

UNDER THE MEDIA MICROSCOPE:
AGENDA SETTING, FRAMING, AND AGENDA BUILDING
IN THE 2014 EBOLA OUTBREAK

by

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This study expands our understanding of effective risk communication in the digital age as it explores the links between the agenda-building efforts of the World Health Organization and the Centers for Disease Control and Prevention through Twitter and concurrent news media coverage in Ghana and the United States during the peak of the 2014 Ebola outbreak. It combines a quantitative content analysis (coding) and qualitative content analysis (framing) to find connections, differences, and insights from and across each entity involved. Findings confirm existing literature that tweets play a role in first- and second-level agenda building but also reveal that this effect is not uniform across all types of tweets. In addition, the WHO and CDC exerted partial influence over the media agenda and the subsequent framing of the outbreak.

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Chapter 1: Introduction

On March 23, 2014, the World Health Organization declared an Ebola outbreak in the West African country of Guinea.¹ In a matter of thirteen months, the outbreak had grown to affect nine countries and claim the lives of more than 10,000 people, rendering it “the most severe acute public health emergency seen in modern times.”² International health authorities and journalists collaborated in response to the situation to deliver pertinent information—through traditional and social media—to control the outbreak. Ebola's reach in news coverage was viral; the volume of headlines and new stories centering on the epidemic eclipsed the spread of the disease itself. Between May 1, 2014, and October 15, 2014, 255.68 billion articles and a total of 1.5 million references to the Ebola virus were published digitally in 190 countries.³

The rise of social media as an information source prompted international health organizations to engage with the public and journalists through the emerging platform. Twitter served as a particularly important channel of communication for both the World Health Organization and the Centers for Disease Control and Prevention. The WHO and CDC manage individual Twitter accounts through which they share insights, media materials, and answers with the public. Popular hashtags during the peak of the

¹ "Ebola Virus Disease." WHO. N.p., n.d. Web. 11 Feb. 2015. <<http://www.who.int/mediacentre/factsheets/fs103/en/>>.

² Horowitz, Evan. "How the Ebola Outbreak Spun out of Control." The Boston Globe. N.p., 08 Oct. 2014. Web. <<http://www.bostonglobe.com/news/world/2014/10/08/how-this-ebola-outbreak-spun-out-control/b3Fea5111oRs4c0gjN36EM/story.html>>.

³ Ebola Coverage: "Panic Is Spreading Faster than the Virus Itself." Cision RSS2. Cision Portugal, 21 Oct. 2014. Web. <<http://www.cision.com/uk/blog/ebola-coverage-panic-is-spreading-faster-than-the-virus-itself/>>.

outbreak included #Ebola, #StopEbola. and #ebolaoutbreak, allowing the public to track these conversations and situation updates.⁴

This study explores the *agenda-building* and *framing* efforts of the World Health Organization and Centers for Disease Control and Prevention as well as the *agenda-setting* and *framing* efforts of the American news publication, *The New York Times*, and the Ghanaian news publication, *Daily Graphic*, to examine how and what the WHO and CDC communicated during the peak of the outbreak and how news media used this information.

Ebola Virus Disease

Before delving into what made this disease outbreak different from previous ones, it is important to understand the disease itself. Ebola virus disease, once known as Ebola hemorrhagic fever, is a rare and acute disease caused by an infection by one of the Ebola virus strains. Wild animals such as fruit bats, primates, and antelope generally transmit it to humans, and from there human-to-human transmission of the virus occurs via contact with blood, contaminated body fluids, and skin. Once infected, symptoms include the sudden onset of fever, fatigue, muscle pain, headache, and sore throat, which then often progress to vomiting, diarrhea, rash, impaired kidney and liver function, and, in some cases, both internal and external bleeding. The disease can be fatal if left untreated, with an average mortality rate around 50%, though in past outbreaks this figure has ranged from 20%-90%.⁵ However, even if a patient is

⁴ "Social Media's Role in Ebola Outbreak - BBC News." *BBC News*. BBC, 14 Oct. 2014. Web. <<http://www.bbc.com/news/world-africa-29613494>>.

⁵ "Ebola Virus Disease." *WHO*. N.p., n.d. Web. 11 Feb. 2015. <<http://www.who.int/mediacentre/factsheets/fs103/en/>>.

undergoing treatment, there is no official vaccine for Ebola, making the disease particularly difficult to control. This proved especially true during the 2014 outbreak.

The 2014 Ebola outbreak is not the first of its kind. In 1976, the world first discovered Ebola when it emerged in two unconnected but simultaneous outbreaks in Nzara, Sudan, and in Yambuku, Democratic Republic of Congo.⁶ Since 2000, several outbreaks have occurred, all based on the African continent: the 2000-2001 outbreak in Uganda, the 2002 outbreak in Gabon and the Republic of Congo, the 2003 outbreak in the Republic of Congo, the 2004 outbreak in South Sudan, and the unrelated 2007 outbreaks in the Democratic Republic of Congo and Uganda.⁷ Many of these outbreaks were quickly contained and rarely crossed the border of their country of origin.

Before the current Ebola outbreak became the largest and longest of its kind in history, the world community only knew of the disease by past outbreaks that had affected mostly rural villages in Central Africa. However, the current Ebola outbreak death count is larger than all other known Ebola outbreaks combined.⁸ According to CDC estimates, approximately 23,825 cases are categorized as suspected, probable, and confirmed. Of those cases, 14,263 are laboratory confirmed as Ebola, and the total number of casualties is 9,675.⁹ These numbers may increase because the outbreak is active and ongoing.

⁶ "Ebola Virus Disease." *WHO*. N.p., n.d. Web. 11 Feb. 2015. <<http://www.who.int/mediacentre/factsheets/fs103/en/>>.

⁷ "Ebola Outbreaks 2000-2014." *Centers for Disease Control and Prevention*. Centers for Disease Control and Prevention, 26 Feb. 2015. Web. 27 Feb. 2015. <<http://www.cdc.gov/vhf/ebola/outbreaks/history/summaries.html>>.

⁸ "'Ebola: Mapping the Outbreak.'" *BBC News*. N.p., 26 Feb. 2015. Web. 24 Feb. 2015. <<http://www.bbc.com/news/world-africa-28755033>>.

⁹ "About Ebola Virus Disease." *Centers for Disease Control and Prevention*. Centers for Disease Control and Prevention, 08 Dec. 2014. Web. 11 Feb. 2015. <<http://www.cdc.gov/vhf/ebola/about.html>>.

Many international health authorities responded because of the situation's severity. The World Health Organization, an international health organization devoted to "the attainment by all people of the highest possible level of health,"¹⁰ maintained surveillance for Ebola and supported at-risk countries by arranging preparedness plans during the outbreak. Diplomats began planning the agency during the formation of the United Nations in 1945 after discussing the creation of a global health organization. Created from that vision on April 7, 1948, the Geneva, Switzerland-based WHO has served countries worldwide in a range of health-related missions ever since. Today, WHO defines itself as "the directing and coordinating authority for health within the United Nations system [...] [responsible] for providing leadership on global health matters, shaping the health research agenda, setting norms and standards, articulating evidence-based policy options, providing technical support to countries and monitoring and assessing health trends."¹¹ On September 29, 2014, it established the United Nations Mission for Ebola Emergency Response (UNMEER) headquarters in Accra, Ghana, to deal with "case management, case finding and contact finding, safe and dignified burials, and social mobilization" to control the unprecedented outbreak.¹²

The Centers for Disease Control and Prevention also played a key role in response to the epidemic. The public health organization formed in 1946 as the Communicable Disease Centers in Atlanta, Georgia, in the United States. Its initial mission was to prevent malaria from spreading across the country, but soon this

¹⁰ "Constitution of the World Health Organization" (PDF). World Health Organization. Retrieved 28 February 2015.

¹¹ "About WHO." *WHO*. N.p., n.d. Web. 01 Mar. 2015. <<http://www.who.int/about/en/>>.

¹² "UN Mission for Ebola Emergency Response (UNMEER)." Global Ebola Response. The United Nations, 24 Nov. 2014. Web. <<https://ebolaresponse.un.org/un-mission-ebola-emergency-response-unmeer>>.

objective expanded to serve a range of diseases and initiatives in the realm of public health.¹³ CDC describes itself today as the “premiere health promotion, prevention, and preparedness agency,” fighting disease while supporting communities and citizens to do the same. Although it originated in the United States, the agency now has 1,700-plus employees in more than 60 countries worldwide. This change has advanced the CDC's role in international health efforts, furthering its mission for “[applying its] research and findings to improve people’s daily lives and [respond] to health emergencies.”¹⁴ During this outbreak, the CDC was primarily committed to providing guidance to healthcare professionals and sending personnel to West Africa to halt Ebola's spread on the ground.¹⁵

Often during health crises of international proportions, the WHO and other health organizations collaborate to monitor and control situations. The WHO and CDC partnered to take “active steps” in response to the 2014 Ebola outbreak.¹⁶ However, they remained separate entities with unique media content in terms of what information they chose to disseminate and how they packaged and framed that information. Through their public relations efforts, these health organizations worked with news media to

¹³ "Mission, Role and Pledge." Centers for Disease Control and Prevention. Centers for Disease Control and Prevention, 14 Apr. 2014. Web. 22 Feb. 2015.

<<http://www.cdc.gov/about/organization/mission.htm>>.

¹⁴ "Our History - Our Story." Centers for Disease Control and Prevention. Centers for Disease Control and Prevention, 26 Apr. 2013. Web. 02 Mar. 2015. <<http://www.cdc.gov/about/history/ourstory.htm>>.

¹⁵ "CDC Responds to the 2014 Ebola Outbreak." CDC. Centers for Disease Control and Prevention, n.d. Web. <<http://www3a.cdc.gov/about/2014-7-cdcresponders/index.htm>>.

