From Strategic Management to Policy Consensus in a Health-related Crisis: An Analysis of the National Salmonella Outbreak in the United States

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Abstract

This study applied the contingency theory to examine how the U.S. government (i.e., FDA and CDC) managed its stance and strategies during the salmonella outbreak that occurred in the summer of 2008. A content analysis of 72 news articles revealed that the government primarily demonstrated advocative stances toward consumers and produce industries while cooperating with state health departments to pinpoint the source of the outbreak. All publics, with the exception of the tomato industry, appeared accommodative to the government throughout the crisis. Regarding contingent factors that influenced the government's stances and strategies, the issue under question (e.g., the source of the outbreak) appeared to be the predominant factor. In accord with the essence of the contingency theory, the results suggest that strategic crisis management is dynamic and that the stances and strategies of an organization shift over time along a continuum from advocacy to accommodation according to a given situation. The findings also suggest that the media may play a supporting role for the government in delivering immediate, up-to-date information and triggering public attention to problems in the existing food systems.

Introduction

Health-related crises, such as epidemic diseases and food poisonings, require immediate attention and rapid dispensing of accurate information, and the government often takes a leading role in dealing with those critical situations (Jin, Pang, & Cameron, 2006). At the onset of a health-related crisis, the government's handling of the situation reflects not only its responsiveness to public demands, but also its ability to protect its citizens from potential risks (Lee, 2007). While searching for the causes of and solutions to a problem, the government tries to communicate information relevant to the issues at hand in a timely manner that reduces uncertainty or misunderstanding among publics. It also gives guidelines that publics can follow in order to avoid putting their health at risk. In terms of the contingency theory, such communication can occur at any point along the continuum—from advocacy to accommodation—and involve different strategies and tactics for its multiple publics based on its stance, which moves along the continuum (Cameron, Pang, & Jin, 2007; Cancel, Cameron, Sallot, & Mitrook, 1997). This dynamism of the contingency theory can be applied to analyze the U.S. government's crisis management in the nationwide outbreak of salmonella that occurred in the summer of 2008.

The first documented illness from salmonella occurred on May 11, 2008, and the outbreak lasted for more than three months due to the uncertainty about its source (Weise, 2008). Throughout the crisis, the Centers for Disease Control and Prevention (CDC) and the Food and

Drug Administration (FDA) cooperated in their efforts to trace the source of the outbreak and terminate the spread of illness. The FDA first focused on salmonella-tainted tomatoes and issued a nationwide warning on June 7 that consumers should not eat raw red tomatoes. Still, the FDA and CDC searched for the exact source of contamination, and the number of infected people rapidly increased, soon becoming the largest food-borne illness outbreak of the past decade (Venkataraman, 2008). On June 27, the FDA and CDC announced that they were investigating other foods commonly eaten with tomatoes (e.g., jalapeno peppers, cilantro, and salsa), although they were still concerned about tomatoes. The FDA revoked its warning of avoiding tomatoes on July 17 and finally found a matching strain of salmonella on a jalapeno pepper at a distribution center in Mexico on July 21. After causing more than 1300 illnesses, the outbreak of salmonella was finally terminated on August 28 when the FDA lifted its warning to consumers about jalapeno peppers. During the course of the crisis life-cycle, many conflicting issues emerged among different groups of public with respect to perceived responsible parties for the underlying problems behind this crisis. In the early phase of the crisis, the produce and food industries cooperated with the FDA by pulling tomatoes from the market. After the FDA's warning against eating jalapeno peppers, however, the produce industry, especially tomato growers, accused the FDA of making a hasty decision to put tomatoes first on the suspect list (Venkataraman, 2008). On the other hand, the FDA blamed produce industries for not having electronic food tracking systems, delaying the investigation (Lazo, 2008). As the situation unfolded, the government's and other publics' stances toward each other changed.

Despite growing attention to understanding dynamics in the strategic management of crises, little research has been conducted on health-related crises using the contingency theory. This study sought to shed more light on the application of contingency theory in health-related crises by analyzing the recent crisis of Salmonella Saintpaul. Therefore, the primary purpose of this study was to explore how the salmonella outbreak was managed and communicated by U.S. government agencies. Another aim of this study was to identify the significant role that the media played during the crisis. This study focused on the role of the media as a mediator between the government and its publics, but it also explored how the formation of public opinion arose along the stages of the crisis life-cycle and how it affected food-safety policies and systems. The findings of this study provide important implications for public relations scholars and practitioners seeking to attain a better understanding of crisis dynamics that possibly lead public debates and social consensus on critical issues and to develop a strategic communication approach to mitigating a health-related crisis and resolving related issues. This study also contributes to advancing a theoretical framework for the application of the contingency theory to crisis communication.

