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The Summer of *Salmonella* in Salsa: A Framing Analysis of the 2008 *Salmonella* Outbreak Linked to Tomatoes and Jalapenos

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ABSTRACT

The purpose of this study was to examine television news coverage of the 2008 *Salmonella* outbreak linked to tomatoes and jalapenos through the scope of framing theory. Transcripts of news broadcasts on ABC, CBS, CNN, and NBC from May 1, 2008 to October 1, 2008 were researched, using a qualitative content analysis. A Lexis-Nexis (news search engine) search using the search term "*Salmonella*" revealed 71 usable transcripts.

Researchers found anti-government, pro-agricultural producer, and anti-Mexican produce imports were the most common frames presented by the networks. Specifically, CNN voiced strong disapproval for the manner in which the United States Food and Drug Administration and the Congress handled the crisis. CNN was also very supportive of tomato growers' financial distress while they were unable to market their crop. Many of the stories were simple, informational pieces informing the public about *Salmonella*'s symptoms and prevention methods, varieties of tomatoes and peppers to avoid, and number of illnesses. In all, the researchers found most of the news coverage was based on the facts that were available at the time; however, some networks provided personal opinions and speculation.

INTRODUCTION

In April 2008, 57 reported cases of *Salmonella* in Texas and New Mexico put the Food and Drug Administration (FDA) on alert for a possible foodborne illness outbreak *(15)*. By the end of August 2008, a reported 1,440 Americans in 43 states and Washington, D.C. had become ill because of the outbreak *(1)*.

In late July, the FDA stated that jalapeno and serrano peppers grown in Mexico were the likely cause of the outbreak; however, the government had initially thought that tomatoes were the culprit *(1)*. By the end of the outbreak, the United States tomato industry had lost a reported $250 million and blamed the government for being singled out on the basis of "flimsy evidence" *(1)*.

This study examined how television news media told this food recall story through the scope of framing theory to understand how the media framed this well-known agricultural issue.

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Timeline

According to news releases posted on the FDA's Web site, the agency began warning the public about raw red plum, red Roma, or round red tomatoes, citing them as the cause of the outbreak on June 3, 2008 (15). On June 5, 2008, the FDA stated that tomatoes grown in Arkansas, California, Georgia, Hawaii, North Carolina, South Carolina, Tennessee, Texas, Belgium, Canada, Dominican Republic, Guatemala, Israel, Netherlands, and Puerto Rico were not associated with the outbreak (16). On July 1, 2008, the FDA began to suspect foods that could be served alongside tomatoes, and thus began the query into peppers (14). On July 17, 2008, the FDA lifted the warning on tomatoes, citing no decrease in the number of illnesses since mid-June; they also stated that consumers should eat jalapeno and serrano peppers with extreme caution (17). Agricola Zaragoza, a produce distributor in McAllen, Texas voluntarily recalled jalapeno peppers on July 21, 2008 because the FDA suspected peppers being transported through that facility could be contaminated with *Salmonella* (18). On July 25, the FDA concluded that the contaminated peppers were grown in Mexico and not the United States, and on July 30 the agency added serrano peppers to the warning (14). Finally, on August 28, the Centers for Disease Control and Prevention (CDC) lifted the warning on all produce (1).

Media coverage of food safety issues

Anderson (2) found that in a food safety situation, environmental or health activists were quoted five times as often as food scientists. Riddle (11) determined that food safety stories stay in the spotlight because every major or minor foodborne illness outbreak is reported in the media. The FDA's assistant commissioner for food protection noted that the outbreak caused by *E. coli* in spinach had sparked media interest, and the media has paid particular attention to food safety stories ever since (8). Anderson (2) concluded that few reporters have science training and few scientists have training in communicating with the media in simple and clear language, which creates a problem when trying to tell food safety stories.

Framing theory

Framing theory is "a central organizing idea or story line that provides meaning to an unfolding strip of events" (7). Entman (6) argued that journalists choose aspects of a perceived reality and place those aspects in a more prominent place within the text to promote a problem, interpretation, or recommendation. Simply stated, frames are how journalists tell a story, and frames frequently tell the public how to think about an issue. Any given story can include more than one frame.