¹⁶ "What CDC Is Doing." Centers for Disease Control and Prevention. Centers for Disease Control and Prevention, 14 May 2015. Web. <<http://www.cdc.gov/vhf/ebola/outbreaks/2014-west-africa/what-cdc-is-doing.html>>.

achieve a range of objectives, some of which include disseminating pertinent information, allaying public fears, and ameliorating risks during epidemics.¹⁷

Because of its international scope and atypicality, this Ebola outbreak was especially newsworthy and featured in many news publications worldwide. According to various journalistic sources, the key factors that led to this Ebola outbreak becoming the largest and longest of its kind in history were urban location, lack of quantity and quality in healthcare, and an ineffective international response.¹⁸ Although Ebola was not new to Africa, most of the past outbreaks were confined to remote villages in Central Africa.¹⁹ In contrast, the current Ebola outbreak affected urban and rural areas alike, due in part to Africa's modernization.²⁰ When the 2014 Ebola outbreak found its way into West African cities such as Monrovia and Freetown—each with approximately 1 million residents—the urban centers acted as “incubators for disease,” spreading the virus faster and wider than ever before.²¹ The proliferation of cases made it difficult for response efforts to combat the outbreak’s unprecedented severity and scope.

In addition, common West African burial rites were also a factor that contributed to the outbreak's rapid expansion. In many West African communities, it is customary for families in ritual preparation for burial to wash the deceased along with

¹⁷ Blumberg, Lucille. "The Role of Media in Disease Outbreaks." *South African Journal of Epidemiology and Infection* 24.1 (2009): 3. Web.

¹⁸ Horowitz, Evan. "How the Ebola Outbreak Spun out of Control." *Boston Globe* 08 Oct. 2014: nb. pag. Print.

¹⁹ "Ebola Virus Disease." *WHO*. World Health Organization, 12 Apr. 2015. Web. <<http://www.who.int/mediacentre/factsheets/fs103/en/>>.

²⁰ Horowitz, Evan. "How the Ebola Outbreak Spun out of Control." *Boston Globe* 08 Oct. 2014: n. pag. Print.

²¹ *Ibid.*

kissing, hugging, and touching the corpse. However, Ebola victims are most contagious after death, leaving these family members oftentimes exposed to the disease.²² In the isolated villages in Uganda and the Democratic Republic of Congo where Ebola outbreaks had occurred before, information “about avoiding contact has had years to enter the collective conscious.”²³ In West Africa, there had not been enough time for this message to spread before the virus had spread through its population. For that reason, it was not long until Ebola had advanced through West Africa into Guinea's neighboring countries of Liberia, Sierra Leone, Nigeria, Mali, and Senegal. Although governments could screen for cases at airports, they struggled with controlling their borders because much transnational movement occurred by foot rather than by plane.²⁴

Additionally, lack of medical workers and quality of medical care further inhibited containment of the outbreak. Two of the most severely affected countries—Sierra Leone and Liberia—have “infrastructure and public health resources [that were] devastated by war in the 1990s and early 2000s.”²⁵ To put matters into perspective, in Liberia, there is just 1 doctor per 100,000 people, in contrast to 245 doctors for every 100,000 in the United States.²⁶ “[N]ew cases multiplied inside health care facilities, killing a significant proportion of the already inadequate health [workforce],”²⁷ which

²² Horowitz, Evan. "How the Ebola Outbreak Spun out of Control." *Boston Globe* 08 Oct. 2014: n. pag. Print.

²³ "Why Ebola Is so Dangerous - BBC News." *BBC News*. N.p., 8 Oct. 2014. Web. <<http://www.bbc.com/news/world-africa-26835233>>.

²⁴ Epatko, Larisa. "Why It's Hard to Keep Ebola from Spreading." *PBS*. PBS, 5 Aug. 2014. Web. <<http://www.pbs.org/newshour/rundown/containing-ebola/>>.

²⁵ Horowitz, Evan. "How the Ebola Outbreak Spun out of Control." *Boston Globe* 08 Oct. 2014: n. pag. Print.

²⁶ "Density of Physicians (total Number per 1000 Population, Latest Available Year)." *WHO*. Global Health Observatory (GHO) Data, n.d. Web. <http://www.who.int/gho/health_workforce/physicians_density_text/en/>.

²⁷ Fink, Sheri, and Pam Belluck. "One Year Later, Ebola Outbreak Offers Lessons for Next Epidemic." *The New York Times*. The New York Times, 22 Mar. 2015. Web.

further exacerbated the situation. The unprecedented number of cases, ineffective sanitation measures in healthcare facilities, and lack of care at crucial times allowed Ebola to flourish.²⁸

On August 8, 2014, nearly five months after the epidemic officially began, the World Health Organization declared the Ebola outbreak a “Public Health Emergency of International Concern (PHEIC),” marking the third time in history that the WHO assigned the PHEIC designation to a crisis.²⁹ According to *The New York Times*, “[t]he virus escaped control as countries and global agencies failed to acknowledge and contend with the magnitude of its spread.”³⁰ Foreign medical officials, who often volunteered in clinics in Ebola-infected communities, returned to their countries of origin unknowingly infected by the disease or were flown internationally for treatment, thereby spreading Ebola to the United Kingdom, Spain, and the United States. Concerns over safety protocol in U.S. hospitals treating Ebola patients, screening of travelers from Ebola-affected countries, and undue panic over the disease itself unsettled many in the U.S.³¹ What started in early 2014 with patient zero in Guinea's southeastern forests had now evolved into a global pandemic, entangling an increasing number of countries.

<http://www.nytimes.com/2015/03/23/world/one-year-later-ebola-outbreak-offers-lessons-for-next-epidemic.html?_r=0>.

²⁸ Epatko, Larisa. "Why It's Hard to Keep Ebola from Spreading." *PBS*. PBS, 5 Aug. 2014. Web. <<http://www.pbs.org/newshour/rundown/containing-ebola/>>.

²⁹ "Statement on the 1st Meeting of the IHR Emergency Committee on the 2014 Ebola Outbreak in West Africa." *WHO*. World Health Organization, 8 Aug. 2014. Web.

<<http://www.who.int/mediacentre/news/statements/2014/ebola-20140808/en/>>.

³⁰ Fink, Sheri, and Pam Belluck. "One Year Later, Ebola Outbreak Offers Lessons for Next Epidemic." *The New York Times*. The New York Times, 22 Mar. 2015. Web.

<http://www.nytimes.com/2015/03/23/world/one-year-later-ebola-outbreak-offers-lessons-for-next-epidemic.html?_r=0>.

³¹ Fink, Sheri, and Pam Belluck. "One Year Later, Ebola Outbreak Offers Lessons for Next Epidemic." *The New York Times*. The New York Times, 22 Mar. 2015. Web.

<http://www.nytimes.com/2015/03/23/world/one-year-later-ebola-outbreak-offers-lessons-for-next-epidemic.html?_r=0>.

Turning Point for Health Communications

Now, over a year after officials declared the outbreak, its peak has long passed. WHO announced on January 23, 2015, that this Ebola outbreak had reached a “turning point”; the number of cases was falling.³² Despite this shift, Ebola is still alive in the minds of millions. The outbreak’s unprecedented course alarmed the international health and global community. With many disillusioned by the response from international health authorities, the news media, and governments in the wake of the outbreak's peak, some are now raising questions about reform. WHO Director-General Margaret Chan stated that “[t]he world this time has learned a lesson: [It] is ill-prepared for severe, sustained public health emergencies. That’s why I hope this [Ebola outbreak] is a turning point, a watershed event for people to understand that.”³³

Looking forward, this outbreak offers lessons to be learned in effective communication during a global pandemic. To that end, this study examines how major U.S. and West African news media framed the Ebola crisis and the role of major health organizations' Twitter feeds in helping build those frames.

³² Gallagher, James. "Falling Ebola Cases Show 'turning Point' - BBC News." BBC News. BBC, 22 Jan. 2015. Web. <<http://www.bbc.com/news/health-30932578>>.

³³ Walt, Vivienne. "WHO Chief Says Ebola Response 'Did Not Match' Scale of the Outbreak." *Time*. Time, 30 Oct. 2014. Web. <<http://time.com/3548096/ebola-world-health-organization-margaret-chan/>>.

Chapter 2: Literature Review

Media coverage of disease outbreaks is important because theory suggests that media can set the public and policy agendas in a process known as agenda setting. Additionally, media can shape how the public thinks about issues such as disease outbreaks through framing the issues in news coverage. But media agendas and framing are themselves shaped by many forces, one of which is public relations practice. This latter process is known as agenda building.

The following literature review outlines the theories of agenda setting, framing, and agenda building. It then examines the small amount of extant literature that applies these theories to disease outbreaks.

Agenda Setting

Agenda-setting theory, one of the most widely used theories in media and communication studies, states that the media don't tell us what to think, but they tell us what to think about.^{34 35} The two basic assumptions of agenda setting are “(1) the press and the media do not reflect reality; they filter and shape it; (2) media concentration on a few issues and subjects leads the public to perceive those issues as more important than other issues.”³⁶ As Bernard Cohen (1963) noted: “The press may not be successful much of the time in telling people what to think, but it is stunningly successful in telling its readers what to think about.”³⁷

³⁴ Kiouisis, S., & Strömbäck, J. (2010). The White House and Public Relations: Examining the Linkages Between Presidential Communications and Public Opinion. *Public Relations Review*, 36(1).

³⁵ Krishnatray, Pradeep, and Gadekar, Rahul. "Construction of Death in H1N1 News in The Times of India." *SAGE* 15.6 (2014): 733. Web.

³⁶ "Agenda Setting Theory." *Agenda Setting Theory*. University of Twente, 2012. Web.

³⁷ Cohen, Bernard Cecil. "The press and foreign policy." (1963).