Literature Review

Contingency Theory of Strategic Conflict Management

The notion of public relations as a strategic management function has evolved based on two major public relations theoretical foundations: the excellence theory and the contingency theory. Grunig and Hunt's (1984) excellence theory posits that public relations activities can be classified into four typologies: (a) press agentry/publicity model, (b) public information model, (c) two-way asymmetric model, and (d) two-way symmetric model. It emphasizes the two-way symmetric model as normative theory, which guides practitioners regarding how they should perform public relations to be most effective and ethical. Noting that public relations is too complex and versatile to be forced into the four models, however, Cancel et al. (1997) proposed

the contingency theory of accommodation as an alternative to the normative excellence theory in public relations. They argue that a continuum model could explain public relations practices more accurately and better reflect the dynamics of strategic communication. The contingency theory assumes that strategic communication occurs at any point along a continuum from pure advocacy to pure accommodation (Cameron, Wilcox, Reber, & Shin, 2008). Advocacy refers to the degree to which an organization maintains its own standpoint disagreeing with the public's viewpoint, while accommodation means that an organization gives in and takes a position in favor of its publics (Cameron et al., 2008). In other words, the position or stance that an organization takes in dealing with conflict can be placed on the continuum from pure advocacy to pure accommodation. Between these two extremes of the continuum, there are other stances that involve "different degrees of advocacy and accommodation" (Cancel et al., 1997, p. 37). Capturing the dynamics of conflict, the continuum identifies the stance of an organization toward a given public at a given time in a given situation, and the organization's stance, in turn, affects its strategies and tactics (Cancel et al., 1997). Based on this theoretical perspective, "true excellence in public relations may result from picking the appropriate point along the continuum that best fits the current need of the organization and its publics" (Cancel et al., 1997, p. 35).

There are two basic principles underlying the contingency theory (Cameron et al., 2008). First, an organization's stance is determined by various factors when dealing with a conflict or crisis. The second principle is that the stance of public relations changes as events and factors evolve. The contingency theory provides 87 factors affecting how an organization responds to conflict, and those contingent factors are categorized into 11 groups on internal and external dimensions (Cancel et al., 1997). External variables consist of the following five groups: (a) external threats, (b) industry-specific environment, (c) general political/social environment, (d) external public characteristics, and (e) the issue under consideration. Internal variables include (a) general corporate/organizational characteristics, (b) characteristics of the public relations department, (c) top management characteristics, (d) internal threats, (e) personality characteristics of involved organization members, and (f) relationship characteristics. Through quantification of the contingent variables, Shin, Cameron, and Cropp (2006) showed that all of the variables are well-combined into a simple matrix of these thematic categories and confirmed the validity of the contingent variables in order to construct a theory for public relations.

To test the practicality of the contingency theory, Cancel, Mitrook, and Cameron (1999) interviewed public relations practitioners and further classified these contingent variables into two dimensions: predisposing and situational factors. Predisposing factors, such as the characteristics of the dominant coalition and organizational size and culture, affect an organization's stance before it enters a situation with a given public. Situational factors, such as perceived urgency and threat and the feasibility of accommodation, may change the stance of an organization while it interacts with a particular public (Cancel et al., 1999). By employing in-depth interviews with public relations practitioners, Cameron, Cropp, and Reber (2001) provided six proscriptive variables that prevent an organization from accommodating its publics. They found that the practitioners first described their approaches in a way that was consistent with the two-way symmetrical model. Deeper glimpses into these approaches, however, revealed less or nonexistent two-way symmetry in their actual practice; rather, it was the proscriptive factors that applied and combined to directly affect their decisions: (a) moral convictions, (b) multiple publics, (c) regulatory constraints, (d) management pressure, (e) jurisdiction issues, and (f) legal constraints.

Contingency scholars have shown the application of contingency theory to public relations practice in diverse fields, such as high-profile conflict resolution (Shin, Cheng, Jin, & Cameron, 2005), intra- and inter-organizational conflicts (Pang, Cropp, & Cameron, 2006; Yarbrough, Cameron, Sallot, & McWilliams, 1998), health-related crisis management (Jin et al., 2006, 2007; Qui & Cameron, 2005), the practitioner-lawyer relationship (Reber, Cropp, & Cameron, 2001), and the source-reporter relationship (Shin & Cameron, 2003, 2005). Specifically, Shin et al.'s (2005) study of high profile conflicts supports the dynamics of conflict management and provides evidence that an organization's stances and strategies, as well as its publics' stances, shift over time along the contingency continuum as situations unfold. In addition, focusing on dynamics in a health-related crisis, Jin et al. (2006) examined how the Singapore government strategically managed a crisis of severe acute respiratory syndrome (SARS) by analyzing its stance and crisis communication strategies toward multiple publics and influential contingent factors. The crisis management of the Singapore government appeared to be proactive advocacy; the government took the lead in dealing with the situation and protecting its citizens from the SARS infection, and thus managed to win public support. Through their comparison of the Chinese and Singapore governments, Jin et al. (2007) highlight that different organizations may take different stances and strategies in a given situation according to influential contingent factors on an organization's decision. Based on these empirical analyses of successful crisis management cases, the contingency theory has been elaborated and advanced to offer useful insights into strategic conflict management and provide theoretical ground for analyzing crisis-response strategies.

It is important for an organization to develop effective crisis-response strategies that may reframe the public's general comprehension of negative issues (Benoit & Pang, 2007) and generate supportive behaviors as well as collective emotions among various publics (Coombs, 1999). From a contingency theory perspective, an organization's crisis communication strategies may be determined by its stance toward a given public (Cameron et al., 2007, 2008) and can also be described in terms of the contingency continuum (Jin et al., 2006). As an elaboration of his typology of crisis communication strategies, Coombs (1998) proposed the accommodation-defensive continuum by integrating various crisis communication strategies. This continuum includes seven categories: attacking the accuser, denial, excuse, justification, ingratiation, corrective action, and full apology and mortification. Jin et al. (2006), however, modified Coombs' continuum in accord with the contingency framework by adding the strategy of cooperation and reordering strategies. The modified continuum includes the following strategies (in order from advocacy to accommodation): (a) attack the accuser (aggressively defending itself against an accuser), (b) denial (asserting that there was no crisis), (c) excuse (avoiding or minimizing its responsibility for the crisis by denying any intention to cause the crisis), (d) justification (explaining why it had to take a certain course of action), (e) corrective action (fixing the problem and promising to prevent its recurrence by changing its initial positions or actions), (f) ingratiation (taking action to generate a more favorable public attitude toward the government), (g) cooperation (making overtures to reach out to the public with the goal of resolving the problem), and (h) full apology (taking full responsibility, making apologies, and asking forgiveness for its wrongdoing) (Coombs, 1999).

