other historical or current threats. One way they did this was by comparing Harvey’s flooding threat to Harvey’s tornado threat. Generally, tornadoes garner substantially more media coverage and attention than flooding, with TV news stations often going live to provide updated meteorological information to viewers (Henson, 2010). However, the flooding threat during Harvey was so serious that it even took priority over the threat posed by tornadoes, an unusual situation given the typical seriousness afforded to tornadoes. Brooks Garner stated,

This is the one time ever you’ll hear the weather guy say this, with a tornado warning happening. They’re very serious, but this is almost a secondary warning to the flooding emergency we’re facing right now in Houston.

A more common comparison was drawn between Harvey and historical flooding disasters in the Houston area, such as Tropical Storm Allison in 2001, the Memorial Day floods of 2015, and the Tax Day floods of 2016. As an example, David Paul expressed concern that “we’re going to see rainfall totals that are above Allison and we’re going to see worse flooding.” Paul also noted that Harvey was different from these previous

events because “this is forecast to stay rainy, not just for one big, long night, but we may do this again the next couple of nights as well.”

The broadcasters returned to a discussion of how Harvey compared to previous flooding disasters much later in the broadcast. The difference, however, was that by this point in time, the discussion was no longer hypothetical, as Harvey continued to ravage the Houston area with no signs of slowing down. The meteorologists made note of when bayous and reservoirs exceeded the levels set during previous floods, using these levels as benchmarks for evaluation. For instance, they reported that “we’re at our Tax Day flood levels in Meyerland as the Brays Bayou continues to slowly rise.” Later, they described Harvey as “Allison 2.0 taking place across the Houston area.” By 7:15 a.m., the scope and severity of the event required new comparisons, such as to a 1935 flood which was described as “the last time that we had a catastrophic flood that literally swept families away, down Buffalo Bayou, through downtown and into the Gulf of Mexico.” The flooding disaster was by this point “obviously historic” and “one of those floods that you can tell your kids about.” Brooks Garner even compared Harvey’s flooding to that of Hurricane Katrina in 2005, noting that “it reminds me of . . . when the Lower Ninth Ward experienced that, a rapid flooding.” Reporting from their make-shift studio at 8:30 a.m., Blake Matthews remarked that Harvey “certainly makes Allison look like child’s play all of a sudden.”

*Coffin corner: Personal expressions of concern.* Perhaps the most powerful way the meteorologists appealed to concern was by expressing the emotion they felt through the use of first-person pronouns. This was done early in the broadcast to convince viewers to take the forecasts seriously. For instance, at 7:45 a.m. on August 26, Chita

Craft stated, “I cannot stress that enough that this is going to be a really dire, critical situation as we head into the beginning of next week.” At 9:30 p.m., Brooks Garner remarked that it’s “amazing to think about the potential of the atmosphere and a little ominous to think about what may happen later on this week.” David Paul even went so far as to describe the forecast as “disturbing.” The meteorologists’ concern was also borne out through hypothetical scenarios. For instance, Chita Craft explained the possibility of rainfall bands setting up over the same areas by stating that “if a training effect starts to kick in, that’s when we could really start to be in trouble in some areas.” David Paul described himself as “very concerned” when discussing the possibility of a new line of building storms. At 11:15 p.m., Paul expressed concern that “these rain bands are just not going to let up all night long.”

As the storm began to wreak havoc on Houston, the meteorologists’ concern was expressed in the increasingly dire advice they had to offer. Shortly after midnight, David Paul advised viewers to “stay where you are because out on the roads is just an absolute dangerous mess right now.” By 3:15 a.m., Brooks Garner was advising viewers to take an axe with them if they needed to take shelter in their attics, noting that “the problem with seeking shelter in your attic is that you’ve painted yourself into a corner and that corner, it can be a coffin corner if your home continues to flood.” Garner explained during the broadcast that “to relay this advice I literally cleared it with our news managers. That’s how dire this advice is.”