McCombs and Shaw's Chapel Hill study (1972) first investigated whether items prominent on the media agenda mirrored what people stated were important and should be addressed. By analyzing the relationship between what voters said were important issues and the actual media content used during the campaign, the study found that the mass media had a significant influence on what voters viewed as the major issues of the campaign.³⁸ Thus, media define the realm of important issues for the public by telling them what issues are important.³⁹ Since this landmark study, thousands of studies have continued to explore the agenda-setting function of mass media in various contexts.⁴⁰

Framing

As studies continued demonstrating agenda setting, researchers realized there was more to this effect. Original agenda-setting theory became known as first-level agenda-setting, and added to it was second-level agenda setting, known as framing theory. It asserts that media tell us what issues to think about and how to think about them. Although issues can be viewed through many perspectives, media generally elevate a certain perspective that is reflected in the presentation of an issue (i.e., the frame).⁴¹ Research on framing effects has shown that small changes in the presentation of an issue or an event may produce large changes of opinion.⁴² These changes include

³⁸ McCombs, Maxwell E., and Donald L. Shaw. "The agenda-setting function of mass media." *Public opinion quarterly* (1972): 176-187.

³⁹ McCombs, M. E.; Llamas, J. P.; Lopez-Excobar, E.; Rey, F. (1998). "Candidate's images in Spanish elections: Second-level agenda-setting effects". *Journalism & Mass Communication Quarterly* **74** (4): 703–717.

⁴⁰ McCombs, Maxwell E., and Donald L. Shaw. "The Agenda-Setting Function of Mass Media." *Public Opinion Quarterly* 36.2 (1972): 176. Web.

⁴¹ Chong, Dennis, and James N. Druckman. "Framing theory." *Annu. Rev. Polit. Sci.* 10 (2007): 103-126.

⁴² *Ibid.*

“the presence or absence of certain keywords, stock phrases, stereotyped images, sources of information, and sentences” which underlie the formation of the dominant frame.^{43 44} In addition, the more salient (i.e., more noticeable, meaningful, or memorable to audiences) an aspect is, the greater probability that a piece of information will be stored in an audience’s memory.^{45 46}

Thus, the frame “organizes everyday reality”⁴⁷ and gives particular meaning to issues that can determine how people understand and remember a problem as well as how they evaluate and choose to respond to it.⁴⁸ This effect is outlined by Entman’s four functions of the frame: definition of the problem, interpretation of the cause of the problem, moral evaluation of the cause, and/or suggestion of problem remedies.⁴⁹ On these functions, Entman stated:

Frames, then, *define problems*—*determine* what a causal agent is doing with what costs and benefits, usually measured in terms of common cultural values; *diagnose causes*—identify the forces creating the problem; *make moral judgments* —*evaluate* causal agents and their effects; and *suggest remedies*—*offer* and justify treatments for the problems and predict their likely effects.⁵⁰

Thus, frames help construct the narrative of an event, influencing not only what the public thinks about, but how we may think about a certain issue or event covered by the media.

⁴³ Scheufele, Dietram A. 1999. “Framing as a Theory of Media Effects.” *Journal of Communication* 49 (4): 103-22.

⁴⁴ Entman, Robert. 1993. Framing: Toward Clarification of a Fractured Paradigm. *Journal of Communication* 43(4): 54.

⁴⁵ Fiske, Susan T., and Shelley E. Taylor. "Social cognition, 2nd." *NY: McGraw-Hill* (1991): 16-15.

⁴⁶ *Ibid.*

⁴⁷ Tuchman, Gaye. "Making news: A study in the construction of reality." (1978).

⁴⁸ Entman, Robert. 1993. Framing: Toward Clarification of a Fractured Paradigm. *Journal of Communication* 43(4): 54.

⁴⁹ *Ibid.*

⁵⁰ *Ibid.*

Framing theory has been applied to various studies in many fields, including studies in political science, mass communications, and psychology. In mass communications research, it is an essential tool because it can effectively “describe the power of a communicating text.”⁵¹ For instance, one study examined the “cold war” frame that emerged from and dominated U.S. news of foreign affairs during the Cold War. Results showed the frame highlighted certain foreign events, defined civil wars as the problem, identified the wars’ cause as communist rebels, offered atheistic aggression as the moral judgment on the casual agents, and suggested U.S. support for the other side as the solution.⁵²

More recently, Nisbet (2009) examined how frames have been used to define risks of climate change, proposing that much of the partisan divide in opinion on the issue is reflected in the specific framing adopted by political leaders. Republican leaders define climate change in terms of either “scientific uncertainty” or action in terms of “unfair economic burdens,” whereas Democratic leaders have tended to frame climate change in terms of looming disaster and crisis.⁵³ Numerous studies continue to explore framing theory in a variety of contexts to examine the audience’s possible interpretation of certain information and, as a result, the information’s influence.

Agenda Building

When studying first- and second-level agenda setting, researchers wondered where the media got its agenda. From there, third-level agenda setting, agenda-building

⁵¹ Entman, Robert. 1993. Framing: Toward Clarification of a Fractured Paradigm. *Journal of Communication* 43(4): 51.

⁵² Ibid.

⁵³ Nisbet, M.C. (2009). Communicating Climate Change: Why Frames Matter to Public Engagement. *Environment*, 51 (2), 514-518.

theory, was discovered. Agenda building studies “examine the degree to which journalists’ stories and public opinion can be shaped by outside forces”—i.e., who feeds the media agenda and how.⁵⁴ Scholars have also suggested that the effectiveness of public relations efforts, particularly on media relations, can be measured by their influence on the agenda-building process.⁵⁵ There are two levels that correspond to first- and second-level agenda setting. First-level agenda building refers to issue salience in what topics journalists cover, whereas second-level agenda building refers to journalists being influenced to use certain attributes to portray issues and other objects.^{56 57}

The impact of public relations on news coverage can be traced through its role in the agenda-building process by examining information subsidies. Information subsidies are examples of public relations materials or news information that are transferred by public relations professionals to journalists.^{58 59} These subsidies may take the form of news releases, news conferences, speeches, interviews, and media advisories.^{60 61} More

⁵⁴ Parmelee, J. H. "The Agenda-building Function of Political Tweets." *New Media & Society* 16.3 (2013): 434-50.

⁵⁵ Hyejoon Rim; Jin Hong Ha; Spiro Kiouisis. “The evidence of compelling arguments in agenda building: Relationships among public information subsidies, media coverage, and risk perceptions during a pandemic outbreak.” *Journal of Communication Management*. 2014;18(1):101-116.

⁵⁶ Lancendorfer, Karen M., and Byoungkwan Lee. "Who influences whom? The agenda-building relationship between political candidates and the media in the 2002 Michigan governor's race." *Journal of Political Marketing* 9.3 (2010): 186-206.

⁵⁷ *Ibid.*

⁵⁸ Gandy, Oscar H. *Beyond agenda setting: Information subsidies and public policy*. Ablex Publishing Corporation, 1982.

⁵⁹ Hyejoon Rim; Jin Hong Ha; Spiro Kiouisis. “The evidence of compelling arguments in agenda building: Relationships among public information subsidies, media coverage, and risk perceptions during a pandemic outbreak.” *Journal of Communication Management*. 2014;18(1):101-116.

⁶⁰ Turk, Judy VanSlyke. "Information subsidies and influence." *Public Relations Review* 11.3 (1985): 10-25.

⁶¹ Zoch, Lynn M., and Juan-Carlos Molleda. "Building a theoretical model of media relations using framing, information subsidies, and agenda-building." *Public relations theory II* (2006): 279-309.

recently, the emergence of social media has demonstrated that tweets—messages on Twitter of no more than 140 characters sent on mobile devices and computers—can also function as information subsidies.⁶² Parmelee (2013) found that these brief messages are able to serve as important components in first- and second-level agenda-building.⁶³ By analyzing the agenda-building capacity of information subsidies, we can observe to what extent and manner public relations professionals influence the media agenda and, consequently, the public agenda.^{64 65 66}

The theories of agenda setting, framing, and agenda building form the basis of this study and allow us to trace and examine the impact of public relations professionals' communication efforts on the media agenda and to dissect the media agenda itself. A large body of substantive research has applied these theories in various contexts, with a considerable number focusing on media during disease outbreaks and fewer relating to social media's influence in this context.

Media and Disease Outbreaks

Agenda-Setting

Media have historically played an integral role in response during disease outbreaks. They are not only crucial in allaying fears and disseminating pertinent

⁶² Ibid.

⁶³ Parmelee, J. H. "The Agenda-building Function of Political Tweets." *New Media & Society* 16.3 (2013): 434-50.

⁶⁴ Hallahan, Kirk. "Seven models of framing: Implications for public relations." *Journal of public relations research* 11.3 (1999): 205-242.

⁶⁵ Sallot, Lynne M., and Elizabeth A. Johnson. "Investigating relationships between journalists and public relations practitioners: Working together to set, frame and build the public agenda, 1991–2004." *Public Relations Review* 32.2 (2006): 151-159.

⁶⁶ Curtin, Patricia A. "Reevaluating public relations information subsidies: Market-driven journalism and agenda-building theory and practice." *Journal of Public Relations Research* 11.1 (1999): 53-90.

information but also in ameliorating risks and consequences during these generally sudden and unpredictable events.⁶⁷ Accordingly, the public relies on media to express the severity of any given health emergency and to disseminate pertinent information to the public,⁶⁸ such as how to avoid infection.⁶⁹ More recently, concern has mounted around the public response to news of anomalous threats to health (e.g., the unprecedentedly severe 2014 Ebola outbreak), which can often be “unduly influenced” by the way these events are portrayed in the news.⁷⁰

Because of this influence, journalists must be cognizant not only of what information they report, but also how they report it. Translating this public health information effectively—i.e., via effective risk communication—is essential “to encouraging publics to adopt protective behaviors, facilitating better use of resources, and decreasing confusion, thereby reducing transmission and mortality.”⁷¹ In addition, it allows the public “to exercise appropriate choices and have confidence that matters are under control.”⁷² Effective media response ideally delays an epidemic’s peak significantly and reduces the number of cases of a disease “by promoting population behavioural changes that are guided in a way that optimizes the control of the disease

⁶⁷ Blumberg, Lucille. "The Role of Media in Disease Outbreaks." *South African Journal of Epidemiology and Infection* 24.1 (2009): 3. Web.

