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American Ebola Story: frames in U.S. National Newspapers

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ABSTRACT

The 2014 Ebola epidemic saw the first symptomatic and fatal cases of Ebola in the United States. Concurrently, news coverage in U.S. media about Ebola increased. Research has shown that media's framing of events influences public perception and understanding. To address framing of the Ebola epidemic in the U.S. media, researchers conducted a content analysis of newspaper articles reporting on the Ebola epidemic during the U.S. contact tracing period from September 30 to December 2, 2014 (n = 718). The top three circulating U.S. national newspapers were used in the analysis. The results show that the *human interest, conflict*, and *action* frames had the highest presence across newspaper articles, whereas the presence of *attribution of responsibility, morality*, and *economic* frames was lower. This study furthers knowledge of U.S. news media framing and coverage of new public health emergencies, and how newspapers may drive audience understanding and perception of the 2014 Ebola epidemic. This study also discusses implications of the findings and suggests directions for future research.

Introduction

Frames structure and shape audience understanding and perception of mediated topics, including topics in news media coverage (Scheufele, 1999, 2000). News coverage of disease is no exception. Ebola, alethal disease (Centers for Disease Control and Prevention [CDC], 2015a), will kill about half of those infected (World Health Organization [WHO], 2014). Despite its lethality, U.S. American news media coverage on Ebola was once scarce, as outbreaks were predominantly contained to nations in west and sub-Saharan Africa (CDC, 2014d). This would change as the 2014 Ebola epidemic saw the first symptomatic and fatal cases of Ebola in the United States (CDC, 2014b), which resulted in more coverage of the outbreak in U.S. news media.

Newspapers were one U.S. news media sources that reported on the outbreak. In the United States, newspapers still attract a sizable portion of the U.S. news media audience (Caumont, 2013). Immediately before the 2014 Ebola epidemic, it was estimated that more than one fourth of U.S. adults relied on newspapers as their main source of national and international news (Caumont, 2013). Digital media sources have gained larger audiences, and print newspaper content is also published to digital media platforms (Yu, 2014) and is often the source of news posted to social media (Ju, Jeong, & Chyi, 2014). From studying U.S. newspapers' framing of the 2014 Ebola epidemic, researchers can begin to explore how audiences might understand and perceive the outbreak, as well as the implications of those understandings and perceptions.

Several researchers have analyzed frames in U.S. newspapers as related to infectious disease outbreaks, such as HIV/AIDS (e.g., Kim, Kumanyika, Shive, Igweatu, & Kim, 2010; Laucella, 2009) and swine flu (HIN1; e.g. Chang, 2010; Oh et al., 2012). These studies also discussed the implications

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and cultural impacts regarding the framing of infectious disease outbreaks. Few studies have analyzed U.S. news media coverage of the 2014 Ebola epidemic. Basch and Basch (2014) analyzed 1 month of coverage about the topics and provided implications for preparedness and prevention but did not specifically discuss the nature of framing, audience perception, and understanding. The presence of symptomatic and lethal Ebola cases in the United States and the increased presence of Ebola as a topic in U.S. news media necessitate additional study of news media frames and warrant analysis of news coverage for the duration that Ebola was declared a health emergency. This study thus (a) analyzes how circulation-leading U.S. national newspapers (*New York Times, USA Today*, and *Wall Street Journal*) framed the 2014 Ebola epidemic during the U.S. contact tracing period (CDC, 2014c) and (b) discusses the implications of those frames for audience understanding and perception.

Review of literature

Ebola: A brief summary and chronology

Ebola (formerly known as Ebola hemorrhagic fever; also known as Ebola virus disease) is a viral disease that is the result of infection from one of the five known Ebola virus subtypes: Ebola virus (*Zaire ebolavirus*), Sudan virus (*Sudan ebolavirus*), Reston virus (*Reston ebolavirus*), Taï Forest virus (*Taï Forest ebolavirus*), and Bundibugyo virus (*Bundibugyo ebolavirus*; CDC, 2015a). According to the WHO (2014), the case fatality among those infected and sickened by the virus generally ranges between 25% and 90%, with a mean average of approximately 50%. One particular exception, Reston virus, is the only known strain that has not caused sickness in human populations (WHO, 2014).