Towards the end of the broadcast, expressions of concern shifted from concern about the forecast to concern for their viewers and their community. In doing so, the meteorologists seemed to be trying to connect with their viewers emotionally. At 6:30

a.m., Blake Matthews made the threat personal during a dialogue with David Paul, stating,

You know, I grew up here. This is my home. You know, and this is your home, you grew up here as well. This is personal. You know, I'm one of you. You know I'm as concerned as you are about my city and I'm sure you are as well.

David Paul responded that “we’re entering into some very tough times here,” although Paul did attempt to instill some hope by repeatedly stating that “we’re going to get through this.”

**Disbelief.** In addition to expressing concern, the broadcast meteorologists also expressed disbelief as a way of making their language more intense as they made sense of the storm. They did this through disbelieving descriptions of Harvey’s impact, and through personal expressions of disbelief, directed towards observations, forecasts, and the meteorologists’ role in a historic event.

*Absolutely incredible: Descriptions of impact.* The meteorologists explicitly described Harvey’s impact in disbelieving terms, such as incredible, tremendous, crazy, and unbelievable. For instance, rainfall accumulation forecasts were described as “absolutely incredible,” fully capable of “causing a tremendous flood here in Houston.” As the rain continued to pour down on Houston, the rainfall rates were described as “incredible,” leading to “unbelievable” rainfall totals as a “tremendous amount of heavy, heavy rain” fell over some areas. Heavy rain led to intense flooding, with “amazing amounts of water coming down Buffalo Bayou.”

*It’s hard to get your head around something like this: Personal expressions of disbelief.* In addition to descriptive adjectives, the meteorologists expressed disbelief

personally through first-person pronouns. Some of this disbelief was directed at observations of the event unfolding around them. For instance, Brooks Garner suggested that he wouldn't have believed a rainfall report of 10 inches of rain in an hour and a half if it hadn't come from a trained spotter. Additional disbelief was directed towards their own rainfall forecasts. At 12:30 a.m., Garner forecasted that that Harvey "could dump up to 30 inches or more additional, which doesn't sound so crazy anymore." In some cases, disbelief was expressed retrospectively. For example, at 4:20 a.m. Blake Matthews noted that "sometimes we see weird things come across the computers on a normal day, you know, we'll, we'll forecast heavy rain and we'll see some odd numbers. 10, 12, 13 inches. You say, well I can't say that on TV."

Often times, the meteorologists expressed disbelief in reference to their previous experience. For instance, chief meteorologist David Paul stated around 11 p.m.,

It's hard to get your head around something like this and I looked at this forecast and it was because I haven't experienced this before. This is so rare for a storm to sit in one spot for so many days in a row.

Paul also remarked that he couldn't "remember ever seeing in this area a forecast for a tropical system to sit in a position to our west where it would just do this to us." Perhaps most incredulously, Paul noted, "I can't remember seeing an extended forecast like this ever, since, since I've been here at KHOU for 20 years."

At times, the meteorologists seemed shocked that they were even playing a role in a historic disaster like Harvey. By midnight, Paul described Harvey as "something you read about in textbooks that can happen and now we're going to watch it happen in real life in front of us." Brooks Garner, meanwhile, seemed to be in disbelief that he was in a

position to offer dire advice to Houston residents, stating, “They’re saying get on top of the roof, which I can’t believe I’m saying that.” Blake Matthews described this feeling of disbelief most succinctly around 6:30 a.m., saying, “there are certain things in life you think you’ll never see. And then here it is. It’s happening right now.”

**Change in intense language over time.** RQ2b asked: How did the use of intense language by the KHOU broadcast meteorologists change as the threat and impact posed by Hurricane Harvey evolved? In general, the meteorologists’ use of intense language mirrored the intensity of the crisis surrounding them. For instance, descriptions of Harvey’s potential threat before the threat materialized used terms like “critical”, “ominous”, and “disturbing.” These terms are intense and were likely used to emphasize Harvey’s potential, especially during periods on the morning and evening of August 26 when rain had temporarily cleared out. However, they pale in comparison to terms like “terrible”, “life and death”, “emergency”, and “catastrophic,” which were most frequently used during the overnight and early morning hours of August 27.