⁶⁸ *Ibid.*

⁶⁹ Fischhoff, B., Bruine de Bruin, W., Guvenc, U., Caruso, D., & Brilliant, L. (2006). Analyzing disaster risks and plans: An avian flu example. *Journal of Risk and Uncertainty*, 33, 133-151.

⁷⁰ Lewison, Grant. "The reporting of the risks from severe acute respiratory syndrome (SARS) in the news media, 2003–2004." *Health, Risk and Society* 10.3 (2008): 241-262.

⁷¹ Rim, Hyejoon, Jin Hong Ha, and Spiro Kiouisis. "The evidence of compelling arguments in agenda building: Relationships among public information subsidies, media coverage, and risk perceptions during a pandemic outbreak." *Journal of Communication Management* 18.1 (2014): 101-116.

⁷² Lewison, Grant. "The reporting of the risks from severe acute respiratory syndrome (SARS) in the news media, 2003–2004." *Health, Risk and Society* 10.3 (2008): 241-262.

outbreak.”⁷³ Thus, the stakes are high for media to interpret disease information well through effective risk communication; however, questions arise as to what exactly constitutes said communication.

Framing

Examining the framing of a public health issue gives insight into how the public is to perceive information on the issue, allowing examination into the information’s influence on public opinion and policy formulation. Organizations such as international health agencies and news media choose intentional or unintentional framing in what their media say—choices that are reinforced by their belief systems.⁷⁴ These choices then shape how they communicate health-related information that consequently dictates how the public views disease.⁷⁵

Although proper interpretation of disease information is important in effective risk communication, relatively limited research exists on this subject. Pan and Kosicki (1993) suggested that during disease outbreaks, frames guide public responses including behavior, policy support, and attribution of responsibility.⁷⁶ Similarly, Shih et al. (2008) found that news framing could affect people’s perceptions of risk or their safety.⁷⁷

⁷³ Xiao, Yanni, Sanyi Tang, and Jianhong Wu. "Media impact switching surface during an infectious disease outbreak." *Scientific reports* 5 (2015).

⁷⁴ Entman, Robert. 1993. Framing: Toward Clarification of a Fractured Paradigm. *Journal of Communication* 43(4): 52.

⁷⁵ Krishnatray, Pradeep, and Gadekar, Rahul. "Construction of Death in H1N1 News in The Times of India." *SAGE* 15.6 (2014): 734. Web.

⁷⁶ Pan, Zhongdang, and Gerald M. Kosicki. "Framing analysis: An approach to news discourse." *Political communication* 10.1 (1993): 55-75.

⁷⁷ Shih, Tsung-Jen, Rosalyna Wijaya, and Dominique Brossard. "Media coverage of public health epidemics: Linking framing and issue attention cycle toward an integrated theory of print news coverage of epidemics." *Mass Communication & Society* 11.2 (2008): 141-160.

Another study on the framing of death in *The Times of India* during the 2009 H1N1 outbreak identified the following frames: fear-panic, attribution of responsibility, action, and human interest.⁷⁸

Often frames in epidemics hinge upon the public's fear because death is largely considered the leading contributor to fear during these occurrences.⁷⁹ A recent study highlighted how official government sources that communicate with the media during outbreaks must pay careful attention to how they quantify the number of people affected.⁸⁰ Lewison (2008) found that coverage in traditional news media was based more on mortality than on morbidity.⁸¹

Both "simplification [of the situation] and jargon" can misinform the public about the potential risk of an outbreak, resulting in excessive panic if not handled expertly.⁸² One study found that the May 1995 Ebola outbreak in Zaire was framed as especially frightening because Ebola was still new to the media and realm of infectious diseases. Consequently, local newspapers increased their number of "scary stories" during this period. However, after Ebola was realized to be less transmissible than originally thought, a rapid decline in "scary" or alarmist coverage occurred.⁸³ More

⁷⁸ Krishnatray, Pradeep, and Gadekar, Rahul. "Construction of Death in H1N1 News in The Times of India." *SAGE* 15.6 (2014): 734. Web.

⁷⁹ Krishnatray, Pradeep, and Gadekar, Rahul. "Construction of Death in H1N1 News in The Times of India." *SAGE* 15.6 (2014): 731. Web.

⁸⁰ Xiao, Yanni, Sanyi Tang, and Jianhong Wu. "Media impact switching surface during an infectious disease outbreak." *Scientific reports* 5 (2015).

⁸¹ Lewison, Grant. "The reporting of the risks from severe acute respiratory syndrome (SARS) in the news media, 2003–2004." *Health, Risk and Society* 10.3 (2008): 241-262.

⁸² *Ibid.*

⁸³ Ungar, Sheldon. "Hot crises and media reassurance: A comparison of emerging diseases and Ebola Zaire." *British Journal of Sociology* (1998): 36-56.

research has examined the framing of various disease outbreaks, such as SARS and the H1N1 virus, and continues to apply framing theory in the context of disease outbreaks.

Agenda Building

The effectiveness of and reliance of journalists on public relations materials during outbreaks has been examined through a considerable body of research. The increasing reliance of journalists on international organizations, such as the WHO and CDC, highlights an important link: public health officials' and journalists' marked reliance on media relations.⁸⁴ Media relations functions as the bridge between journalists and public relations practitioners, allowing public relations professionals to dispatch messages of the organization they serve or represent to the media. Journalists often use government sources, such as federal agencies, to increase their credibility in news because such sources are generally regarded as “effective, credible spokespersons that enhance the persuasiveness of messages.”⁸⁵ Thus, journalists often expect that international health organizations will serve as credible sources of information during disease outbreaks.⁸⁶

Often when an epidemic is detected, international public health agencies (e.g., the WHO and CDC) collaborate to share information that is worth delivering to the

⁸⁴ Rim, Hyejoon, Jin Hong Ha, and Spiro Kioussis. "The evidence of compelling arguments in agenda building: Relationships among public information subsidies, media coverage, and risk perceptions during a pandemic outbreak." *Journal of Communication Management* 18.1 (2014): 101-116.

⁸⁵ Ibid.

⁸⁶ Ibid.

public.^{87 88} A past study examined the authority of the WHO's media relations in particular, demonstrating it as the most important controlling influence on the course of an epidemic and its reporting, with its spokespeople widely regarded as "authoritative and in charge of events."⁸⁹ Because of these responsibilities and newer international health threats, international health organizations exercise caution in how they communicate during a disease outbreak.

Agenda Building and Twitter

Today, information is at the tip of one's fingers, and methods for mass communication are evolving along with technological advances. With the reach of information wider than ever before and a shift in how we receive our information, social media have emerged as new channels of communication. Although traditional news media remain the primary channel for informing people about disease and prevention, an influx of journalists have begun to use social media professionally.^{90 91}

Because of the evolving communication landscape, it is important to understand these emergent technologies and their effects on health communications. With more than 288 million active users, Twitter is especially notable given its popularity and

⁸⁷ Zoch, Lynn M., and Juan-Carlos Molleda. "Building a theoretical model of media relations using framing, information subsidies, and agenda-building." *Public relations theory II* (2006): 279-309.

⁸⁸ Curtin, Patricia A. "Reevaluating public relations information subsidies: Market-driven journalism and agenda-building theory and practice." *Journal of Public Relations Research* 11.1 (1999): 53-90.

⁸⁹ Lewison, Grant. "The reporting of the risks from severe acute respiratory syndrome (SARS) in the news media, 2003–2004." *Health, Risk and Society* 10.3 (2008): 255.

⁹⁰ Rim, Hyejoon, Jin Hong Ha, and Spiro Kiouisis. "The evidence of compelling arguments in agenda building: Relationships among public information subsidies, media coverage, and risk perceptions during a pandemic outbreak." *Journal of Communication Management* 18.1 (2014): 101-116.

⁹¹ Jensen, Klaus Bruhn. *Media convergence: The three degrees of network, mass and interpersonal communication*. Routledge, 2010.

burgeoning role in health communications.⁹² Twitter functions as an information-sharing platform used by both public relations professionals and journalists. Graham and Boersma (2013) found that journalists are increasingly using Twitter as a source for news coverage.⁹³ The social media platform has become a tool by which journalists point readers to news but also by which they receive news tips and track events. In addition, public relations practitioners use Twitter to inform journalists about events and issues. This function of Twitter emerged during the 2010 cholera outbreak in Haiti, marking the first time the platform was used to track a disease, demonstrating its use in a disease outbreak.⁹⁴

Past research has demonstrated agenda-building's variability, showing that its "effects are not uniform across all types of media in every circumstance."⁹⁵ Limited research has analyzed the role of Twitter on the agenda-building function of public relations and the agenda-setting and framing functions of the news media. In one such study, Parmelee (2013) examined the agenda-building function of political tweets, demonstrating that tweets have a considerable effect on subsequent media coverage.⁹⁶ Although some types of information subsidies, such as news releases, are still seemingly most effective at first-level agenda building, other types of subsidies have a notable effect on agenda building as well.⁹⁷ For instance, Parmelee's same study found

⁹² Twitter: number of monthly active users 2010-2015. Statista.

⁹³ Broersma, M., & Graham, T. (2013). Twitter as a News Source. *Journalism Practice*, 7(4), 446-464.

⁹⁴ Chunara, R., J. R. Andrews, and J. S. Brownstein. "Social and News Media Enable Estimation of Epidemiological Patterns Early in the 2010 Haitian Cholera Outbreak." *American Journal of Tropical Medicine and Hygiene* 86.1 (2012): 39-45.

⁹⁵ Parmelee, J. H. "The Agenda-building Function of Political Tweets." *New Media & Society* 16.3 (2013): 436.

⁹⁶ Ibid.

⁹⁷ Ibid.

that the public accessibility of political tweets can potentially render them more influential in media coverage than traditional news releases.⁹⁸ Whether these trends can be extrapolated to health communications during epidemics remains unclear, however.