1970s: The first Ebola strains are identified

Ebola (named after the Ebola River) was discovered in 1976 in Zaire (currently the Democratic Republic of Congo), following two nearby outbreaks (WHO, 1978b). During the 1976 Zaire epidemic, the *Zaire ebolavirus* strain spread mainly through contaminated needles in health-care facilities. People having close contact with infected individuals escalated the spread of the virus. Of the reported 318 cases, 280 people (88.05% of infected individuals) died. That same year, a different viral strain—the *Sudan ebolavirus* strain—was discovered and infected many medical personnel in parts of modern-day Sudan and South Sudan (WHO, 1978a). This outbreak claimed 151 (53.17%) lives of the 284 reportedly infected. The *Sudan ebolavirus* also infected and sickened a laboratory worker in England (via an accidental contaminated needle prick), who later recovered (Emond, Evans, Bowen, & Lloyd, 1977). The *Zaire ebolavirus* and *Sudan ebolavirus* strains caused additional outbreaks during the late 1970s with no additional cases reported outside of the African continent during that decade (CDC, 2014d).

1980s and 1990s

Reston ebolavirus was introduced to the United States in 1989 via monkeys imported from the Philippines (CDC, 2014d). Between 1989 and 1990, there were four reported U.S. residents and three Philippine animal care workers who had developed antibodies to the *Reston ebolavirus* strain but remained asymptomatic.

In 1994, *Taï Forest ebolavirus* was discovered after a patient was treated in Switzerland for Ebola (CDC, 2014d). The patient, a scientist, fell ill after conducting an autopsy on a wild chimpanzee in the Taï Forest of Côte d'Ivoire (also known as the Ivory Coast) but would later recover. Throughout the rest of the 1990s, outbreaks of the *Zaire ebolavirus* (Gabon: 1994 [60.00% mortality rate], 1996 [57.00% mortality rate], 1996–1997 [74.00% mortality rate]; Democratic Republic of the Congo: 1995 [81.00% mortality rate]; and South Africa: 1996 [50.00% mortality rate]) would continue to affect the African continent and would reach Eurasia (Russia: 1996 [laboratory contamination, one case, 100% mortality rate]).

2000–2013

A fifth strain of Ebola—the *Bundibugyo ebolavirus*—was discovered as the result of an outbreak that occurred in the Bundibugyo District of Uganda (CDC, 2014d). Of the 149 reported cases, 37 people died (24.83%). Another outbreak in 2012 (Democratic Republic of Congo) claimed 13 lives of the 36 laboratory confirmed cases (36.11%).

In addition to *Bundibugyo ebolavirus*, the *Sudan ebolavirus* along with *Zaire ebolavirus* were responsible for additional outbreaks across the various nations (Uganda, Sudan, South Sudan, Gabon, Republic of Congo, Democratic Republic of Congo, and Russia), with mortality rates ranging in individual countries from approximately 36% to 100% (CDC, 2014d).

The 2014 Ebola epidemic

Infection from the *Zaire ebolavirus* strain led to the 2014 Ebola epidemic outbreak. At the time of this study, the 2014 Ebola epidemic was the most widespread Ebola outbreak known (CDC, 2014d). Human infection was reported on three continents: Africa (Guinea, Liberia, Sierra Leone, Mali, Nigeria, and Senegal), Europe (Spain, Italy, and the United Kingdom), and North America (United States; CDC, 2014b). Between March 2014 and March 2016, more than 28,000 suspected, probable, and confirmed cases, along with more than 11,300 deaths were reported worldwide (CDC, 2014d).

The 2014 Ebola epidemic in the United States of America

During the 2014 Ebola epidemic, there were 11 reported cases of Ebola in the United States (Wilson, 2014). The 11 cases included seven people who were evacuated to the United States from other countries (Wilson, 2014), along with four others who were diagnosed in the United States (CDC, 2014a). Of the 11 cases, there were two deaths (Fantz, 2014).

Despite the low number of Ebola infections and deaths in the United States, the 2014 Ebola epidemic was the first in which people in the United States were infected and died. Because it was a public health emergency at home as well as abroad, U.S. news media increased its coverage on the disease outbreak. The new relevance of Ebola to the U.S. population and news media also created a heuristic opportunity to study how U.S. national newspapers framed this domestic health threat from the beginning of its direct relevance to the nation.