In addition, the intense language used by the broadcast meteorologists became more explicitly emotional through the use of first-person pronouns. The emotions expressed followed a trend from concern to disbelief back to concern. The initial wave of concern was associated with discussions about Harvey’s potential impact. For instance, Chita Craft noted that “this is going to be a really dire, critical situation” and expressed concern about the potential for heavy rain setting up over the same areas all night. Concern was also expressed through the comparison of Harvey to previous events, like Tropical Storm Allison and the Tax Day and Memorial Day Floods, noting that Harvey’s

rainfall totals could be above Allison and could lead to “a tremendous flood here in Houston.”

As the event ratcheted up into the overnight hours, the meteorologists transitioned from forecast concern to legitimate disbelief at what was occurring around them. They expressed disbelief in rainfall observations, forecasts, and even their own ability to make sense of the storm by observing that they couldn't remember a storm like Harvey in their entire meteorological career. Finally, the meteorologists transitioned back towards concern, while still expressing disbelief. This concern was different from the hypothetical concern expressed earlier because by this point in the broadcast (early morning hours on August 27), their concern was actualized. Some of this concern was evident in the increasingly dire advice they offered, such as Brooks Garner's remark that taking shelter in your attic would be like painting yourself into a “coffin corner.” Concern also became more community based. This is most clear in a dialogue between David Paul and Blake Matthews around 6:30 a.m., when they noted how concerned they were for “their city” and the “tough times” they would all be facing in the coming days and weeks.

## Chapter Five: Discussion

This study used thematic analysis to explore the rhetorical choices of broadcast meteorologists during Hurricane Harvey in order to help their viewers make sense of the storm. Live broadcasts from KHOU, Houston's CBS affiliate, were located on YouTube, transcribed, and analyzed in order to better understand how broadcast meteorologists make sense of an unprecedented natural disaster.

RQ1 (How did the KHOU broadcast meteorologists make sense of Hurricane Harvey's threat and impact through the use of figurative language?) found that the broadcast meteorologists relied on two overarching figurative frames to describe Harvey as a whole. The first was Harvey as a monster (specifically, a Lovecraftian horror), which depicted Harvey as a grabbing, pulling, reaching beast intent on feeding itself at the expense of Houston. The second was Harvey as a machine, which presented Harvey as a battery or a heat engine in an attempt to explain why the storm was "stalling out" and ceasing to move. The meteorologists also relied on several figurative ideas to frame specific elements of the storm. For instance, rain was described as "blinding" and "coming down in waves", tornadoes were described as like a "twirly-whirl" when you pull on an oar, Houston was described as being on the "dirty side of the storm", and the vertical structure of Harvey was described as like "a tall wedding cake."

RQ2a (How did the KHOU broadcast meteorologists use intense language to make sense of Hurricane Harvey's threat and impact?) found that the KHOU meteorologists appealed to concern and disbelief to make their language more emotionally intense. They appealed to concern by using adjectives like "serious", "life-threatening", "emergency", and "dire", and appealed to disbelief by using adjectives like

“amazing”, “incredible”, “tremendous”, and “unbelievable”. They also appealed to concern and disbelief by using first-person pronouns in order to make the threat more personal. Finally, they appealed to concern through comparisons with other threats and other historical flooding events. RQ2b (How did the use of intense language by the KHOU broadcast meteorologists change as the threat and impact posed by Hurricane Harvey evolved?) found that the use of intense language matched the intensity of Harvey’s impact. Emotional intense language also shifted from hypothetical forecast concern to disbelief at the fact that what was forecast was actually happening, to a more grounded concern for the people and communities affected by Harvey’s wrath. The following section provides further discussion of these findings.

### **Figurative frames are used to “other” the hazard**

The KHOU meteorologists used figurative language in a way that is consistent with other usages in risk communication. The primary function of figurative language during this coverage was to organize information about the storm into frameworks that could be more easily understood. The two primary frames – Harvey as Lovecraftian horror and Harvey as a machine – were referenced throughout the broadcast and were often called upon to explain some detail about the storm. As such, figurative language was clearly intended to be used as a sensemaking tool.