Neuman, Just, and Crigler (10) argued that reporters do not intentionally frame stories; instead, constraints from a news organization's management, professional judgment, and opinions about the audience and the situation can lead a writer to give a story a certain angle or tone. Additionally, interest groups, social institutions, and activists are experts at getting journalists to present their frame (4). Many of these groups can involve journalists in constructing news drama, which in turn promotes a frame.

For example, a news director may allow only a short amount of time in a newscast to tell a story; the reporter then has to narrow the number of sources and soundbites to tell the story. In addition, the reporter may think that informing the public of the symptoms of *Salmonella* is more important than which types of tomatoes are potentially dangerous. The station may have research that indicates they have a strong viewership of stay-at-home moms; therefore, the reporter may think it is most important to focus on the effects *Salmonella* has on children to keep parents informed. An interest group for the tomato industry may encourage a reporter to write about the dollars lost by tomato farmers. These are different examples of how frames can be influenced without a reporter realizing he or she constructed a frame.

This study analyzed the frames and tones of frames presented—the frames that journalists created to make sense of the information. This study also analyzed the sources used by the media and how those sources could have influenced the frames presented—what Scheufele (13) would call "external sources of influence." These sources could be political actors or interest groups.

Research objectives

The purpose of this study was to examine coverage of the *Salmonella* outbreak in 2008 through the scope of framing theory (13). By understanding how the media frame an agricultural issue, agricultural communicators can more effectively communicate and promote messages to the mainstream media. Television rather than print sources were analyzed because most of the recent content analyses in agricultural communications involved print media (3, 12), and much can be learned from television news. The networks chosen for this study were the four major United States news networks: ABC, CBS, CNN, and NBC.

Two research objectives guided this study:

1. Determine how the 2008 *Salmonella* outbreak was framed by ABC, CBS, CNN, and NBC.
2. Determine how the sources used by individual networks played into the framing of the issue.

Certain interest groups and organizations can help promote a frame; therefore, it was important to determine which sources were used, and what, if any, frame those sources promoted.

MATERIALS AND METHODS

To address the research objectives, this study employed qualitative content analysis methodology. The methodology closely fits with Berg's (5) definition of a directed content analysis. Categories had already been established by a previous study involving an agricultural crisis in the media (3); however, the categories served as guidelines as new themes and categories emerged from the data. Although the first FDA warning was released in early June, the time frame for this study was from May 1, 2008 to October 1, 2008, to ensure that all stories reported about the tomato and jalapeno recall were collected. The researchers utilized a Lexis-Nexis search with the keywords "*Salmonella*." Transcripts from ABC, CBS, CNN, and NBC were collected. Since this recall encompassed numerous states and several foreign countries, a national news source was appropriate. Duplicated stories were removed from the data set. Because of the relatively small number (n = 71) of *Salmonella* stories airing on television, the researchers analyzed each story.

TABLE 1. List of frames and themes by tone and network (Pos. = Positive; Neg. = Negative; Neu. = Neutral)

Frames	ABC			CBS			CNN			NBC			Total
	Pos.	Neg.	Neu.	Pos.	Neg.	Neu.	Pos.	Neg.	Neu.	Pos.	Neg.	Neu.	
Government		7		1	4		1	13	13		3		42
Farmers	4			5	2		11	1					23
Mexico								4				1	5
Themes													
Information			3			7			4			5	19
Tomato	1	5			4			2		1	4		17
Peppers		4			1			4					9
Supply chain					1			1				1	3

The unit of analysis for the study was each individual story. Two separate researchers examined each story, using a researcher-created coding sheet. Categories on the sheet were loosely based on the Ashlock et al. *(3)* study of the mad cow disease crisis and included the network, total number of words in the story, air date, types of sources, overall tone (positive, negative, or neutral), and prominent frame(s). The researchers kept track of frames as they emerged.

Two researchers independently coded each article and then met to reach consensus on all stories. In all, the researchers agreed on approximately 95% of the stories and then through discussion and explanation of methods, came to an agreement so that all findings were consistent with both researchers. Accountability was maintained by making an audit trail that consisted of all news transcripts and coding spreadsheets.