Framing research and news media

Since framing theory's formalization in the 1970s (Goffman, 1974), this theoretical framework has been used to identify and conceptualize dimensions of a wide variety of topics addressed by the media. Examples include identifying and analyzing messages of social movements (Benford & Snow, 2000), news media (Pan & Kosicki, 1993), politics (Iyengar, 1991; Jebril, Vreese, Dalen, & Albæk, 2013; Scheufele, 2000; Semetko & Valkenburg, 2000; Valkenburg, Semetko, & De Vreese, 1999), and U.S. media coverage of international crises (Entman, 1991; Iyengar & Simon, 1993).

Specific to journalism, Scheufele and Tewksbury (2007) stated that framing "is based on the assumption that how an issue is characterized in news reports can have an influence on how it is understood by audiences" (p. 57). Previous research suggests the existence of a predictable relationship between the construction of news frames and audience focus along with the attitudes expressed toward a topic (Price, Tewksbury, & Powers, 1997). This is likely enhanced by the credibility attributed to journalists and their sources. With the journalists' credibility bolstered via the support of reliable sources, the audiences perceive news media messages as reliable (Durham, 2007; Kang, Gearhart, & Bae, 2010). In addition to trusting news media coverage, audiences may use it as a heuristic tool to better understand issues (Scheufele & Lewenstein, 2005). As a result, frames present in news media coverage likely influence how an audience feels about topics (Scheufele, 1999, 2000).

Although framing theory has traditionally been applied to the analysis of the aforementioned topics, its use in the analysis of mediated health issues has gained momentum. Past studies include research of media frames in U.S. news media coverage of epidemic diseases. One prominent example

is the 2009 H1N1 outbreak. Research has identified and analyzed frames in H1N1-related content present on digital media platforms such as Twitter (Chew & Eysenbach, 2010), Google News (Wang, Smith, & Worawongs, 2010), and television (Fogarty et al., 2011), as well as in newspapers (Chang, 2010; Oh et al., 2012). So far, only a small amount of research has analyzed U.S. news media coverage of Ebola (e.g., Basch & Basch, 2014), suggesting the opportunity and need for more research to be done, specifically regarding frames.

Although there are a variety of media frames, several frames appear more in news media. Semetko and Valkenburg (2000) stated in their analysis of frames in European politics that the *attribution of responsibility, human interest, conflict, economic consequences*, and *morality* "frames largely account for all the frames that have been found in the news" (p. 95), particularly in U.S. and European news media. The attribution of responsibility frame "presents an issue or problem in such a way as to attribute responsibility for its cause or solution to either the government or to an individual or group" (p. 96). The human interest frame "brings a human face or an emotional angle to the presentation of an event, issue, or problem" (p. 95). The conflict frame "emphasizes conflict between individuals, groups, or institutions as a means of capturing audience interest" (p. 95). The economic frame "reports an event, problem, or issue in terms of the consequences it will have economically on an individual, group, institutions, region, or country" (p. 96). Last, the morality frame "puts the event, problem, or issue in the context of religious tenets or moral prescriptions" (p. 96). The ubiquity of these frames makes them useful to scholars for conducting research on their presence and structure related to a range of phenomena, including the 2014 Ebola epidemic.

Frames applied to U.S. news media and the 2014 Ebola epidemic

In addition to the Semetko and Valkenburg (2000) frames, this study also considered the importance of an action frame. Although the applied attribution of responsibility frame addresses whom or what is responsible for various aspects of the 2014 Ebola epidemic through the lens of U.S. news media, the frame does not address if any entity worked to do something about the outbreak. Ebola's lethality, the increased media attention, and public concern surrounding the disease prompted the researchers to examine if U.S. newspapers covered if any entities, domestic or abroad, were addressing the outbreak. In their study comparing U.S. and Korean news media coverage of H1N1, Oh et al. (2012) added an action frame, defined as media "aims to inform the public about practical information on how to prevent, diagnose, or cure H1N1" (p. 222). As a result, the researchers decided to adapt and include an *action frame* as part of their analysis.