In accord with the essence of the contingency theory, this study sought to examine the U.S. government's management of the salmonella outbreak and communication efforts, focusing on the complexities and dynamics of strategic management. In this study, the U.S. government refers to two federal agencies—the CDC and FDA—that were responsible for dealing with this

food-poisoning crisis. As the contingency theory notes than an organization may take different positions toward different publics in a given situation (Yarbrough et al., 1998), the U.S government strategically dealt with various publics: consumers, the tomato industry, the pepper industry, the food industry, state health departments, and the Mexican government. Based on the framework contingency theory, the following research questions were proposed:

> RQ1a: What kinds of stances and strategies were used by the U.S. government and its publics during the various stages of the crisis life-cycle?
>
> RQ1b: What contingent factors appeared to influence the U.S. government's stances and strategies toward its multiple publics?

The Role of Media in Crisis

When a crisis breaks out on a large scale, the government should communicate important, up-to-date information with its publics in a timely manner due to the rapid evolution of the situation and the uncertainty about its impact (Jin et al., 2006). Thus, the media may play a significant role in informing the public of what has happened and guiding them to avoid potential risks in times of crisis. Particularly in outbreaks of serious diseases, such as SARS, the government can strategically deal with its multiple publics in cooperation with the media and resolve critical situations without serious damage to its image (Jin et al., 2006, 2007; Qui & Cameron, 2005). In doing so, the media can help draw public attention to the reform of related health policies and facilitate a social consensus on setting new regulations and enforcing existing laws (Dorfman, 2007; Gamson & Modigliani, 1989; Jernigan & Wright, 1996).

As a result of recent health-related crises (e.g., spinach contaminated with *E. coli* and outbreaks of salmonella poisoning), the public's awareness of food-safety issues and food tracking systems has been considerably increased. Since the media have reported problems with the fresh food distribution system that might have worsened the crises, many public groups (e.g., consumer unions and restaurants) have called for the development of new food safety plans along with reform of current regulations (Weise, 2008). It is crucial for the government to be aware of public opinion and attentive to its voice, especially when latent public opinion and sentiments trigger public events such as protests and vigils (Heath, 1997; Sturges, 1994). In responding to public opinion and action, the government may search for solutions and encourage sponsor organizations to take the initiative to enhance problematic situations (Heath, 1997). According to Sturges (1994), the process of group opinion formation can be described by the following series: (a) latent issues emerge → (b) an event occurs → (c) pro and con factions form → (d) debates occur → (e) time lapses → (f) public opinion forms → (g) social actions take place → (h) social norms form. As a facilitator, the media contributes to this process of generating the collective opinion among publics (Page & Shapiro, 1987). Since the public may tend to pay more attention to the media after a crisis breaks out, the media can serve as a useful tool to trigger public policy initiatives. Jernigan and Wright (1996) note that the media can be an effective instrument for educating the public and policy makers and garnering public support for policies to promote a healthier society.

Although issues presented in the media cause the generation of public opinion on those issues, media discourse and public opinion can interact with each other as parallel systems (Gamson & Modigliani, 1989). In other words, both media discourse and public discourse may be parts of the process of constructing meaning in a large context. Gamson and Modigliani (1989) specify that "media discourse is part of the process by which individuals construct

meaning, and public opinion is part of the process by which journalists and other cultural entrepreneurs develop and crystallize meaning in public discourse" (p. 2). While trying to understand emerging social issues that touch their own lives, people may also rely on media messages to help them make sense of those issues and construct underlying meanings (Viswanath & Demers, 1999). Regarding some social issues, such as policy reforms and disease prevention, however, the media may take a larger part than the public counterpart could in the social construction of meaning and the creation of initiatives to resolve social problems. That is, the potential of the media in influencing public opinion may vary from issue to issue (Ball-Rokeach & DeFleur, 1982). When it comes to health-related crises, publics may be more dependent on media accounts because critical issues pertaining to the situation (e.g., the treatment, prevention or possible causes of illnesses; problems in the current health system) are too volatile or complicated for them to easily understand. Therefore, media discourse during a crisis and in its aftermath may be the key to understanding public opinion, and it at least contributes to public discussion that can lead to social change (Viswanath & Demers, 1999).

As the major information channels in the public sphere, mass media are considered essential for understanding the formation of public opinion and the emergence of social consensus on important issues (Habermas, 1991). In the salmonella outbreak, while the media were promoting the flow of relevant information about food contamination occurrences, they were also drawing public attention to the reform of related health policies. The media may also have facilitated the formation of public opinion and social consensus on the need for new regulations and enforcement of existing laws to enhance food traceability and public safety. Further, social consensus ultimately leads to social change with moderate adjustments in the current social system (Viswanath & Demers, 1999). In terms of Viswanath and Demers' (1999) typology of relationship between social control and social change, many health-related movements fall into the category of moderated change because a gradual change is made to some aspect of the system while the dominant values remain the same. A content analysis of news articles about a health-related crisis might reveal key issues in media messages as well as emerging discussion on policy reform or other changes among lawmakers in the opinion formation process (Malone, Boyd, & Bero, 2000). In this sense, this study focuses on the role of the media in encouraging the formation of public opinion as well as in dispensing important, accurate information speedily in the outbreak of salmonella. Therefore, the second research question asks the following:

> RQ2: What role did the media play in the salmonella outbreak with respect to dispensing information and covering issues that possibly influence public opinion?