The researchers both are from agricultural backgrounds and consider themselves to be proponents of American farmers. Although the researchers acknowledged this bias a priori, they made conscious efforts to prevent this bias from making them overly sensitive to stories that may have been negative toward farmers. The researchers also note they both watch at least one national newscast per day and acknowledge that they prefer certain networks; however, each researcher prefered a different network, and those differing opinions kept favoritism in check.

ABC News aired 17 stories, CBS News aired 16 stories, CNN aired 24 stories, and NBC News aired 14 stories; however, the network aired the same stories on the Nightly News and The Today Show on six different occasions, which lowered NBC's story count.

Of the 71 stories, 36 were packages; four were packages followed by live interviews; nine were live interviews; 16 were readers (no interview or cover video); and eight were voice-over videos, two of which were accompanied by a sound bite and six of which were not.

RESULTS

Findings related to research objective 1 – determine how the 2008 *Salmonella* outbreak was framed by ABC News, CBS News, CNN and NBC News

The mystery of not knowing the true source of the *Salmonella* was a common element on all four networks. In 50 of the 71 stories, the unknown source of the *Salmonella* was a part of the story.

As a result of analyzing the stories, several frames emerged. Some were presented with negative tones, some positive, and some neutral. The most common frame was criticism of government entities (*n* = 29), mostly the FDA, but the President of the United States and government import regulations were also disapproved of in several stories. CNN aired the highest number of negative stories, with 13 stories, condemning the government, even stating that FDA directors were "overpaid."

During the *Salmonella* investigation, 23 stories were aired about tomato growers; all but three were positive, meaning the stories were in support of the farmers. CNN aired the most (*n* = 12); all were positve but one. Some stories emphasized how upset tomato growers were with the FDA; others presented the frame of financially distressed farmers who were unable to sell their crop.

CNN aired four negative stories that negatively framed Mexican produce imports, while NBC aired one story that was presented in a neutral manner. A CNN anchor specifically recommended country-of-origin labeling. CNN also stated that a food tracking system could have stopped the outbreak sooner.

During data coding, themes emerged that could not be considered true frames. Informational stories (*n* = 19) were very common. Each network frequently presented information notifying the public of a *Salmonella* warning from the FDA, informing viewers of *Salmonella* symptoms, explaining how to prepare foods to avoid illness caused by the bacterium, listing the types of tomatoes to avoid, listing the states that grew safe tomatoes, and listing the number of people ill with *Salmonella*. All of the informational stories had a neutral tone.

General stories about tomatoes had a negative tone in the early weeks of the warning (*n* = 15 negative, two positive).

TABLE 2. Timeline of news events

Date	News Event
June 3	**FDA issued first warning.**
5	**FDA identified which states were not associated with the outbreak.**
9	First CNN report. Identified the produce as coming from Mexico.
	First CBS report. Identified produce from certain states and countries as safe.
10	CBS reported the FDA ruled out Florida.
17	ABC reported that jalapenos and cilantro were also being considered.
20	CNN reported FDA inspectors were going to Florida and Mexico. Somewhat blamed produce from Mexico.
21	NBC suggested Mexican produce may have played a role in outbreak.
22	CNN reported that Mexico may have found *Salmonella* cases.
28	CNN reported that investigators were in Mexico.
July 1	**FDA announced jalapenos and cilantro were suspicious.**
	NBC reported that tomatoes were still suspected, but FDA was looking into foods served with tomatoes.
2	CNN reported that no tomatoes had been found with *Salmonella* on them.
	CBS reported other produce was being tested.
3	CNN reported a strong possible Mexico link and tomato shipments from Mexico were being halted.
10	CBS reported that tomatoes and some varieties of peppers were still suspected.
	CNN reported the investigation was shifting to jalapenos, serrano peppers, and cilantro. Reported the FDA was inspecting imports at the Mexican border.
13	**FDA lifted warning on tomatoes.**
	ABC, CBS, and NBC reported that tomatoes were safe.
17	CBS reported that inspectors were being sent to Mexico.
	ABC reported that peppers were not cleared but tomatoes were.
18	Agricola Zaragoza voluntarily recalled jalapenos.
	CNN and NBC reported *Salmonella* was found on a jalapeno in McAllen, TX.
	CNN said they knew all along it came from Mexico.
21	CNN reported the contaminated pepper was raised in Mexico.
	ABC and CBS reported a pepper was the culprit.
22	**FDA declared the contaminated peppers were not grown in the United States.**
	NBC reported the pepper came from Mexico, tomatoes were clear.
25	**FDA announced seranno peppers were added to the warning.**
26	CNN reported the contaminated pepper was grown in Nueva Leonne, Mexico, and that *Salmonella* was found in irrigation water.
30	ABC suggested avoiding peppers from Mexico and reported that serrano peppers were the likely culprit from Mexico due to contaminated irrigation water.
31	NBC reported the *Salmonella* came from irrigation water in Mexico, but the Mexican government was denying it.
Aug. 2	CNN reported the FDA was not admitting to mistakes.
28	CDC lifted warning on all produce.