The 2014 Ebola epidemic affected the United States with Ebola-related illness and death for the first time in known history, which also generated intense and widespread media coverage. For this investigation, the researchers posed the following question:

RQ1: How did the top three circulation-leading U.S. national newspapers frame the 2014 Ebola epidemic during the U.S. Ebola contact tracing period?

This question was answered by conducting a quantitative content analysis of a sample of articles published in the top three circulation-leading U.S. national newspapers. Content analyses provide descriptions of domains of content in the media (Slater, 2013), a method useful for this analysis, as U.S. news media coverage of Ebola is a scarcely studied topic. This method can also inform future research. Slater (2013) advised that content analysis should be used as the foundation for "identifying messages to be examined in experiments and survey research," and can lead to "both substantive insight and theory building" (p. 91). This study represents an opportunity to launch future research on the 2014 Ebola epidemic in U.S. news media.

Method

Sampling

A sample of articles published in the top three circulating U.S. national newspapers—the *New York Times, USA Today*, and the *Wall Street Journal*—was chosen for analysis because of audience reach and spread. Newspapers published in the United States were of particular interest and focus for this study because, for the first time, symptomatic, fatal Ebola cases occurred in the United States. This study was therefore also an analysis of the reporting of a new domestic phenomenon. Concerning the newspapers selected for collecting the sample, the *New York Times, USA Today*, and the *Wall Street Journal* reported the highest average circulation, subscribers in all 50 United States, and all have an international audience (2015b; Alliance for Audited Media, 2015a, 2015c). In the first quarter of 2015 (the first quarter following the end of the U.S. Ebola contact tracing period), the *New York Times* reported an average Sunday circulation of 2,624,277 and Monday-to-Friday circulation of 2,313,675 (Alliance for Audited Media, 2015a). In the same quarter, *USA Today* reported an average print and digital readership of 6,719,000; an average Sunday circulation of 3,914,172; and Monday-to-Friday average circulation of 4,101,796 (Alliance for Audited Media, 2015b). The *Wall Street Journal* in the same quarter reported an average weekend circulation of 1,352,065 and an average Monday-to-Friday circulation of 1,348,051 (Alliance for Audited Media, 2015c). The circulation and distribution of these U.S. national newspapers across the nation allowed for Ebola-related news media coverage and frames in these publications' articles to reach and influence the perceptions of a large and widespread audience.

To provide context to the content analysis, this study focuses on newspaper articles published in the top three circulating national newspapers during the U.S. contact tracing period (CDC, 2014c). In the context of Ebola, the CDC (2015b) defined contact tracing as the process of locating people who came into contact with sick Ebola patients, monitoring them for 21 days from last contact, testing for the disease, and providing necessary care. The U.S. contact tracing period resulting from the 2014 Ebola epidemic began on September 30, 2014 upon CDC confirmation of the first laboratory-confirmed case of Ebola in the United States, and expired on December 2, 2014 when the 21-day observation period concluded for the last known U.S. residents who had contact with a sickened Ebola patient (CDC, 2014c).

Using the keyword "Ebola," searches for newspaper articles were conducted using the LexisNexis Academic (for newspaper articles in the *New York Times* and *USA Today*) and Factiva databases (for newspaper articles in the *Wall Street Journal*). The search was limited to articles published during the U.S. Ebola contact tracing period (September 30–December 2, 2014). These searches produced a total population of 756 newspaper articles.

Several newspaper articles were excluded from the analysis ($n = 38$). As the researchers wanted to analyze news coverage of 2014 Ebola epidemic in U.S. national newspaper articles, advertisements, and obituaries were omitted from the analysis. In the case of duplicate articles, the most recent version of the article was retained for analysis. The remaining sample of 718 newspaper articles was used for analysis.