The metaphorical framing of Hurricane Harvey as a Lovecraftian horror is similar in nature to the framing of wildfires as monsters. Both frames depict natural phenomenon as threatening, destructive beings that are hungry for some form of fuel (Matlock et al., 2017). Using the “monster” frame emphasizes the erratic and uncontrollable nature of the natural phenomenon, and necessarily distances the phenomenon from the humans it

impacts. This framing of Harvey as the “other” can be dangerous in that it ignores the responsibility humanity has in creating and exacerbating disasters. While Harvey’s rains would have been devastating in almost any metro area, Houston was uniquely flood-prone given the aggressive growth of its sprawling cityscape, which wiped out naturally absorbent wetlands in the process (Bliss, 2017). Additionally, humans have contributed to anthropogenic climate change, which may have boosted rainfall accumulation during Harvey by a factor of 3.5 (Risser & Wehner, 2017). Thus, the use of the “monster” frame to describe Harvey is highly misleading by asserting that the storm’s impact was entirely out of the control of humans.

### **Figurative frames are flexible**

While the description of Harvey as a Lovecraftian horror is similar theoretically to the wildfire “monster” frame, there are several key differences. First, the Harvey monster includes more descriptions that involve use of the arms, such as grabbing, pulling, and tugging. The other major difference lies in the motivations of the beast. The wildfire monster is “depicted as [an] agentive being that willfully and purposefully travels across physical space” (Matlock et al., 2017, p. 6). Meanwhile, depictions of Harvey’s movement were much less motivated and more based on the whims of the atmosphere. These differences highlight the flexibility of figurative language in describing natural disasters.

The “Harvey as a machine” frame likewise indicates the ways that metaphors can be crafted to apply only to specific hazards. The description of Harvey as a heat engine relies on the internal mechanics of tropical cyclones, which rely on a steady stream of warm air into their central core. Tropical cyclones are the only weather phenomenon to

have “warm cores,” so it is unlikely that the heat engine metaphor could apply to any other meteorological hazard. The rowboat metaphor used to explain tornado generation may be even more specific, as it explains only how tornadoes are formed as part of tropical cyclones. Still, these highly specific metaphors indicate just how flexible figurative language is as an organizing and sensemaking concept.

### **Specific figurative language becomes more novel and extended over time**

While broad organizing figurative themes were consistent throughout the broadcast, some of the more niche metaphors and analogies, such as the lawnmower and rowboat analogies, only took place towards the middle to the end of the broadcast. This indicates that metaphors became more novel and more extended as the coverage wore on throughout the night. A possible explanation for this trend is simply due to the improvisational nature of continuous coverage. During normal coverage, meteorologists must present the forecast within an allocated time slot (Henson, 2010). However, continuous coverage gives meteorologists license to speak for extended periods of time. Long-winded metaphors may be an effective way to fill in the gaps and keep coverage flowing. This tactic, while likely unintentional, may have a beneficial persuasive effect. Sopory and Dillard (2002), in a meta-analysis of the persuasive effect of figurative language, noted that extended metaphors were more likely to change attitudes than nonextended metaphors and more novel metaphors were more effective than less novel metaphors.

### **Language became more intense and personal as the storm evolved**

The KHOU broadcast meteorologists used intense language primarily to describe Harvey’s impact, as there were few intense descriptions of the storm itself. This is

consistent with the NWS approach to impact-based warnings. For instance, impact-based tornado warnings statements like “You will be killed if not underground” (Perrault et al., 2014, p. 489) are conceptually similar to warnings from KHOU meteorologists that taking refuge in an attic is like “painting yourself into a coffin corner.” However, intense statements may backfire and decrease the credibility of the speaker without increasing behavioral intentions to take protective action (Perrault et al., 2014; Morss et al., 2016). More research is necessary to infer when intense language is acceptable and when it is not.