TABLE 3. Interview sources utilized by network and total number of sources

	ABC	CBS	CNN	NBC	Total
FDA	4	6	13	5	28
Farmer/Grower	3	2	4	3	12
Consumer	2	4		3	9
Politician	1		8		9
Center for Science in the Public Interest	4	1	3		8
Supply chain		3	2	3	8
Other	3	1	3	1	8
Food safety expert			5	2	7
Center for Food Safety (based in Washington, D.C.)	2	2		2	6
CDC			4	1	5
Medical doctor/medical professional	1	1	2		4
Attorney	1		2		3
Government, other	1		1		2
Victim	1	1			2
Health Department	1				1

As the investigation shifted to peppers, the negative tone switched to stories concerning jalapenos and serranos (*n* = 9). Table 1 is a complete list of frames and themes by network and tone.

Timeline

The researchers found some interesting differences in when and how certain pieces of the story were reported. The FDA released information about the warning on June 3, 2008 and then again on June 5, but none of the networks reported the information until June 9. On June 10, CBS reported that the FDA had ruled out tomatoes grown in Florida as a source of *Salmonella*; however, on June 20, CNN reported that FDA inspectors were going to Florida and Mexico. Another inconsistency occurred on June 17, when ABC reported that jalapenos and cilantro were being considered as culprits, yet the FDA did not release that information until July 1.

CNN began blaming produce from Mexico very early in the investigation (June 9). NBC was the only other network to report that Mexican produce

could be the culprit, but that report was not released until June 21, and the FDA did not announce that the contaminated produce was not grown in the United States until a month later. Curiously, CNN did not report the story when the FDA lifted the warning on tomatoes. No network aired reports when the CDC lifted the warning on all produce on August 28.

Because this story combined many events, and each network reported the events differently, Table 2 is a detailed timeline of events beginning in June to help the reader more clearly understand the events that occurred in 2008. Information released by the FDA is printed in bold font.

Findings related to research objective 2 – analyze the sources used by individual networks and how those sources played into the framing of the issue

The sources interviewed can influence the frames presented by the me-

dia. The FDA was the most frequently used source (*n* = 28), and David Acheson, FDA's assistant commissioner for food protection, was interviewed the most, at 23 times. The second most popular interviewee was Caroline Smith DeWaal, food safety director of the Center for Science in the Public Interest, a nutrition, health, and food safety advocacy group, with five interviews. A complete list of sources and networks can be found in Table 3.

CONCLUSIONS AND RECOMMENDATIONS

Conclusions related to research objective 1

Research Objective 1 sought to determine how the 2008 *Salmonella* outbreak was framed by ABC, CBS, CNN, and NBC. Prior studies had led researchers to speculate that agriculture would be framed in a negative manner *(3, 12)*. In fact, only three stories aired that were negative toward farmers. CNN was most supportive, with 11 stories that framed the plight of the tomato farmer during this crisis.