Coding scheme

After compiling the sample, the researchers conducted a quantitative content analysis. The content analysis involved coding the sample of newspaper articles for demographic characteristics and the presence or absence of news coverage characteristics. Demographics included the source of the article (*New York Times, USA Today*, or *Wall Street Journal*), and the date of publication. News coverage characteristics included 25 coding categories related to the frames attribution of responsibility (e.g., Does the article suggest that a level of U.S. government has the ability to alleviate the 2014 Ebola epidemic?), human interest (e.g., Does the article go into the private or personal lives of the actors affected by the 2014 Ebola epidemic?), conflict (e.g., Does one party, individual, group, or

country, reproach another in relation to the 2014 Ebola epidemic?), morality (e.g., Does the article contain any moral, religious, ethical, or culturally traditional messages with regard to the 2014 Ebola epidemic?), economic (e.g., Is there a mention of current domestic financial losses or gains as a result of the 2014 Ebola epidemic?), and action (e.g., Does the article suggest that action was, is, or will be taken by a U.S. entity to address the 2014 Ebola epidemic?) (See Table 1 for a complete list of frames and coding categories.)

Coding procedure

Individual newspaper articles were the unit of analysis for this study. Two researchers served as the coders, each coding half of the sample of articles, and were both trained to establish intercoder reliability. Before coding the entire sample for analysis, a subsample of about 20% of the articles (n = 144) were randomly selected for the researchers to code independently.

Reliability was calculated using the ReCal2 statistical program (Freelon, 2010), and the average Krippendorf's alpha for all coefficients was 0.78, determined to be an acceptable level of reliability (Hayes & Krippendorf, 2007). The researchers referred to Krippendorf (2004) and determined a coding category to be reliable if the alpha was equal or greater than 0.67. Fourteen of the 15 coding categories had alphas greater than 0.67 (see Table 1 for a complete list of calculated alphas).

Table 1. Frames and coding categories, Krippendorf's alphas, and presence scores.

	α	Presence Score
ATTRIBUTION OF RESPONSIBILITY (AR)	—	0.07
AR1. A level of U.S. government can alleviate the outbreak.	0.70	0.12
AR2. A level of non-U.S. government can alleviate outbreak.	0.85	0.06
AR3. A level of U.S. government cannot alleviate outbreak.	0.76	0.02
AR4. A level of non-U.S. government cannot alleviate outbreak.	0.74	0.05
AR5. Individual/group responsible for spread of Ebola or putting people at risk of infection in the United States.	0.69	0.16
AR6. Individual/group responsible for spread of Ebola or putting people at risk of infection outside the United States.	0.76	0.05
HUMAN INTEREST (H)	—	0.33
H1. Human experience—directly affected by outbreak.	0.87	0.32
H2. Personal vignettes eliciting of emotions.	0.73	0.34
H3. Discussion of how individual or groups are affected by outbreak.	0.72	0.42
H4. Personal/private details about people affected by outbreak.	0.91	0.23
CONFLICT (CF)	—	0.30
CF1. Disagreements between individuals or entities.	0.72	0.29
CF2. One individual or group reproaches another.	0.78	0.31
MORALITY (M)	—	0.09[a] (0.07)
M1. Morality messages are mentioned in relation to outbreak.	0.92	0.13
M2. Morality tenets are mentioned in relation to outbreak.	0.86	0.08
M3. Encouragement to follow morals.	0.79	0.04
M4. Encouragement to challenge or not follow morals.	0.66[b]	0.02
ECONOMIC (E)	—	0.05
E1. U.S financial gains or losses.	0.72	0.09
E2. Non-U.S. financial gains or losses.	0.82	0.04
E3. Degree of U.S. financial gains or losses.	0.79	0.07
E4. Degree of non-U.S. financial gains or losses.	0.72	0.04
E5. U.S. economic consequences for addressing or not addressing outbreak.	0.69[b]	0.03
E6. Non-U.S. economic consequences for addressing or not addressing outbreak	0.74	0.02
ACTION (AC)	—	0.31
AC1. U.S. entity has/is/will take action to address outbreak.	0.84	0.50
AC2. Non-U.S. entity has/is/will take action to address outbreak.	0.87	0.22
AC3. International collaboration to address outbreak.	0.84	0.19

[a]Frame presence scores adjusted by omission of coding categories with reliability, $\alpha < 0.67$. [b]Krippendorf's α below set reliability, $\alpha \geq 0.67$.