Where this study offers a unique contribution is in the description of how intense language changes throughout the course of the event. Intense language during early coverage was hypothetical by default, given the fact that the event had not occurred yet. However, even during this period, the meteorologists were consistent in describing the relatively high confidence that Houston would encounter a major flooding event. Chita Craft even described the forecast as “a 100% [chance] over the next four days . . . of some of these really heavy, flash flooding type downpours across the area.” The primary challenge during this period was to emphasize the severity of the future threat during a period when rain had lightened up and skies were even clearing in some spots. Craft repeatedly urged her viewers to “not let your guard down, even when you look out the window and you see a little bit of sun come up.”

As the storm intensified, the meteorologists’ language intensified as well. Language intensity was often ratcheted up by expressing emotions like concern and disbelief more candidly through the use of first-person pronouns. The expression of emotions like concern and disbelief via first-person pronouns can be interpreted from the

perspective of the meteorologists themselves. For instance, it's possible that sharing these personal emotions offered a way to cope with the dire situation unfolding around them. After all, the broadcast meteorologists were not only forecasting an event that they had never experienced before, but they were also watching their vehicles in the parking lots fill with water and eventually had to grapple with the reality of having to follow their own advice and seek higher ground. The competing demands of their personal health and safety with their role as broadcasters to continue delivering coverage may have contributed to some form of strain that was manifest in the language they used to describe the event. The inclusion of more personal emotions during the broadcast may simply be their way of adapting to changing expectations and adjusting to new roles.

#### **Figurative framing informs usage of intense language**

These results indicate some overlap between the figurative frames employed and the intense language used by the meteorologists to make sense of Harvey. For instance, the meteorologists frequently relied on terms like “blinding” rain, which describes the rain intensity figuratively. Additionally, the development of figurative frames depicting Harvey as a threatening monster bolster the intense adjectives used by the meteorologists. It would seem easier to believe that a situation is truly “dire” and “life-threatening” if one can picture an image of an out-of-control monster causing the damage.

#### **Sensemaking was evident in the rhetorical choices of the meteorologists**

The meteorologists frequently provided protective action advice to their viewers, often packaging this advice with intense language. For instance, Brooks Garner advised viewers to take an ax with them if they had to take shelter in the attic to avoid being caught in a “coffin corner.” The meteorologists also advised viewers to stay off the roads

and stay inside, and cautioned viewers to not let their guards down. These protective action statements indicate the enacted nature of sensemaking, for the meteorologists and for their viewers. By telling their viewers how to act during the event, the meteorologists were bringing “events and structures into existence and setting them in motion” (Weick, 1988, p. 306). For instance, a viewer may have decided to take action based on the advice that the meteorologists were providing. In most cases, this is beneficial for viewers who may not have known how to react. However, the enacted nature of crises can spawn additional crises if the meteorologists provide bad advice, as was the case for an Oklahoma broadcaster who advised viewers to get in their cars and flee a coming tornado. When people followed the advice, massive traffic jams ensued, which ended up putting additional lives in jeopardy (Mannette, 2013).

While the use of figurative language and intense language clearly indicate the efforts of the meteorologists to act as sensegivers, one can also see how the meteorologists personally made sense of Harvey through the language they used. For instance, appealing to concern by recalling previous flooding disasters may also reflect bracketing of information (Weick et al., 2005). It also highlights the retrospective nature of sensemaking. Mills et al. (2010) describe this property of sensemaking by noting that “in order to give meaning to the ‘present’ we compare it to a similar or familiar event from our past and rely on the past event to make sense” (p. 184). By comparing Harvey to previous flooding disasters like Tropical Storm Allison and the Tax Day and Memorial Day floods, they were setting expectations for how bad of a disaster to expect, based on their previous experience. The retrospective nature of sensemaking is often seen as a pitfall to rational thinking during crisis. For instance, the Mann Gulch firefighters

continued to rely on their preconceptions based on previous experience until it was too late (Weick, 1988). The KHOU meteorologists seemed to avoid this pitfall by noting in their comparisons that Harvey could exceed the flooding from previous events. They were able to recognize that Harvey was different from previous events because it would last for multiple days and even noted that the flooding could exceed Allison.