The researchers found that CNN began implicating Mexico only seven days after the FDA announced the warning on tomatoes. On several occasions CNN showed support for country-of-origin labeling, almost implying that if consumers had known that produce was grown in Mexico, this incident would not have occurred. In the end, CNN was correct about the *Salmonella* originating in Mexico; however, this was well before the FDA made that claim. CNN did air some stories that were responsibly reported and based on the known facts at the time; most of the speculative stories were on *Lou Dobbs Tonight*.

Lou Dobbs also presented a strong anti-government frame and even suggested that the president be impeached over the incident. Stories on CNN as well as CBS were extremely critical of the FDA and the United States' food tracking system. On the other hand, CNN was very sympathetic to the tomato farmers who were unable to sell their products, ultimately because of a problem that did not involve their crop. In relation to framing theory, the aspects of the perceived reality *(6)* of this story that were most commonly reported were the mystery of the *Salmonella* source, the performance of the FDA, and the plight of tomato farmers. It is important to note that CNN has 24 hours of news a day and has more time to dedicate to live interviews and news talk formats that allowed hosts and guests to make speculations and voice opinions. CNN was especially opinionated and critical of President Bush's handling of the incident.

ABC reported on July 31 that serrano peppers were the culprit; however, serrano peppers were only part of the warning, not the declaired cause. The FDA made the announcement about serrano peppers six days before ABC aired the story.

Conclusions related to research objective 2

Research Objective 2 sought to analyze the sources used by individual networks and the ways in which those sources played into the framing of the issue. Baran and Davis *(4)* stated that interest groups are experts at getting their frames presented. Anderson *(2)* argued that many reporters do not have science

training, and few scientists have training in communicating with the media. Therefore, finding sources that provide information in a manner that is easy for reporters and the viewers to understand can be difficult. Sometimes the sources the media use may present the information well, but the information might not be scientifically accurate. For example, research found that Caroline Smith DeWaal, a frequent interviewee during the 2008 *Salmonella* crisis, presented inaccurate information during the Wendy's crisis when a human finger was allegedly found in a bowl of chili *(9)*. During the 2008 *Salmonella* crisis, DeWaal appeared to be negatively biased in her views about the safety of the United States' food supply; however, her information was accurate. The researchers did not find any other inaccuracies based upon information from interview sources, and the farmers who were interviewed were generally articululate and provided good information. However, using sources that have provided poor information in previous stories can reduce the credibility of the news organization.

As Anderson *(3)* argued, many reporters may not have a science background. In the *Salmonella* stories, most of the reporters were general assignments reporters or anchors, and typically, the anchors read the information written by a news producer or reporter. Two medical reporters covered the story. However, a lack of a science background did not seem to reduce the accuracy or understandability of the stories. The researchers note they are not familiar with the amount of scientific or agricultural knowledge the general assignment reporters had.

Although food safety stories are never good for the commodity at the center of the investigation, the reporting of the *Salmonella* cases in the summer of 2008 was, for the most part, fair and accurate toward farmers and agriculture in general. It is unfortunate that the tomato industry lost $250 million dollars due to the incident, but poor or biased reporting did not cause the losses. It was true the FDA was investigating tomatoes, and tomatoes were the supposed source of the *Salmonella* until July 1. With the exception of speculation about the tainted produce originating in Mexico, broadcast media reported the information that was based on fact at the time.

Recommendations for future research

This research looked at how the media presented frames on an agricultural story. The researchers are currently investigating how the media built the frames for this story, by interviewing those who most commonly reported this story.

Another planned study is a risk and crisis communications case study building upon this research. The researchers plan to interview those who were frequently interviewed and those who spent significant time communicating with the media, such as the FDA, CDC, Florida Tomato Growers Exchange, and others. This case study will also seek to determine what the tomato industry could have done differently in this situation. Another objective will be to develop a model to help an industry when it is under an investigation; such a model could have been helpful to the spinach and lettuce industries during the *E. coli* investigation in 2006.

In addition, analyzing how the FDA and CDC handle crisis communications from situation to situation would be interesting to see how they deal with the different situations.

The findings of this study are limited to the 2008 *Salmonella* outbreak; however, these findings will be used to contribute to a similar research study that will analyze the television stories during the peanut butter recall that occurred in early 2009 to see if other food industries were treated differently than produce.

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