Methods

Study Design

In order to examine the proposed research questions, this study employed a quantitative content analysis of major U.S. newspapers' crisis coverage regarding salmonella-tainted tomatoes. Media may reflect dynamics of crisis situations and thus serve as a useful tool in examining an organization's stances and strategies, as well as publics' reactions in times of crisis (Martinelli & Briggs, 1998). Three newspapers (i.e., *The New York Times, USA Today,* and *The Washington Post*) were selected based on the circulation size and availability.

Data Collection

News articles were downloaded from Lexis-Nexis News Database. A key word search using the word "salmonella" in news publication during the six months from April 1 to September 30, 2008, generated 62 articles in *The Washington Post*, 36 articles in *The New York Times*, and 27 articles in *USA Today*. Because the first salmonella occurrence was reported to the state health department on May 11 and the CDC announced the end of the outbreak on August 28, the timeframe of six months (from one month before the report until one month after the end of the outbreak) was reasonable for comprehensively examining the evolution of the crisis. Some of the articles retrieved, however, mentioned salmonella in a peripheral way (e.g., discussion on food irradiation) or addressed other salmonella cases; these articles were excluded from the analysis. Both editorials and feature news, including news briefings, were also included. The deletion process resulted in a total of 72 articles.

Coding Procedure and Inter-coder Reliability

Two graduate students were trained to code the news articles. After training sessions, two coders separately coded 15 percent of the sample for an inter-coder reliability test. Scott's *pi* scores for each variable ranged from .81 to 1.0, indicating that the agreement between the coders was acceptable (Wimmer & Dominick, 2006). Two coders then coded the rest of the news articles independently.

Coding Categories

The unit of analysis was an individual news story, and the codebook was developed based on Jin et al.'s (2006) research. The coding categories were composed of four sections: (1) general publication information (e.g., newspaper source, date, section, length, phase, etc.); (2) stance changes of the government and involved publics, as well as and contingent factors; (3) crisis response strategies of the government; and (4) sources cited and information addressed by the government and other sources.

Publication information. The date of publication, the page where an article appeared, and the length of the article (in number of words) were coded from the information provided by the Lexis-Nexis Database.

Phase. To examine the evolution of the crisis, four phases were identified: (a) tomato-warning phase, (b) jalapeno-warning phase, (c) matching-strain phase, and (d) post-crisis phase. Although the time frame of this study includes the date the first salmonella case was reported to the Mexico State Health Department (May 11), newspapers first reported the salmonella outbreak on June 8, when FDA announced a national consumer warning not to eat certain types of red raw tomatoes (June 7). Therefore, the actual time span for the analysis began with the first news report on the outbreak (June 8), with no news articles found prior to the crisis.

The phase was identified by examining the critical events during the life-cycle of the crisis. The tomato-warning phase (coded as 1) included publications from June 8 (the first news report regarding the salmonella outbreak) to June 26. News articles in this phase presented the FDA's national consumer warning and its initial investigative efforts. The jalapeno-warning phase (coded as 2) included publications from June 27 to July 20, when the FDA expanded its investigation into other sources of contamination, such as peppers, and then initiated its public warning on jalapeno and Serrano peppers. As the FDA found the matching bacterial strain in Texas on July 21, the crisis moved to the matching-strain phase (from July 21 to August 27; coded as 3). Finally, the post-crisis phase was defined as the aftermath of the CDC's announcement of the end of the outbreak on August 28 (coded as 4). The four phases divided the

time frame in a relatively balanced way: tomato-warning phase (3 weeks), jalapeno-warning phase (3 weeks), matching-strain phase (5 weeks), and post-crisis phase (4 weeks).

Conference call follow-up. To examine the relationship between the government and media in the crisis, it was coded whether a news article was written based on the conference call or news releases. The dates of news releases and conference calls were identified from the FDA website. If a news article was published within one day of the government's conference call or news release, the article was coded as 1; otherwise, it was coded as 0.

Types of publics. Seven major publics involved in the crisis were identified: (a) government (i.e., FDA and CDC), (b) state health departments, (c) consumers/consumer organizations, (d) tomato industry, (e) pepper industry, (f) food industry (i.e., food retailers, restaurants), (g) Mexican government, and (h) others. Each article was coded if one or more types of publics were presented in addressing the crisis (1=presented; 2=non-presented).

Stance. The stance variable measured how each group of publics took a stance toward the other groups of publics on the advocacy-accommodation continuum. Since this study focused on the government's role in the crisis, this study mainly measured (1) what stance the government took toward the other seven types of publics and (2) what stance the other groups of publics took toward the government. The stance was measured on a 5-point scale, ranging from 1 (pure advocacy) to 5 (pure accommodation), based on Cameron et al.'s (2008) operational stances on the contingency continuum. For example, a stance reflecting arguing or avoiding was coded as 2, a stance reflecting comprising or negotiation as 3, and a stance reflecting collaboration or cooperation as 4.