However, the meteorologists simply could not prepare for a storm of Harvey's magnitude, which brought them to a cosmology episode. Interestingly, their framing of Harvey as a Lovecraftian beast offered a perfect way to understand and rationalize the feelings of shock and awe that accompany a cosmology episode. While the concept of a Lovecraftian horror can simply refer to a sprawling physical beast, Lovecraftian horror (or cosmic horror) can also entail a more abstract concept that describes "that fear and awe we feel when confronted by phenomena beyond our comprehension, whose scope extends beyond the narrow field of human affairs and boasts of cosmic significance" (Ralickas, 2007, p. 364). Such a phenomenon is

almost definable by its indescribability. Its presence can be felt, but only the merest glimpses can ever be caught of its form. Its description and definition can be tentatively approached in various ways . . . but can never be completed or clarified. (Stableford, 2007, p. 71)

As such, cosmic horrors test the "limits of language to represent adequately both the awe-inspiring spectacle and the subject's experience of the violation of the limits of being" (Ralickas, 2007, p. 364).

One can see how the metaphorical framing of Harvey as Lovecraftian horror could extend beyond the physical realm and into the metaphysical domain of the cosmic

horror. As the storm tested the limits of the broadcasters' experience, they were suddenly plunged into a cosmology episode in which their meteorological expertise was challenged by an unknowable, indescribable beast. Their only recourse was to express their own "fear and awe" as they gaped at Harvey's cosmic significance. Comparisons to previous events offered some basis of knowledge, but Harvey even rendered those experiences obsolete.

The KHOU broadcasters were not alone in navigating this experience. In the midst of Harvey's most intense rainfall, the NWS posted a tweet that stated, "This event is unprecedented & all impacts are unknown & beyond anything experienced" (NWS, 2017). In essence, Harvey was so immense a phenomenon and it created a situation so far beyond the realm of previous experience that the meteorologists responsible for understanding its essence had no choice but to abdicate their responsibility. The result was an appeal to disbelief that, when placed in context, offered some of the most emotionally intense language of the entire broadcast.

## **Chapter Six: Conclusions**

These findings provide several implications, for theory on figurative language, intense language, and sensemaking/sensegiving, and for practitioners in meteorology specifically and risk communication generally. These implications are summarized below, followed by this study's limitations and potential next steps for research in this area.

### **Theoretical Implications**

These results point to the key role sensemaking and sensegiving play in the language broadcast meteorologists use during disasters like Hurricane Harvey. Their efforts to frame Harvey figuratively and their use of intense, emotional language to describe Harvey's impact seem to reflect not only the meteorologists' efforts to make sense of the situation for themselves, but also to provide interpretations for others to use to make sense of the storm. In other words, the broadcast meteorologists supplied "a workable interpretation" (Gioia & Chittipeddi, 1991, p. 443) to their viewers, in order to sway their viewers towards a "preferred interpretation" (Stieglitz et al., 2017, p. 1333) of Harvey's impact. It seems likely that they did so in order to heighten risk perceptions among their viewers in order to ensure that they take protective action. By providing a way for viewers to understand the storm in the same terms as the meteorological experts, the KHOU meteorologists may have been attempting to align their mental models with that of their viewers.

In applying the concept of sensegiving to a crisis situation like a natural disaster, this study demonstrates the linkages and similarities between the corporate-focused strategic change branch and the human-focused crisis and disaster branch of research on

sensemaking. I echo the comments of Maitlis and Sonenshen (2010), who argued that the integration of the change and crisis literatures should be a priority for scholars of sensemaking. This study also provides some exploration of the link between emotion and sensemaking through the inclusion of emotional intense language. These results cannot answer Weick et al.'s (2005) question as to “whether intraorganizational institutions are better portrayed as cold cognitive scripts built around rules or as hot emotional attitudes built around values” (p. 419). However, we can say that these “hot, emotional attitudes” are certainly present during disaster situations, and are reflected in the efforts of the broadcast meteorologists to make sense of the crisis (for themselves and others).