This study explores the WHO's and CDC's agenda-building efforts and concurrent news media coverage in Ghana and the United States of the 2014 Ebola outbreak. By examining these links, findings uncover the agenda-building, framing, and agenda-setting processes at work in the context of the 2014 Ebola outbreak. These insights add to the discourse around best practices in effective risk communication.

To that end, this study addresses the following research questions.

Research Questions

1. How prominent was Ebola on the U.S. and West African media agendas?
2. How did U.S. and West African media frame the Ebola outbreak?
 - a. What did coverage define as the problem?
 - b. What was given as the cause of the problem?
 - c. Who or what was considered responsible or at fault for the problem?
 - d. What is the remedy suggested for the problem?
3. How did the coverage vary between *New York Times* and *Daily Graphic*?
4. How often did major health organizations (i.e., WHO and CDC) appear as sources in the coverage?

⁹⁸ Parmelee, J. H. "The Agenda-building Function of Political Tweets." *New Media & Society* 16.3 (2013): 436.

5. How effective were international health organizations in building the media agenda using social media?
 - a. What strategies were most used and most effective?

Chapter 3: Method

To analyze news media and Twitter content, this study employed two methods: quantitative content analysis (coding) and qualitative content analysis (framing).

Content analysis is integral to and widely used in mass communications studies. The quantitative content analysis was accomplished through coding, which allowed for the reduction of large quantities of words into numbers that stand for the material of analysis. In turn, this offered a more standardized way to draw data from the content. The second part of the method was the qualitative framing analysis. By examining the presentation of the content qualitatively, I interpreted meaningful patterns and themes of content on a more nuanced, complex level. Together, these two methods give a rigorous examination of the content that allows for greater insight into the agenda setting, framing, and agenda building relationship during the 2014 Ebola outbreak.

News Media Quantitative Content Analysis

For news media, I coded coverage of the 2014 Ebola outbreak in *The New York Times*, an American daily newspaper owned by The New York Times Company based in New York City, and *Daily Graphic*, a Ghanaian state-owned daily newspaper based in Accra, Ghana. Both publications are available in online and print versions and were chosen for their wide circulation and host country's relation to the outbreak. Ghana's *Daily Graphic* has a circulation of 100,000, making it the most widely read daily newspaper in the country. Likewise, *The New York Times* is one of the most widely circulated papers in the United States, with a total average print circulation of 639,887

for Monday through Friday and 1,181,160 for its Sunday edition.⁹⁹ In each country the publications had parallel roles during the 2014 outbreak. Ghana had zero Ebola cases but is in relatively close proximity to some of the West African countries most severely affected by Ebola. Additionally, its capital city of Accra housed the UNMEER headquarters.¹⁰⁰ Similarly, the United States remained relatively unaffected, with only several Ebola cases within its borders during the outbreak, one of which was treated in New York City where *The New York Times* is based. Parallel to WHO and Ghana, the United States is home to the Centers for Disease Control and Prevention.

Ghana's mobile phone usage and Internet penetration is pervasive. Ghana is ranked as the country with the highest mobile broadband penetration in Africa with penetration standing at 100.4%.¹⁰¹ Additionally, 51% of Ghanaians reported that they used their mobile phones to access the Internet.¹⁰² These numbers continue to rise, demonstrating the expanding role of mobile phones and Internet usage in Ghana.

To find the timeframe for my analysis, I used Downs' issue-attention cycle theory.¹⁰³ Downs' issue-attention cycle is a five-stage model describing the rise and fall of social attention to important issues. By applying it to my media coverage, I traced the theory's five stages—the pre-problem stage, alarmed discovery and euphoric

⁹⁹ "The New York Times Marks Solid Circulation Gains." The New York Times Company -. The New York Times Marks Solid Circulation Gains, 28 Oct. 2014. Web. <<http://investors.nytc.com/press/press-releases/press-release-details/2014/The-New-York-Times-Marks-Solid-Circulation-Gains/default.aspx>>.

¹⁰⁰ "UN Mission for Ebola Emergency Response (UNMEER)." Global Ebola Response. The United Nations, 24 Nov. 2014. Web. <<https://ebolaresponse.un.org/un-mission-ebola-emergency-response-unmeer>>.

¹⁰¹ "Ghana Is First in Mobile Broadband Penetration in Africa." *Ghana Is First in Mobile Broadband Penetration in Africa*. International Telecommunications Union (ITU) | Ghana Web, 16 January Jan. 2013. Web.

¹⁰² "Communications Technology in Emerging and Developing Nations." *Pew Research Centers Global Attitudes Project RSS*. Pew Research Center, 19 Mar. 2015. Web.

¹⁰³ Downs, Anthony. "Up and Down with Ecology-the Issue-Attention Cycle." *Public Interest*. 28 (1972:Summer). 39-40.

enthusiasm, realizing the cost of significant progress, gradual decline of intense public interest, and the post-problem stage—to illuminate the outbreak's peak, which then defined the focus for my content analysis.¹⁰⁴ The peak of the outbreak began on March 23, 2014, the date that the WHO declared an Ebola outbreak in Guinea, and ended on January 23, 2015, the day that the WHO released a statement on the outbreak's turning point when the rate of new cases had slowed. Thus, my timeframe for my content analysis spans from March 23, 2014, to January 23, 2015.

The New York Times articles were accessed through LexisNexis Academic & Library Research services. A search for articles featuring the keyword "Ebola" during the specified time period returned a total of 904 articles. *Daily Graphic* articles were curated through the publication's online archive for a return of 97 articles. Because of the large number of articles and desire to compare coverage of the two papers, I drew a systematic sample to have a matching number of articles. I chose one out of every 18 articles in *The New York Times* and one out of every two for the *Daily Graphic*. With this sampling strategy, I coded 100 news articles total: 50 for *The New York Times* and 50 for *Daily Graphic*.

For my coding schema, I followed Zhou and Sloan's principles for creating codes to ensure the codes were applicable to all coding units; were exhaustive; were mutually exclusive; and contained a sufficient number of categories.¹⁰⁵ For each coding unit, I assigned a "1" for an affirmative answer and a "0" for a negative answer. In other

¹⁰⁴ Ibid.

¹⁰⁵ Zhou, Shuhua, and W. David Sloan. *Research Methods in Communication*. Northport, AL: Vision, 2011. Print.

coding units requiring a graduated scale, I assigned a "0" for "none," a "1" for "some," and a "2" for "much."

The unit of analysis was each story coded as a whole rather than each sentence. I coded for the following categories in each article: article length, source, geographical extent, overall alarmist tone, alarmist language related to the spread of the disease, alarmist language related to the disease itself, individual risk of infection, and population risk of infection.

Refer to Table 1 for the full coding schema.

Table 1: Coding Schema for The New York Times and Daily Graphic

<i>Coding Category</i>			
WHO Attributed or Quoted	0 = no		1 = yes
CDC Attributed or Quoted	0 = no		1 = yes
West Africa	0 = no		1 = yes
United States	0 = no		1 = yes
Global	0 = no		1 = yes
Tone	0 = none	1 = some	2 = much
Spread	0 = none	1 = some	2 = much
Disease	0 = none	1 = some	2 = much
Individual Risk of Infection	0 = no		1 = yes
Population Risk of Infection	0 = no		1 = yes

In the 'source' category, I documented whether or not the WHO, the CDC, both the WHO and CDC, or neither organization was attributed or quoted in the article.

<i>Source Examples</i>
'The minimal precautions recommended by the C.D.C. 'led to the infection of my nurses and physician co-workers who came in contact with body fluids,' Dr. Callahan said.'

'The director of the Centers for Disease Control and Prevention said Tuesday that the Ebola outbreak in West Africa could be brought under control, but that "we are by no means out of the woods.'

'The World Health Organization's latest update on Ebola, posted Wednesday on its website, said the number of confirmed, probable and suspected cases totaled 15,145, with 5,420 reported deaths, as of Sunday.'

Coding for geographical extent referred to each news article's geographical focus and was divided into three subcategories: West Africa, United States, and global.

<i>Geographical Extent Examples</i>	
'There were reports of patients with symptoms in both Sierra Leone and Liberia, but no laboratory-confirmed cases, said Dr. Armand Sprecher, an Ebola expert with the medical aid group Doctors Without Borders.'	West Africa
'As health officials struggle to contain the disease in Texas, the political fight in Washington over funding levels for public health agencies -- and whether reductions have left the country unprepared for a public-health crisis -- has reached a fever pitch.'	United States
'President John Mahama has called on world leaders to embrace Ebola as a worldwide problem that is not restricted only to West Africa "because it's a disease that knows no boundaries".'	Global

I then coded for an overall alarmist tone. This referred to the overarching tone of the article and how alarmist it was on a sliding scale from 'none,' 'some,' to 'much.'

<i>Alarmist Tone Examples</i>
'Ebola, Killing Scores in Guinea, Threatens Nearby Nations'

'The W.H.O. predicts that Ebola may afflict 20,000 people before the outbreak ends, but that is only if the world mounts a prompt and enormous response. If we fail, that number will become 40,000, then 80,000, with no end in sight.'

'According to him, "what makes Ebola so dangerous is that the virus dares us to compromise the impulses that exist at the very core of our humanity: our impulse to comfort one another with love; to care for each other with the healing power of touch; and, to maintain the dignity of our loved ones even in death with a public funeral and properly marked grave.'

Next, I coded for alarmist language relating to the disease itself and alarmist language referring to the spread of the disease. Articles within this category featured alarmist language specifically referring to the Ebola virus disease or specifically to the spread of the disease.

Alarm: Disease Examples

'The Ebola hemorrhagic disease is terrifying, as the virus punches microscopic holes in the endothelial lining of blood veins, vessels, and capillaries, causing blood to leak from its normal pipelines coursing through the body. Within hours, the punctures enlarge, the leaking turns into a flood, and blood pours into the intestines, bowels, and respiratory channels. As the victims become feverish -- raging in pain and hallucinations -- their tears drip red with blood. The crimson liquid flows from their noses, ears, bowels, bladders, mouths, while old wounds reopen all over their bodies.'