Contingent factors. Since news coverage of crisis situations may not reflect internal contingent factors, such as organizational characteristics and culture, only external factors that may have affected the government's stances or strategies were coded (1=presented; 2=not presented) under six sub-categories. These factors included (a) threats, such as a rapid dissemination of illness or possible reputational damage to the government; (b) industry environment, such as recent changes in the produce and food industries or new safety measures recently implemented in restaurants; (c) general political/social environment/cultural environment, such as consumers' support or opposition to the government's current policy or new proposals in Congress; (d) external public, such as consumer organizations' requests; (e) issue under question, such as arguments about the possible sources of the outbreak; and (f) others.

Crisis-response strategy. The government's crisis response strategies were coded for the seven groups of publics, according to Coombs' (1998) crisis-response strategy continuum. However, adopting Jin et al.'s (2006) modification of Coombs' continuum, the strategies were measured in terms of the following eight categories: (1) attack the accuser (e.g., FDA and CDC accusing the tomato industry of not having the food tracking system while defending itself against tomato producers' criticism), (2) denial (e.g., asserting that their delayed investigation was not due to their negligence), (3) excuse (e.g., avoiding or minimizing its responsibility for the delayed investigation to track the source of the outbreak), (4) justification (e.g., explaining why it took a long time to pinpoint the cause of the crisis), (5) corrective action (e.g., correcting the source of the problem and promising to prevent its recurrence), (6) ingratiation (e.g., stating that its state-of-the-art technology was used to find the source of the outbreak or announcing possible financial support to produce industries for profit loss), (7) cooperation (e.g., working with state health departments to resolve the situation), and (8) full apology (e.g., taking full

responsibility for the rapid spread of illness or making apologies to consumers or tomato growers).

Source. The sources cited in the news articles were coded (1=cited; 2=not cited) under seven sub-categories: (a) federal agencies (e.g., representatives of the FDA and CDC), (b) state health departments (e.g., Indian Health Service), (c) consumers/consumer organizations (e.g., individual consumers, Center for Science in the Public Interest, Consumer Union), (d) produce industry (e.g., individual farmers, Produce Marketing Association, California Tomato Farmers), (e) food industry (e.g., National Restaurant Association, restaurant owners/spokespersons), (f) food safety experts (e.g., professors or researchers), and (g) others. A direct quotation with quotation marks and a citing phrase, such as "according to," were examined to point to the news sources. Additionally, verbs indicating one's verbal statement were used to identify sources in the news articles: said, noted, reported, criticized, announced, told, recommended, advised, reiterated, asserted, warned, acknowledged, and declared. Two or more sources cited in the same category were also coded as 1.

Problem and solution. These variables measured whether or not each group of sources (i.e., source variable) addressed (1) the problems regarding the existing food safety system, policy, or regulation and (2) the solutions to resolve the problems embedded in the existing food safety system, policy, or regulation (1=addressed; 2=not addressed).

Information provided by the government. This variable measured what kind of information was presented in the news article being provided by the government sources. A news article was coded as to whether information in each sub-category was presented (coded as 1) or not (coded as 2). Sub-categories included (a) general information about salmonella (e.g., type of disease, symptoms of disease), (b) potential causes of the outbreak (e.g., source of contamination, region of the outbreak's origin), (c) figures and statistics (e.g., the number of illnesses; spread of illness), (d) investigation updates (e.g., CDC's efforts, discovery of the outbreak strain), (e) FDA alerts and recommendations, (f) impact on the industry (e.g., financial loss), (g) previous outbreaks (e.g., spinach with *E. coli* in 2006), (h) problems (e.g., problems with food tracking system), (i) solutions (e.g., new traceability standards, electronic records, advanced produce distribution system), and (j) others.

Findings

Table 1. Number of articles analyzed by newspaper and phase

Phase / *Newspapers*	*Tomato warning*	*Jalapeno warning*	*Matching strain*	*Post crisis*	*Total*
New York Times	10 (52.6)	4 (21.1)	4 (21.1)	1 (5.3)	19 (100)
USA Today	3 (18.8)	7 (43.8)	5 (31.2)	1 (6.2)	16 (100)
Washington Post	15 (40.5)	11 (29.7)	9 (24.3)	2 (5.4)	37 (100)
Total	28 (38.9)	22 (30.6)	18 (25.0)	4 (5.6)	72 (100)

Of a total of 72 news articles analyzed, 19 articles (26.4%) were from *The New York Times*, 16 articles (22.2%) were from *USA Today*, and 37 articles (51.4%) were from *The Washington Post*. Regarding the four phases, news articles were generated most during the

tomato-warning phase (38.9% of the entire publications), followed by the jalapeno-warning phase (30.6%), the matching-strain phase (25.0%), and the post-crisis phase (5.6%) (Table 1).

The first research question regarded the stances and strategies employed by the U.S. government and its publics over the four stages of the salmonella outbreak life-cycle. Over the six-month period of the outbreak, federal agencies appeared to be involved in all of the articles analyzed (n=72, 100%). Consumers (n=57, 79.2%) and the tomato industry (n=38, 52.8%) were frequently addressed as being involved in the crisis, followed by the pepper industry (n=27, 37.5%), the food industry (n=27, 37.5%), state health department (n=14, 19.4%), and the Mexican government (n=7, 9.7%). Chi-square analysis revealed differences of involvement of certain types of publics (i.e., state health department and food or produce industry) over the identified four stages, while federal government agencies and consumers were addressed as being involved in the crisis regardless of the phase (Table 2). Specifically, state health departments and the food industry were mostly discussed in the tomato-warning phase, and mention of them seemed to disappear over the next phases. On the other hand, the engagement of the tomato and pepper industries tended to increase over the phases.