Finally, this study offers a contribution to the sensemaking and sensegiving literature by investigating the specific figurative and intense language types that facilitate sensemaking and sensegiving during disasters. Most literature on sensemaking focuses on action – for instance, the actions of the Mann Gulch firefighters (Weick, 1993). This study instead focused on the *rhetorical choices* made during sensemaking and sensegiving. While some research has explored this territory – for instance, Hill and Levenhagen's (1995) exploration of metaphors in sensemaking and sensegiving and Fiss and Zajac's (2006) study on framing in sensegiving – more work remains in order to explicate a) how sensemaking and sensegiving are articulated rhetorically, and b) what types of rhetorical functions are most effective for sensemaking and sensegiving. This study offers a first step towards understanding these questions by explicating the specific rhetorical choices of an expert group communicating to non-experts.

### **Practical Implications**

The results of this study have implications for broadcast meteorologists specifically, and risk communicators more generally. First, these results indicate the power of figurative language as a sensemaking tool for risk communicators to use as a way to help others make sense of a dangerous crisis. Specifically, the “Harvey as a monster” figurative frame may have been particularly effective as a motivator for protective action. Threats are judged to be riskier if they are unknown, unobservable, uncontrollable, and carry catastrophic potential (Slovic, 1987). The “monster” frame carries all of these descriptors.

Figurative language is also quite flexible in allowing risk communicators to tailor general figurative frames to specific hazards without losing the meaning of the overarching metaphor. Given the wealth of literature indicating the persuasive and informational role of figurative language (Sopory & Dillard, 2002; Hill & Levenhagen, 1995; Lu & Schuldt, 2018), it would be wise for risk communicators to continue to lean into figurative language as a tool for explaining complex hazard information.

The results concerning intense language are useful practically in that they show how the personal emotions of broadcast meteorologists are potentially powerful rhetorical tools that can be used to emphasize the threat and impact of a hazard. This study cannot answer whether these strategies were effective. However, it seems likely that describing an attic as a “coffin corner” and noting that the storm is beyond anything ever experienced would lead to some sort of emotional activation in viewers. Whether those types of emotion are beneficial for decision-making is up for debate.

For broadcast meteorologists specifically, this study emphasizes the multi-faceted role that they play during disasters. Not only are they providers of information and

sensegivers, but they also struggle to make sense of the crisis for themselves as they fight through cosmology episodes. In addition, they act as community leaders and resilience builders by connecting to their viewers emotionally. In this specific case, the meteorologists also had to be creative and resilient to find solutions when their studio began to flood and they were forced to evacuate. The KHOU meteorologists balance each of these roles, which is evident in the rhetorical choices they make. These versatile communicators cannot be underestimated for their important role within the weather enterprise, and they should serve as a model for other science communicators and sensegivers.

### **Limitations and Next Steps**

The primary limitation of this study is that it relies on a qualitative, case study approach. As such, the results are only descriptive and cannot provide causal or predictive claims regarding the effectiveness of these strategies. For instance, it is not clear whether the translational power of figurative language was fully utilized. As an example, Brooks Garner's translation from the complex inner workings of Hurricane Harvey's struggle to stay alive over land to the struggle to start a lawn mower when it's running out of gas may have been too labored to make sense. Additionally, it wouldn't have been useful for those who have no experience with lawnmowers, given the lack of a common base to draw from (Gentner, 1982; Lakoff & Johnson, 1980). Whether Garner and the other KHOU meteorologists were able to help viewers understand the meteorology of the storm with concepts that they were familiar with remains a question for future research to answer.

Additionally, future research could assess whether the use of intense language was effective in changing attitudes and behaviors, or whether it backfired and led to decreases in credibility. In particular, displays of emotion that relied on first-person pronouns deserve more study. For instance, were first-person expressions of concern effective in expressing Harvey's threat and impact in ways that changed attitudes and behaviors? Expressions of disbelief may have served as an even stronger indication of the storm's unique impact. If the meteorologists with 20 years of experience were indicating that this is an event that they've never seen before, then surely there was no doubt about Harvey's severity. Appeals to disbelief, especially when coming from trusted scientific authorities, represent an intriguing way to appeal to fear, and thus deserve more study. Future studies could compare the impact on attitudes of disbelief statements with appeals to other emotions, including fear, guilt, and even positive emotions like hope or happiness that may be evoked through humor.