Data analysis

Frequencies were calculated for each coding category in the analysis. The researchers used these frequencies to calculate presence scores of each coding category and frame. Coding category presence scores represent the mean average of presence for each coding category recorded in the sample of articles for analysis. Frame presence scores represent the mean average of the coding category presence scores when categories are grouped by frame. Higher presence scores mean a greater average presence in the newspaper articles. Presence scores for frames with coding categories that had alphas below 0.67 were adjusted, omitting those coding categories. The data collected in the content analysis were analyzed using the Statistical Package for the Social Sciences version 24.

Findings

There were 718 U.S. national newspaper articles used for this study's content analysis. Of the sample, 481 (67.00%) articles were published in the *New York Times*, 145 (20.19%) were published in *USA Today*, and the remaining 92 (12.81%) were published in the *Wall Street Journal*.

The *attribution of responsibility* frame had a frame presence score of 0.07. There were six coding categories related to this frame. Coding category presence scores ranged from 0.05 to 0.16. The coding category analyzing the presence of discussion about whether individuals were responsible for spreading Ebola in the United States was the most prominent category (0.16). The *human interest* frame had a frame presence score of 0.33. This frame comprised four coding categories, with their presence scores ranging 0.23–0.42. The most present category highlighted if the newspaper article emphasized how individuals and groups are affected by the 2014 Ebola epidemic.

The presence score for the *conflict* frame was 0.30. Two coding categories were used in this frame, analyzing if there were mentions of disagreements and reproach. The disagreements coding category had a presence score of 0.29, and the reproach coding category had the higher presence score of 0.31. The morality frame had an adjusted presence score of 0.07. This frame had four coding categories, and the three with acceptable alphas had presence scores ranging from 0.02 to 0.13. The most present coding category was the mention of morality with regard to the 2014 Ebola epidemic.

The *economic* frame had a presence score of 0.05. Coding categories pertinent to this frame had presence scores ranging from 0.02 to 0.09. The most present coding category referred to mentions of current domestic financial gains or losses as a result of the 2014 Ebola epidemic. The final frame analyzed—the *action* frame—had a presence score of 0.31. The three coding categories for this frame had presence scores ranging from 0.19 to 0.50. The coding category for mention of U.S. action addressing the 2014 Ebola epidemic was the most prominent, being present in half of the sample of analyzed newspaper articles (see Table 1 for a complete list of frame and coding category presence scores).

Discussion and implications

Of the adapted Semetkto and Valkenburg (2000) frames applied to this study, the human interest frame (0.33) and conflict frame (0.30) had the highest presence scores in this analysis. News stories that frame topics as a matter of human interest, focusing on the emotional angle of a story, may encourage empathy and make a story more interesting to audiences but may also limit the ability of audiences to recall information present in news stories (Valkenburg et al., 1999). However, Jebril et al. (2013) found that stories framed as ones of human interest, as well as matters of conflict, encourage learning from news media. Thus, although people who rely on these newspaper articles or news sourced from these articles may have a harder time remembering specific details about the epidemic, they are also likely to be motivated to learn more about the outbreak, providing opportunities for increased awareness, education, and action.

The action frame, adapted from Oh et al. (2012), also had a relatively high presence score (0.31). Half of the newspaper articles in the study mentioned U.S. action addressing the Ebola outbreak. The high presence of the action frame in U.S. media aligns with findings in Oh et al., but the researchers made a few observations. The researchers agreed with Oh et al. that the higher presence score of the action frame may be a function of the U.S. American cultural belief that problems can be solved by deliberate action. However, the researchers disagreed that comparatively high death rates are the primary driving factor for the action frame. Oh et al. stated that (concerning H1N1) "given the higher death rate in the US compared to Korea, the relative prevalence of the action frame in US newspapers may reflect a situational need for practical information that individuals themselves could take to avoid catching the flu" (p. 228). However, in the case of the 2014 Ebola epidemic, infections and fatal cases in the United States were relatively low compared to other impacted nations (CDC, 2014a). Instead, the researchers of this study suggest that the lack of familiarity and experience with Ebola, along with this being a public health emergency, may have also driven the need for U.S. media to report practical information about what has been and can be done to avoid Ebola. It was also a current topic of high interest to the audience, thus driving and prompting coverage by news outlets.