'''I tell you that the plague, whether it's a conspiracy of white man, black man, I don't care. I just know that this thing is demonic. Anything that kills people the way it's killing people is demonic.'

'One drop of blood can harbor millions of viruses, and corpses become like virus bombs.'

Alarm: Spread Examples

'According to Archbishop Duncan-Williams, there was the urgent need for Ghanaians to pray because the [E]bola virus was looking for “a door to enter the country [Ghana]”.'

'The pace of the disease and also its impact have taken our breath away -- it's been that massive,' said Shanelle Hall, director of the supply division at Unicef [...].'

'Senior United Nations officials said in Geneva that cases of the disease were rising at an almost exponential rate, with the number of reported cases now at 4,985, including 2,461 deaths.'

Lastly, the categories of individual risk of infection and population risk of infection delved into whether or not risk of infection was mentioned or implied in an article and, if so, whether it was focused on the individual, the wider population, or both.

Population Risk of Infection Examples

'Dr. Thomas R. Frieden, director of the Centers for Disease Control and Prevention, has said such a case is inevitable in the United States, and the agency this month issued the first extensive guidelines for hospitals on how recognize and treat Ebola patients.'

'In his address, the vice chancellor explained that the decision not to shake hands with the students had become necessary to ensure there was the least contact to prevent possible Ebola spread.'

Individual Risk of Infection Examples

'Mrs. Amissah-Arthur who attended a mini durbar organised to donate books and stationery to basic schools in Dzodze Ablorme, said she declined to shake hands with the chiefs and people of the area as part of efforts to create awareness on the need for people to protect themselves against Ebola.'

'It does not matter which facility or family a case is reported to; what matters is preventing the spread. Indeed, it is every individual's responsibility too, in safeguarding the situation.'

Twitter Quantitative Content Analysis

To assess the agenda-building function of tweets, I coded content from the individual Twitter accounts of the World Health Organization (@WHO) and Centers for Disease Control and Prevention (@CDCgov) during the aforementioned timeframe. I used the advanced Twitter search tool to collect a census of the tweets containing the word 'Ebola,' resulting in 683 tweets for @WHO and 244 tweets for @CDCgov. I analyzed all of the tweets rather than a sample during the time period because tweets are short, simple to code, and require a larger quantity to study effectively. I coded the organizations' tweets for three functions I found: amplification, encouragement, and briefing. Each of these tweets could fall into more than one category. Limited literature on coding for Twitter exists, which is why I created and defined my own categories for the tweets' functions.

Amplification tweets are defined as messages pushing the organization's own media materials and coverage. These tweets directed their audience to links to articles, reports, and other media produced by each respective health agency.

Amplification Examples

**'@WHO: Latest WHO Disease Outbreak News on #Ebola outbreak in #Guinea
goo.gl/KE43Rw'**

**'@CDCgov: New Q&A: CDC's guidance for monitoring symptoms & controlling
movement to stop #Ebola spread 1.usa.gov/1A4pPDG'**

Tweets in the encouragement category functioned as morale raisers with messages that point toward progress or work improving the situation. Often they feature messages of reassurance that the health agencies or associated entities had matters under control or were responding to the situation effectively. Additionally, they sometimes functioned to galvanize the public against the Ebola threat.

Encouragement Examples

'@WHO: Multidisciplinary teams have been deployed to #Guinea to actively search and manage #Ebola cases, to trace & follow-up contacts'

'@CDCgov: Miwako & Jonathan trained staff at Liberian hospital that closed due to 22 #Ebola infections in HCWs. #CDCInTheField'

The last category, briefing, included messages on events or happenings related to the outbreak. These feature updates on outbreak-related conferences and events, alerts on the status of outbreaks in affected areas, and other similar messages. These tweets contain pertinent information in their content rather than simply functioning to direct audiences to external materials.

Briefing Examples

'@WHO: As of 22 March 2014, a total of 49 #Ebola cases, incl. 29 deaths, had been reported in #Guinea. Four health care workers are among them'

'@CDCgov: Update: CDC has confirmed positive test for #Ebola in volunteer international aid worker 1.usa.gov/1rtamTr'

Refer to Table 2 for the Twitter coding schema.

Table 2: Coding Schema for @WHO and @CDCgov

<i>Coding Category</i>		
Amplification	0 = no	1 = yes
Encouragement	0 = no	1 = yes
Briefing	0 = no	1 = yes

After my initial content analysis, a second coder reviewed and double coded 16 news articles total (16%) and 60 tweets, 30 for each Twitter, (6.5%) to ensure intercoder reliability. For the tweets, the smaller percentage was reasonable because of the tweets' short length and fewer coding categories. The intercoder reliability coefficient was 0.867, well beyond the accepted minimum of 0.75 for content analysis.¹⁰⁶

Qualitative Framing Analysis

To code for frames qualitatively, I adopted the framework developed by Miles and Huberman (1994) for analyzing qualitative data, which includes data reduction and conclusion drawing and verification.¹⁰⁷ First, I took thorough notes as I coded the articles and Twitter content for my quantitative content analysis. Data reduction required close reading of the texts a number of times to uncover their main problem, cause, moral responsibility, and remedy in their narrative. After the initial quantitative data collection, I returned to my notes and refined them to expose the dominant frame

¹⁰⁶ Wimmer, Roger D., and Joseph R. Dominick. *Mass Media Research: An Introduction*. Belmont, CA: Wadsworth Pub., 1983. Print.

¹⁰⁷ Huberman, Michael, and Matthew B. Miles. *Qualitative Data Analysis: An Expanded Sourcebook*. 2nd ed. U.S.: SAGE Publications, 1994. Print.

of the content. I stayed close to my data when drawing conclusions, using quotes from my data to support my findings.

Analysis of the framing in U.S. and West African mainstream media was guided by Entman's four functions of frames, which have been implemented in previous studies in the health communications context.^{108 109} The first function is the problem function, which expresses the perceived threat, susceptibility, severity, or uncertainties related to the 2014 Ebola outbreak. Second is the cause function, which covers what was given as the cause of the problem. The third function is moral responsibility, which describes messages indicating responsibility (i.e., blame) toward governments or agencies for Ebola and the appropriateness of these actions. Lastly, the remedy function proposes solutions and strategies to ending the Ebola outbreak and preventing future public health crises.

¹⁰⁸ Beaudoin, Christopher E. "The impact of news use and social capital on youth wellbeing: An aggregate ~~Journal of Community Psychology~~ *Journal of Community Psychology* 35.8 (2007): 947-965.

¹⁰⁹ Entman, Robert M. "Framing: Towards clarification of a fractured paradigm." *McQuail's reader in mass communication theory* (1993): 390-397.

Chapter 4: Results

This chapter presents the results from both quantitative content analyses and qualitative framing analysis. Quantitatively, the content analysis of U.S. and West Africa mainstream media revealed few notable differences in the coverage of the 2014 Ebola outbreak. Qualitatively, the framing analysis revealed the dominant frame of each news medium and health agency.

News Media Content Analysis

Results from the news media content analysis illuminated the differences in coverage between *The New York Times* and *Daily Graphic* in the terms outlined in the coding schema.

Refer to Table 3 for an overview of the news media content analysis.

Table 3: News Media Content Overview

	<i>The New York Times</i>	<i>Daily Graphic</i>
Number of Articles	50	50
Average Article Length	932 words	1139 words

Overall, 80% of stories cited the WHO and/or CDC. In the New York Times, 96% of stories cited each organization. In the Daily Graphic, 64% of stories cited each organization. Results showed that the *Daily Graphic* cited the WHO significantly more often [54% versus 34%; $\chi^2 (1, N = 100) = 4.05, p = .035$], while *The New York Times* cited the CDC significantly more often [62% versus 10%; $\chi^2 (1, N = 100) = 29.3, p = .000$]. When coding for geographical extent in the articles, 86% of stories had a West Africa focus, 78% a U.S. focus, and 40% a global focus. Each publication paid more attention to its own country; *The New York Times* significantly more frequently had a

U.S. focus (61%) than did the Daily Graphic [39%; $\chi^2 (1, N = 100) = 18.5, p = .000$], and the *Daily Graphic* significantly more frequently had a West African focus (86%) than did the New York Times [14%; $\chi^2 (1, N = 100) = 16.3, p = .000$]. In other categories, there were no other statistically significant differences. Refer to Table 4 for the frequency of affirmative or negative coding categories and Table 5 for coding categories with three answers. Note that for Table 5, articles that coded as “none” on the scale of “none, some, much” in this section are not included in the tally. The figure N denotes the number of articles that were coded as either “some” or “much,” which refer to the degree of alarmist language in an article. This category was further divided into three subcategories: alarmist tone (tone), alarmist language about the spread of the disease (spread), and alarmist language about the disease itself (disease).

Table 4: News Media Frequencies by Coding Category (Affirmative or Negative)

Category	<i>The New York Times</i>		<i>Daily Graphic</i>		Total	
	N	%	N	%	N	%
West Africa Region	36	72	50	100	86	86
US Region	30	60	9	18	78	78
Global	11	22	9	18	40	40
WHO as Source	17	34	27	54	44	44
CDC as Source	31	62	5	10	36	36
Individual Risk of Infection	6	12	8	16	14	14
Population Risk of Infection	23	46	20	40	43	43

Table 5: News Media Frequencies by Coding Category (Three Answer)

Category	<i>The New York Times</i>		<i>Daily Graphic</i>		Total	
	N	%	N	%	N	%
Tone	20	40	32	64	52	52
Spread	24	48	26	52	50	50
Disease	18	32	24	48	42	42

Twitter Content Analysis

The Twitter content analysis revealed the frequency of different strategies used by each health agency in response to the outbreak. Overall, 49.5% of tweets used amplification as a strategy, 62.7% for briefing, and 11.3% for encouragement. The WHO (@WHO) used 40.2% amplification, 66.7% briefing, and 10.2% encouragement. In contrast, the CDC (@CDC) used 75.4% amplification, 51.2% briefing, and 14.3% encouragement. Results yielded significant differences in the organizations' content on the platform. The CDC used amplification and encouragement significantly more often than WHO did [$\chi^2(1, N = 927) = 88.8, p = .000$; $\chi^2(1, N = 927) = 3.00, p = .05$], whereas the WHO significantly more often (66.7%) used briefing in its tweets [$\chi^2(1, N = 927) = 18.5, p = .000$].