Future research could also test the strategies identified in this study using experimental designs to understand how intense language like "dire" and "catastrophic" affects risk perceptions, or how figurative frames that present a hurricane as a monster impact whether an individual is likely to evacuate from a storm. By testing the rhetorical strategies identified here, a lexicon of rhetorical strategies in broadcast meteorology could be developed. Such a listing would provide meteorologists across the private-public divide with a toolkit of communication strategies that have proven to be successful at swaying attitudes and instructions on which strategies are suitable for specific contexts. This lexicon could ultimately lead to more consistent and effective communication across the weather enterprise.

Another limitation of this study is that it relies on a singular case, which provides unique insights but at the expense of representativeness. As such, future studies should use similar methodologies to examine the rhetorical strategies of coverage by different stations for different threats. Future studies could also use a multiple case study approach (Yin, 2018) in order to compare the rhetorical strategies of different stations for the same threat, or the same station for different threats. Research could even seek out other instances in which broadcasters faced challenges to safety while covering an event and analyze their language in a similar fashion to this study. For instance, coverage was recently released from a Panama City news station that continued broadcasting during Hurricane Michael in 2018, even as their roof was shaking and water was leaking into their studio (Cappucci, 2019).

This study is also limited given its focus on the communication strategies of the KHOU meteorologists as a whole. Future studies could compare the communication strategies of individual meteorologists instead. Individual factors like gender, level of experience, previous training, and personal communication style all play a role in how broadcast meteorologists make sense of information (Weick, 1995; Henson, 2010).

Another possibility for future research would involve interviews with the broadcast meteorologists. Such interviews could shed light on why the meteorologists chose to rely on certain figurative framings to make sense Harvey or why they felt it necessary to use more intense language to describe Harvey's impact. These interviews could also investigate how the meteorologists personally made sense of and coped with the storm. For instance, future research could investigate whether the meteorologists experienced "role strain", which describes situations in which "a person has a difficult

time negotiating the demands expected of him/her when fulfilling a role” (Trainor & Barsky, 2011, p. 10). Role strain traditionally focuses on the emergency responders who have multiple roles, such as parent, caregiver, or partner, in addition to their role as a public safety official. Role strain is consistently observed among emergency managers and emergency responders during disaster situations. Given broadcast meteorologists’ “links to public safety” (Henson, 2010, p. 2), it wouldn’t be surprising to find out that they too experience tension when trying to balance their expected roles in a disaster, especially during an extenuating circumstance like a studio evacuation.

In conclusion, this thesis contributes to the risk communication and sensegiving literatures by applying the concept of sensegiving to understand how broadcast meteorologists communicated during a disaster. This study found that sensemaking and sensegiving were apparent in the rhetorical choices of the meteorologists. Specifically, they utilized figurative framing and intense, emotional language in order to create an interpretation of the storm as dangerous and life-threatening that they attempted to articulate to their viewers. Future studies should assess whether these attempts at sensegiving through rhetorical choices are effective at changing risk perceptions and behaviors.

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### Academic Employment

University of Kentucky, College of Communication and Information, Lexington, KY  
2017-2018    Graduate Teaching Assistant, Department of Communication  
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### Academic Awards and Honors

2019    2<sup>nd</sup> Place, Oral Presentation – Societal Applications Symposium, 99<sup>th</sup> American Meteorological Society Annual Meeting

### Professional Publications

Sutton, J.N., Renshaw, S.L., Vos, S.C., Olson, M.K., **Prestley, R.**, Butts, C.T. (under review). Getting the word out, rain or shine: The impact of message features and hazard context on message passing online. *Weather, Climate, & Society*.

Sutton, J., Olson, M., **Prestley, R.**, Renshaw, S., Vos, S. C., & Butts, C. T. (under review). Build community before the storm: How the National Weather Service uses digital engagement and dialogic strategies on social media. *Journal of Contingencies & Crisis Management*.