The attribution of responsibility (0.08, adjusted), morality (0.06), and the economic frames (0.05), and their associated coding categories, had among the lowest presence scores in this analysis. Regarding attribution of responsibility, Semetko and Valkenburg (2000) found that this frame was "especially more evident in the serious news outlets in the press" (p. 106). Although U.S. national newspapers are serious news media outlets, an explanation for the lack of this frame's presence, along with the morality frame, are perhaps the result of news media exercising discretion in assigning responsibility for the cause and effects of the outbreak in the United States, especially as events were unfolding. Such discretion would likely be due to the relationship between infectious disease and stigma (Laucella, 2009). Also, the low presence scores related to the economic frame may also be the result of the unknown direct effects of the 2014 Ebola epidemic on the economy, especially in the United States, which can be better assessed in the future.

Limitations and future research

This study represents a part of the understanding of the way that U.S. news media framed the 2014 Ebola epidemic. As this study focused on U.S. newspaper articles published in top-circulating national newspapers with a wide audience, there is room to also analyze Ebola-related news stories published in state and regional newspapers. Future research to analyze articles in state and regional newspapers may show differences and similarities in frame presence by geographical region. This may especially be useful given that Ebola infection cases and fatalities occurred in only a few states. Coverage in those areas and the way news media influence understanding could be different in those media markets.

Future research would also do well to analyze the way that sources of news media that are growing in popularity (i.e., social media) framed the 2014 Ebola epidemic. Similarities and differences in frame presence could provide insight into whether different platforms provided a shared or dissimilar understanding and perception of this event, especially given that there is an ample variety of news media sources (Caumont, 2013).

Concerning tests for reliability, 14 of the 15 coding categories had Krippendorf's alpha levels above 0.67. The one coding category that did not reach this level, testing for whether the article mentioned a challenge to morality (morality frame), had an alpha of 0.66. The researchers of this study felt that this should not automatically deem this category invalid (as percentage agreement was about 99%, only two disagreements). As this is on the border of alpha-level acceptability and the presence of this category was very rare, we encourage future research to test the reliability and presence of this variable regarding other issues.

As Slater (2013) argued that content analyses can inform about topic domains and serve as the foundation for future research (e.g., surveys and experiments), the researchers of this study find that

this content analysis is similarly useful for directing future research. Specific to the 2014 Ebola epidemic, future studies might analyze how coverage in U.S. national newspapers changed over time before, during, and after the U.S. contact tracing period.

This study found high usage of the human interest frame, which may have effects on audience recall. Future research should investigate how audiences recall the 2014 epidemic. The findings from such studies can inform scholars how Ebola is perceived by the public, if there are any implications for society, and how this may influence newspaper coverage and audience perception of future disease outbreaks. The researchers also found the presence of the action frame to be heuristic, calling to question how infectious diseases are framed in their infancy (be it in terms discovery or presence to a new region). Such an investigation would be useful to see if coverage of disease has changed over time or if there is a relationship between the type of disease and the type of coverage it receives. Regarding the attribution of responsibility, morality, and economic frames, it is currently unclear whether their lack of presence was a function of the event still unfolding. Future analysis of coverage post-U.S. contact tracing period may assess if there was a significant change in frame usage, analysis which also can be applied to the other frames.

Additional next steps for research might also include surveys to assess the perceptions of the 2014 Ebola epidemic and experiments to test the influences of message frames on audience attitudes and behaviors—this study being a means to inform such investigations. Moving beyond the scope of this particular outbreak, the findings in this study can be compared to findings in studies analyzing the news media framing of other infectious diseases (e.g., H1N1). Findings from such research can inform theoretical approaches such as framing theory, or even models that predict health behaviors (e.g., the health belief model; Rosenstock, 1974).

Conclusion

The 2014 Ebola epidemic was a terrible event that brought new challenges to the United States. Ebola infected, sickened, and claimed the lives of thousands of people worldwide. Whereas other nations have tackled and reported on this disease for several decades, in 2014 the United States partook heavily in the conversation, framing the issue in news media with new domestic perspective. This study contributes to the bodies of framing and news media research, informing how media sources help audiences understand and perceive the events that took place surrounding this tragedy that took the lives of two people in the United States and more than 11,000 individuals worldwide.

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