Table 2. Type of publics involved

Phase / *Publics*	*Tomato warning*	*Jalapeno warning*	*Matching strain*	*Post crisis*	*Total*	χ^2 *p-value*
Government	28 (100)	22 (100)	18 (100)	4 (100)	72 (100)	NA
State health dept.	10 (35.7)	2 (9.1)	2 (11.1)	0 (0)	14 (19.4)	.046*
Consumers	23 (82.1)	18 (81.8)	13 (72.2)	3 (75.0)	57 (79.2)	.846
Tomato industry	8 (28.6)	14 (63.6)	14 (77.8)	2 (50.0)	38 (52.8)	.007*
Pepper industry	0 (0)	9 (40.9)	14 (77.8)	4 (100)	27 (37.5)	.000*
Food industry	16 (57.1)	6 (27.3)	5 (27.8)	0 (0)	27 (37.5)	.033*
Mexican gov't	1 (3.6)	2 (9.1)	4 (22.2)	0 (0)	7 (9.7)	.183
Others	8 (28.6)	6 (27.3)	6 (33.3)	1 (25.0)	21 (29.2)	.973
N	28	22	18	4	72	

Note. * *significant at* $p < .05$

On a five-point scale, ranging from 1 (pure advocacy) to 5 (pure accommodation), the government mostly demonstrated advocacy stances toward consumers (M=2.23, SD=.890), the tomato industry (M=2.81, SD=1.009), and the pepper industry (M=2.33, SD=.734), while it appeared to be accommodative to state health departments (M=3.85, SD=.555). The ANOVA test resulted in statistically significant changes of government stances toward consumers, the tomato industry, and the pepper industry, in an accommodative direction as the crisis approached the endpoint (Table 3).

Table 3. Government's stances toward multiple publics

Phase / *Publics*	*Tomato warning*	*Jalapeno warning*	*Matching strain*	*Post crisis*	χ^2 *p-value*
State health departments	4.00 (.000)	3.00 (1.414)	4.00 (.000)	NA	.047*
Consumers	2.0 (.686)	2.06 (.574)	2.20 (.632)	4.67 (.577)	.000*
Tomato industry	2.14 (.690)	2.57 (1.089)	3.38 (.870)	3.00 (.000)	.035*
Pepper industry	NA	2.11 (.782)	2.14 (.363)	3.50 (.577)	.001*
Food industry	2.08 (.760)	2.40 (.548)	3.00 (.000)	NA	.212
Mexican government	3.00(NA)	4.00 (NA)	3.33 (1.155)	NA	.833
Others	2.57 (.976)	3.00 (1.414)	3.00 (.000)	3.00 (NA)	.873

Note. 1 = Advocacy to 5 = Accommodation; Mean (S.D.)

* *significant at $p < .05$*

On the other hand, most of the public involved in the crisis appeared accommodative to the government throughout the crisis (M(SD)=3.79(.579) for state health department; M(SD)=3.54(1.1285) for the food industry, and M(SD)=3.42(.948) for consumers). In contrast, the tomato industry and the pepper industry significantly changed their stances toward the government as the investigation continued. The stance of the tomato industry toward the government moved from its initial accommodative stance (M=3.50, SD=.548) to an advocative stance (M=1.91, SD=.944). Once jalapeno rose as a suspect of the contamination, and it became more advocative (M=1.75, SD=.707) after a matching strain was identified. On the other hand, the stance of the pepper industry was initially relatively advocative (M=2.88, SD=1.126), but became more accommodative (M=3.71, SD=.756) after a matching strain was identified.

Table 4. Multiple publics' Stances toward the government

Phase / *Publics*	*Tomato warning*	*Jalapeno warning*	*Matching strain*	*Post crisis*	χ^2 *p-value*
State health dept.	3.90 (.316)	3.00 (1.414)	4.00 (.000)	NA	.107
Consumers	3.58 (.900)	3.43 (.938)	3.18 (1.079)	4.00 (NA)	.716
Tomato industry	3.50 (.548)	1.91 (.944)	1.75 (.707)	1.00 (NA)	.001*
Pepper industry	NA	2.88 (1.126)	3.71 (.756)	1.00 (NA)	.046*
Food industry	4.00 (1.038)	3.00 (1.581)	2.80 (1.304)	NA	.111
Mexican gov't	4.00 (NA)	3.00 (1.414)	3.00 (1.732)	NA	.862
Others	2.62 (1.408)	2.50 (1.049)	1.80 (.837)	NA	.462

Note. 1 = Advocacy to 5 = Accommodation; Mean (S.D.)

* *significant at $p < .05$*

Along with the overall stance of the government toward publics, the government's crisis response strategies were examined. The government mostly used a strategy of cooperation (n=11, 91.7%) with state health departments. It also employed justification (n=17, 37.8%) and corrective strategies (n=16, 35.6%) most often to consumers; excuse and justification strategies to the tomato (n=9, 12.5%; n=10, 10.9%) and pepper industries (n=5, 6.9%; n=11, 15.3%); and corrective action (n=12, 70.6%) and ingratiation strategies (n=2, 11.8%) to the food industry. However, the crisis response strategies were not significantly different across the four phases, considering the eight crisis response strategies as a continuous variable with an equal interval from 1 to 8 (1=attack, 2=denial, 3=excuse, 4=justification, 5=corrective action, 6=ingratiation, 7=cooperation, 8=full apology).