Note that an individual tweet could be double coded by falling into more than one category. Refer below for an example of a tweet coded for both the amplification and encouragement. This tweet from @WHO was selected for both categories because of its uplifting, human message and link to further educational materials.

Example of Amplification and Encouragement Tweet	#Ebola survivors are helping to train health workers in #Liberia. Austin, a WHO “expert patient trainer” shares how http://goo.gl/chxrUR ”
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Refer to Table 6 for an overview of the Twitter content and to Table 7 for the frequencies by coding category.

Table 6: Twitter Content Overview

	World Health Organization	Centers for Disease Control and Prevention
Twitter Handle	@WHO	@CDCgov
Number of Followers	2.37 million	530,000
Number of Tweets	683	244

Table 7: Twitter Frequencies by Coding Category

Category	WHO		CDC		Total	
	N	%	N	%	N	%
Amplification	275	40.2	184	75.4	459	49.5
Briefing	456	66.7	125	51.2	581	62.7
Encouragement	70	10.2	35	14.3	105	11.3

Qualitative Content Analysis: Framing

The analysis of the 50 news stories in *The New York Times* and 50 news stories in *Daily Graphic* yielded the following dominant frames.

Framing in The New York Times

Problem Function

- What did coverage in *The New York Times* define as the problem in the 2014 Ebola outbreak?

Coverage in the mainstream U.S. publication defined the problem of the outbreak in several ways. Ebola's "unstoppable" and "rapid" spread, its lethality, and its unprecedented nature as the "longest and deadliest Ebola outbreak in history" comprised the main problems associated with the outbreak. Additionally, the narrative frequently mentioned Ebola's "rapid" and stealthy transmission. The disease's spread was described by phrases such as "astonishing" speed, "astonishment and alarm at the virus," "rapid spread," and spreading at an "exponential rate." These terms created and amplified a sense of urgency and invoked anxiety, fear, and grave uncertainty about the outbreak's future.

In turn, this led to Ebola's characterization as "out of control" with a "window closing" for health officials to scramble for a cure. For instance, public authorities such as President Obama were quoted saying that if the disease continues to spread out of control, "then it will spread globally." Future predictions were bleak, describing the outbreak as having "no end in sight" with "the worst yet to come."

Along with the spread of Ebola, focus on the specific features of the disease characterized the content. Ebola's mortality rate along with its 'unstoppable cascade' of symptoms portrayed it as an unconquerable force, a theme that began in the very first article in the publication. Phrases such as "killing scores of West Africans," "kills 9 out of 10 patients," "Ebola's deadly escape," and more amplified the mortality rate. Once

spread, its effects were framed as overwhelming with a barrage of symptoms, featuring “copious amounts of vomit or diarrhea,” and leaving corpses like “virus bombs.”

By framing the problem as Ebola’s spread and lethality, the U.S. media produced a narrative of fear, which mounted following the few isolated cases that crossed the U.S. border. Thus, Ebola was framed as an unstoppable and unconquerable force that, if entering the U.S. or not handled properly, would undoubtedly spell disaster.

Cause Function

- What was given as the cause of the problem?

Lack of preparation and proper knowledge to combat the disease in the U.S. and in affected West African countries was the cause of the problem as suggested by New York Times framing of the 2014 Ebola outbreak. Previously war-torn West African countries were explained to be lacking sufficient infrastructure and supplies to treat the surge of patients, leading to the prolific transmission rate. Afflicted countries were in dire need of medical personnel able to fight the outbreak; UNMEER mentioned that 19,000 doctors, nurses, and paramedics were needed and that it was ‘nowhere near that number’ during the outbreak’s peak. Additionally, the mobilization and modernization of Africa in recent times was identified as another cause behind the greater problem. Many of these causes were large-scale issues, unable to be changed in a short amount of time, which further emphasized the characterization of Ebola as uncontrollable.

Articles mentioned West African cultural practices that led to Ebola's spread, with the denial of Ebola and "20 percent of the Ebola deaths in West Africa stemm[ing] from unsafe burial practices" proposed as causes of the wider issue.

In addition, uncertainty around proper treatment of the disease exacerbated the problems associated with the outbreak. Hospitals were unsure how the virus was spreading from patients to healthcare practitioners despite following given protocol. U.S. patient Tim Duncan was even turned away from the hospital for unknown reasons despite being afflicted by the disease and exhibiting signs of a fever. He later died of the disease. Along with the infection of medical personnel and improper handling of the cases, this lack of awareness led to what were coined as "unconstitutional quarantines." One case involving a nurse from New Jersey who was kept against her will, despite being asymptomatic, garnered considerable coverage.

These instances further fueled the uncertainty surrounding best procedures for outbreak response. As a result, hospitals and then health agencies were viewed not only as unprepared for the situation but as uninformed and failing to acknowledge their inadequacies or inexperience to counter the outbreak's magnitude.

Moral Responsibility Function

- Who or what was considered responsible or at fault for the problem?

This frame fixes responsibility (i.e., blame) on an entity for a specific set of actions related to the Ebola virus. News coverage during the peak of the Ebola outbreak in the *New York Times* assigned blame to public health leaders (i.e., the WHO and the CDC) for the unpreparedness of medical workers and insufficient and delayed response

to the situation. Although hospitals were criticized for the disease's continued spread as nurses became infected, the CDC was blamed for providing shifting information about which threat category patients were in and failing to adequately train doctors and nurses at hospitals with Ebola cases on proper procedures.

Furthermore, inability to contain what was seen as an “avoidable crisis” (or its associated deaths and cases) was linked to public health authorities' wanting action that was too little, too slow, and too late. The CDC was accused of being “behind on this [situation],” unknowledgeable and unable to carry out its mission of protecting the public and saving lives. Blame was ascribed to its “inadequate and outdated policies designed to prevent routine infections and airborne diseases.” CDC initially assured hospitals that any hospital in the United States could be prepared to treat the outbreak. However, the minimal precautions the CDC prescribed were seen as too relaxed according to the media perspective, leading to the infection of U.S. health professionals and citizens.

Overseas, critics voiced that the WHO “failed to lead the global fight” and characterized government and public health authority response as a “political parade of follies.” The implication for health authorities is that if they had acted faster and more efficiently, without spreading misinformation and false reassurance, the outbreak would never have amassed its unprecedented scope and severity.

Remedy Function

- What is the remedy suggested for the problem?

The remedy frame expressed solutions and strategies for containing the 2014 Ebola outbreak and avoiding making the same mistakes in a future epidemic. The remedy frame proposed several solutions: preparedness, quarantine, and surveillance; reforms in protocol and guidelines; and coordination of efforts. In the wake of the peak of the outbreak, many called on hospitals to go above and beyond protocol, exercising extreme caution toward potential cases. As a result, “science-driven” or “science-backed” measures were taken to protect the public. The government arranged quarantines to isolate the potentially infected for 21 days (the longest period it has taken for Ebola symptoms to manifest in a victim), monitoring and taking temperatures of the individuals twice daily. After the CDC's missteps, hospitals called for “standard protocol, rigorously applied.” New and improved CDC guidelines were announced following “broad revisions with considerably more detail.”

Additionally, a coordinated effort was summoned to halt the outbreak’s spread, emphasizing that it was not a job for just one entity. The world community needed to coordinate efforts to not only “slash risk of importing Ebola” elsewhere but stopping it at its source in West Africa. Authorities viewed collaboration, cooperation, and communication as essential. The proposed solution was to encourage and incentivize medical personnel to go to West Africa, although that action was viewed as gravely delayed.

Framing in *Daily Graphic*

Problem Function

- What did coverage in *Daily Graphic* define as the problem in the 2014 Ebola outbreak?

The Ghanaian paper focused on the inevitability of Ebola's spread to Ghana and the terrible effects of the “evil Ebola virus” as the core problems of the outbreak. Strong imagery and adjectives created a narrative of fear, panic, and anxiety around the disease. The *Daily Graphic* referred to Ebola as the “deadly illness,” “evil Ebola virus,” “killer Ebola,” and “demonic Ebola virus,” further characterizing the disease as “terrifying” and “dreaded.” The result: personification of Ebola as a murderer unyielding to current defenses.

As the publication introduced fear, it also focused on the prospect of the disease crossing Ghanaian borders. News stories often speculated on the likelihood of Ghana being Ebola's next target. For instance, the outbreak was described as looking for “a door to enter the country,” and phrases such as “Ghana largest probability of seeing the arrival of Ebola Virus Disease,” “Ghana tops the list of countries at risk of recording an Ebola outbreak,” “it is only a matter of time before the disease hits Ghana,” and Ghana being in a “vulnerable position” created a sense of urgency for action and preparation against the threat. “We can't take any chances,” “we may be running out of time,” “if we don't respond to the outbreak, it is going to affect all countries in the world” and similar phrases spread a sense of impending doom. Transmission to Ghana was framed not as a matter of if but when.

Cause Function

- What was given as the cause of the problem?

In the Ghanaian publication, the cause can be described as a lack of population control and preparedness of health facilities. Cross-border activities rendered it difficult to counter the disease's spread, leading to the entrance of Ebola into Ghana being viewed as inevitable and unstoppable. In turn, this unsettled many about UNMEER's presence in the Ghanaian capital of Accra. The Ghanaian publication saw the entity as heightening the risk of Ebola spreading to their community, adding to the fear of infection in the country.