Table 5. Government's crisis response strategy toward multiple publics

Phase / *Publics*	*Tomato warning*	*Jalapeno warning*	*Matching strain*	*Post crisis*	*Total*	*Sig*
State health dept.	7.00 (.000)	4.50 (3.536)	7.00 (.000)	NA	6.58 (1.443)	.065
Consumers	4.12 (.885)	4.5 (.966)	4.80 (.632)	5.33 (.577)	4.49 (.895)	.084
Tomato industry	2.71 (1.254)	4.00 (1.414)	3.77 (1.691)	4.00 (NA)	3.66 (1.514)	.323
Pepper industry	NA	3.67 (1.323)	2.91 (1.300)	4.67 (.577)	3.43 (1.343)	.103
Food industry	4.17 (.718)	3.75 (1.258)	4.00 (NA)	NA	4.06 (.827)	.709
Mexican gov't	3.00 (NA)	5.50 (2.121)	5.00 (3.464)	NA	4.83 (2.563)	.809
Others	4.17 (2.483)	5.00 (2.828)	3.33 (.577)	NA	4.09 (2.071)	.718

Note. 1=attack, 2=denial, 3=excuse, 4=justification, 5=corrective action, 6=ingratiation, 7=cooperation, 8=full apology; Mean (S.D.); ANOVA

Regarding contingent factors that may have affected the stances or strategies of each public, the issue under question (n=64, 88.9%) appeared to be the most prominent factor, followed by threats (n=45, 62.5%), political/social/cultural environment (n=27, 37.5%), and the external public (n=24, 33.3%). Such a pattern was presented across the phases (Table 6).

Table 6. Contingent factors presented in the news articles

Phase / *Contingent factor*	*Tomato warning*	*Jalapeno warning*	*Matching strain*	*Post crisis*	*Total*	χ^2 *p-value*

Threats	17 (60.7)	18 (81.8)	9 (50.0)	1 (25.0)	45 (62.5)	.068
Industry environment	3 (10.7)	8 (36.4)	6 (33.3)	1 (25.0)	18 (25.0)	.156
Political/social env't	13 (46.4)	7 (31.8)	6 (33.3)	1 (25.0)	27 (37.5)	.647
External public	6 (21.4)	11 (50.0)	7 (38.9)	0 (0)	24 (33.3)	.079
Issue under question	23 (82.1)	21 (95.5)	16 (88.9)	4 (100)	64 (88.9)	.432
N	28	22	18	4	72	

The second research question asked about the role of media in the salmonella outbreak crisis. It specifically attempted to examine the facilitating role of the media in the relationship between the government and other publics in its providing of relevant information, and in the formation of public opinion about the social system and policy regarding food safety. Table 7 shows that almost half of the news articles (n=31, 43.1%) were published on the day after an FDA/CDC conference call or news release. Considering the number of media conference calls and news releases during the six months, the number of news articles generated from the pseudo events is regarded as substantial. Except for the post-crisis phase, this pattern appeared over the crisis period.

Table 7. Number of conference call follow-up articles

Phase / *Follow-ups*	*Tomato warning*	*Jalapeno warning*	*Matching strain*	*Post crisis*	*Total*
Yes	12 (42.9)	10 (45.5)	9 (50.0)	0 (0.0)	31 (43.1)
No	16 (57.1)	12 (54.5)	9 (50.0)	4 (100.0)	41 (56.9)
Total	28 (38.9)	22 (30.6)	18 (25.0)	4 (5.6)	72 (100)

Over the six-month timeframe for this study, federal agencies (i.e., FDA, CDC) appeared in the vast majority of the news articles as a source. Overall, 62 articles (86.1%) cited federal government sources, and dependency on the government sources was especially noticeable during the tomato-warning (n=25, 89.3%) and jalapeno-warning phase (n=20, 90.9%). On the other hand, the produce industry was cited only in a third of the articles (n=25, 34.7%), followed by food safety experts (n=16, 22.2%). State health departments (n=11, 15.3%), consumers (n=9, 12.5%), and the food industry (n=6, 8.3%) were rarely quoted in the articles in addressing the crisis. The use of sources was not significantly different across the phases.

Table 8. Sources mentioned in the news articles

Phase / *Sources*	*Tomato warning*	*Jalapeno warning*	*Matching strain*	*Post crisis*	*Total*	χ^2 *p-value*
Federal agencies	25 (89.3)	20 (90.9)	13 (72.2)	4 (100.0)	62 (86.1)	.240

State health dept.	8 (28.6)	1 (4.5)	2 (11.1)	0 (0)	11 (15.3)	.081
Consumers	4 (14.3)	2 (9.1)	2 (11.1)	1 (25.0)	9 (12.5)	.821
Produce industry	7 (25.0)	11 (50.0)	6 (33.3)	1 (25.0)	25 (34.7)	.306
Food industry	4 (14.3)	1 (4.5)	1 (5.6)	4 (100.0)	6 (8.3)	.521
Food safety experts	4 (14.3)	5 (22.7)	7 (38.9)	0 (0)	16 (22.2)	.168
Others	6 (21.4)	6 (27.3)	8 (44.4)	1 (25.0)	21 (29.2)	.405
N	28	22	18	4	72	