Meanwhile, in other West African countries, some were said to believe it was a government-created hoax, with many Liberians described as denying Ebola's existence. In the Ghanaian media's narrative, this belief caused the virus to spread faster there, increasing the threat of the disease's spread into Ghana. Other causes fell into the category of lack of assistance and lack of awareness in how to respond.

Moral Responsibility Function

- Who or what was considered responsible or at fault for the problem?

The Daily Graphic attributed responsibility to the Ghanaian government, slow world response, and, to a lesser extent, western society. News stories expressed concern that Ghana's government had not done enough to contain the disease; the government was often portrayed as unprepared and ignorant of Ebola and its implications for Ghana, despite having zero cases within its borders. Additionally, Ghanaian media directed blame on the world community. They conjured up the collective memory of the AIDS

epidemic, urging the international community to recognize the outbreak and fight it alongside them. News media described the response as “glacially slow,” unable to control the situation. From the Ghanaian perspective, the WHO had not done enough because the agency did not consider the outbreak to be its problem.

Moreover, Western society was blamed by Ghanaian media for perpetuating the idea of Ebola as an African problem rather than a world problem. The *Daily Graphic* attributed responsibility for this issue to western media’s biased narrative. Ghanaians felt western media further stigmatized the West African community, painting them as the “Dark Continent,” rife with “gloom and doom” of the African situation.

To a smaller extent, critique of the West mentioned ideas such as Ebola being invented to “wipe out the blacks,” with some sources believing “those who invented Ebola must be punished” as it was a “man-made invention,” “designed by white scientists.” This part of the frame also highlights another key aspect: citizens of some of the affected regions being in denial of the disease's existence.

Remedy Function

- What is the remedy suggested for the problem?

Prevention and preparedness characterized this frame in Ghanaian media. Stringent screening of travelers and school students were employed as contingency measures. In addition, travel advisories warned Ghanaians against traveling to Liberia, Sierra Leone, or Guinea. Measures of early detection and disease surveillance were planned to forestall future outbreaks. Overall, strategies emphasized self-preservation of the country to maintain its Ebola-free status. Many stories focused on groups

congregating for prayer and fasting to end the outbreak and avoid infection, using faith as a tool against the seemingly indomitable threat of Ebola.

Beyond its borders, the Ghanaian paper summoned the world community to provide international support and coordination in the fight against Ebola. Ghana's neighboring countries needed supplies, medical personnel, and donations to contain the outbreak, and, despite its unsettling occupation in Accra, UNMEER was seen as an answer to this call. Lastly, educational campaigns through an Ebola Awareness Week and other mass communication measures were taken to sensitize the public to the virus. These programs would often take the form of announcements during religious services and pamphlets in offices that featured information from handshake etiquette to proper hygiene. The goal: to keep Ebola in the minds of the general public and transmission at bay.

The Twitter Narrative

The analysis of the WHO's 638 tweets through its @WHO account and the CDC's 297 tweets through its @CDCgov account revealed unique narratives. The WHO defined the outbreak as a global threat with a mounting number of cases and an increasing need for action. It identified the outbreak as an "unusual challenge" requiring an "exceptional response." WHO director-general Margaret Chan was quoted in a tweet saying, "@WHO: Dr Chan: The whole world is responsible and accountable to bring the #Ebola threat under control. Action! Action! Action!" Emphasis went to "international solidarity" and communicating how one agency or entity could not fight a problem of international scope. The WHO deflected much blame, countering it by

noting that with Ebola as a world problem, it is on all of us—health agencies, governments, citizens, and medical personnel—to act.

WHO’s Twitter feed often featured human testimonials in the form of photos and quotations. A common theme was community engagement, with tweets commonly featuring portraits of West African community members helping contain Ebola in their communities. Rallying the world community to act was required to “beat Ebola.” Thus, the WHO set it up as a challenge to be eradicated by teamwork rather than the work of one agency.

The CDC’s Twitter feed focused on the dissemination of facts and events like #CDCchat to dispel misinformation on Ebola. For instance, it tweeted that “Ebola poses very little or no risk to the US at large, but CDC & healthcare providers in the US need to be prepared.” This summarized its approach to communicating with the public.

The CDC answered questions of concerned individuals in the United States, emphasizing that there was no need to panic over Ebola and that it was not an airborne disease. The agency presented itself as the go-to source on all things Ebola, working to educate the public on the issue that concerned many because of its rarity and relative unfamiliarity. Moreover, CDC tweets often reassured the U.S. public of the preparedness of medical professionals and the improbability of Ebola entering the country.

In response to the criticism the agency received of its misdirected policies after cases entered the U.S., the CDC released information on its revised policies and advice.

Tweets such as “New #Ebola guidance for health officials: how to decontaminate a residence & dispose of contaminated waste,” “New Q&A: CDC's guidance for monitoring symptoms & controlling movement to stop #Ebola spread,” and “CDC issues revised Interim U.S. Guidance for Monitoring and Movement of Persons with Potential Ebola Virus Exposure” pointing toward the action it was taking to inform the public.

Chapter 5: Discussion

Major Findings and Implications

This study explored the links between the agenda-building efforts of the WHO and CDC and concurrent news media coverage in Ghana's *Daily Graphic* and the United States' *New York Times* in the 2014 Ebola outbreak, allowing us to observe the agenda building, framing, and agenda setting processes around the event. These findings aim to add to our understanding of best practice in effective risk communication.

During the disease outbreak, the WHO and CDC received significant criticism on several fronts, but they still appeared to have considerable influence in media coverage. However, these entities were not setting the media agenda so much as being used as sources of the stories because of their prominence. Although it is common for journalists to use international health agencies as sources due to their credibility, reporters continued citing the WHO's and CDC's words, experts, and findings despite the criticism each entity endured. This reliance could be due in part to few people in the most affected areas being accessed or interviewed for sources.

Both the WHO and CDC played a central part in the Ghanaian and U.S. news narrative of the outbreak, but they only exerted partial influence over the media agenda and framing of the event itself. The WHO attempted to shift and even deflect the full responsibility that was pinned on its organization and its lacking response. Although there was a push for this in its own framing of the event on Twitter, this aspect was not reflected in the wider media agenda. In the global arena, news media still framed WHO

as the one that “failed to lead the global fight” despite the organization’s call for unified, global action against these larger public health threats. Timing was key, and press voiced its contempt for untimely and insufficient action.

On this front, the CDC attempted to calm fears related to Ebola’s mystique and the outbreak’s entrance into the U.S. This aspect of its narrative succeeded in seeping into the larger media agenda with many facts trying to dispel rumors and myths surrounding the rare illness. However, this occurred only after the disease had entered the U.S. and alongside stories of medical personnel infection by Ebola in hospitals because of the initially insufficient guidelines.

Findings confirmed Parmelee (2013), showing that tweets during the outbreak were able played a role in first- and second-level agenda-building; however, this aspect was not uniform across all types of tweets. Twitter proved effective in terms of spreading information but not in terms of quelling panic, ensuring public safety, and encouraging the public that the response was strong and sufficient. Findings support Parmelee (2013) because, although the tweets did have some influence, they were not the only force building the media agenda and sometimes were entirely ineffective in that function. For instance, tweets within the briefing and amplification categories were more often reflected in respective news media coverage. In the categories of encouragement, coverage was sparse, especially in the start of the outbreak, with few articles in the U.S. and Ghanaian news media reflecting the stories and information shared under this category.

To be more effective in shaping the media agenda, the WHO and CDC could have done the following: earlier use of the encouragement tweets and coordinated communication strategies. Better use of Twitter by implementing more tweets in the encouragement category in earlier stages of the outbreak could have prevented a degree of backlash. These tweets could inform the public of what action these entities were taking while quelling unnecessary panic that surrounded the “insurmountable” threat. Additionally, most of the criticism and moral responsibility was pinned to the WHO and CDC’s untimely and uncoordinated response. By the time the encouragement messaging became consistent, media had already begun questioning and criticizing each agency’s actions. Certainly, an organization’s actions must match its words, so if little action and collaboration were being taken early on in the outbreak, then the Twitter feed would not reflect that.

Along with earlier employment of encouragement messaging, many high-ranking officials and media alike expressed a need for a coordinated effort against these international threats. From a health communications standpoint, this would translate to a more concerted effort for effective risk communication that reflects the collaborative medical strategy on the ground.

Although the WHO and CDC were condemned for their actions and inaction in their insufficient response, the unprecedented outbreak was a watershed moment for all health officials and agencies worldwide. Epidemics such as the 2014 Ebola outbreak are not a thing of the past. In our ever-interconnected, globalized world, outbreaks have unprecedented potential to spiral out of control. However, we are also connected

through social media in unprecedented ways, allowing information to be disseminated to the masses and conversations to exist that simply could not have happened before. The threat may be evolving, but so are our tools—such as Twitter—for countering them. Ultimately, the WHO and CDC could have done a significantly more effective job in their communication efforts, but this outbreak offered many lessons to be learned that could help prevent or control another global health emergency.

Limitations, Contributions, and Future Study

There are several limitations to this study. Despite the unique nature of the 2014 Ebola outbreak, it is still only one outbreak within a history of many unique outbreaks that have occurred with different diseases, countries, and within other contexts. Additionally, this study focused on only several media sources when, in fact, there were many other worldwide actors during this outbreak. Lastly, in regard to framing, Twitter has a limited capacity for carrying whole frames, which makes it difficult to tease out a qualitative framing analysis when compared to other media.

Looking forward, future studies could research outbreaks for an extended time period rather than focusing solely on the peak. In turn, this could provide an even more nuanced and comprehensive view of an epidemic and its various stages. Similarly, studies could examine a larger number of information subsidies while tracking them through specific media outlets. This could expand not only the breadth of content but the number of countries and perspectives included in the analysis.

Additionally, further research could incorporate interviews with journalists about their use of Twitter to give a more holistic view of the agenda-building process

through a firsthand perspective. One could interview public health authorities for similar reasons, investigating how they communicate using Twitter during disease outbreaks and their philosophy on what constitutes effective risk communication through this platform.

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