Table 9. Information given by the government

Phase / *Sources*	*Tomato warning*	*Jalapeno warning*	*Matching strain*	*Post crisis*	*Total*	χ^2 *p-value*
General information	4 (14.3)	0 (0)	0 (0)	1 (25.0)	5 (6.9)	.062
Potential causes	12 (42.9)	13 (59.1)	6 (33.3)	1 (25.0)	32 (44.4)	.327
Statistics	19 (67.9)	12 (54.5)	3 (16.7)	3 (75.0)	37 (51.4)	.005*
Investigation	15 (53.6)	9 (40.9)	8 (44.4)	3 (75.0)	35 (48.6)	.564
Alerts/recommendations	9 (32.1)	8 (36.4)	8 (44.4)	1 (25.0)	26 (36.1)	.814
Previous outbreaks	4 (14.3)	0 (0)	1 (5.6)	0 (0)	5 (6.9)	.228
Problems	6 (21.4)	4 (18.2)	2 (11.1)	1 (25.0)	13 (18.1)	.818
Solutions	2 (7.1)	2 (9.1)	1 (5.6)	1 (25.0)	6 (8.3)	.636
Others	6 (21.4)	0 (0)	2 (11.1)	2 (50.0)	10 (13.9)	.025*
N	28	22	18	4	72	

Note. * *significant at* $p < .05$

The majority of news articles (n=62, 86.1%) included any sort of information provided by the government. Looking carefully at the information provided by the government, statistics about the spread of the disease was the most frequently presented information in the news articles. About half of news articles (n=37, 51.4%) contained such statistic information, and it was more frequently presented in the early stages of the crisis. Updates about the investigation (n=35, 48.6%), potential causes of the outbreak (n=32, 44.4%), and public alerts/recommendations (n=26, 36.1%) were also commonly found over the life-cycle of the crisis. On the other hand, general information about salmonella infection, such as symptoms and preventive actions, was rarely presented (n=5, 6.9%). Also, discussions about problems with the present food safety systems (n=13, 18.1%) and solutions for the problems (n=6, 8.3%) were highly limited in the news articles. Other information found in the articles included tension between Congress and the FDA regarding budgetary matters, the food industry's (restaurants and retailers) reaction to the outbreak, distributors' recalls of jalapenos, compliments of the

local/state health professionals, the official announcement of the end of outbreak, and excuses for the agency's responses to the outbreak.

As shown in Table 10, government sources were most likely to point out the problems regarding food safety systems (n=15, 20.8%), compared to other sources. Besides government sources, the produce industry (n=6, 8.3%) and food safety experts (n=6, 8.3%) discussed the problems involved in the present food safety system, but the proportion was not substantial. Discussion of solutions to improve the present food safety system or to minimize the future risks of food-borne illness was not prominent across phases or sources. Federal agencies were the major sources to propose such solutions (n=7, 9.7%), followed by the produce industry (n=5, 6.9%), consumers (n=3, 4.2%), and food safety experts (n=2, 2.8%).

Table 10. Problems and Solutions in the news articles by source

Phase / *Sources*	*Problems*	*Solutions*
Federal agencies	7 (9.7)	15 (20.8)
State health dept.	0 (0)	1 (1.4)
Consumers	3 (4.2)	2 (2.8)
Produce industry	5 (6.9)	6 (8.3)
Food industry	0 (0)	0 (0)
Food safety experts	2 (2.8)	6 (8.3)
N	72	72

Discussion

As the contingency theory contends, this study supported the dynamics of stance changes and corresponding strategies of the government and publics involved in the crisis of salmonella outbreak. The government and its publics involved in the crisis changed their stances along a continuum from advocacy to accommodation according to a given situation. The government appeared to adopt advocatory stances in dealing with most of the public by giving alerts and recommendations to help them avoid potential risks. On the other hand, the general public (i.e., consumers) appeared to be accommodative to the government by following its recommendations. Such a pattern corresponds to what other scholars have found with regard to the SARS epidemics (Jin et al., 2006).

Results of content analysis also supported that the media played a mediating role in this crisis situation in some ways. With heavy dependency on the government sources, it seems that the media served as a watch guard, rather than as a watchdog, in the life-threatening health crisis. The high proportion of news articles published as follow-ups of the FDA/CDC's conference calls also implicitly supports the idea. However, this does not mean that the media should be blamed for functioning as the government's watch guard, because such health-related crises (e.g., a spread of epidemic diseases and food-borne illnesses) require immediate public attention and prompt delivery of accurate information mainly from the government (Jin et al., 2006, 2007; Qui & Cameron, 2005). In this regard, media play a supporting role for the government, assisting in

the dissemination of warnings and updates in a timely manner, preventing further spread of infections, and further, encouraging public reflection on the reform of related policies.

In this case of salmonella-tainted tomatoes, uncertainty about the source of the outbreak created a tension between the government and the tomato industry around food safety systems. However, on top of media's role in promoting the flow of relevant information about food contamination occurrences, the results of content analysis suggested the potential role of media in drawing public attention to the reform of related policies and facilitating the formation of public opinion and social consensus on the needs for new regulations and enforcement of existing laws. Although the intensity of discussion regarding policy and regulation did not turn out to be phenomenal (see Table 10), the news articles addressed many flaws regarding the health-threatening outbreak from a social and political perspective. For example, in addition to the on-going crisis itself, news articles demonstrated budget problems in public health, lack of state resources for public health, the tension between Congress and federal health agencies (e.g., FDA), problems with increased produce imports, and flaws in the current food-safety plan and produce traceback system (e.g., paper-based tracking system, produce repacking from multiple sources, complicated distribution system). At the same time, news articles also highlighted diverse solutions for overcoming these problems, such as legislative actions to improve the current food safety policy to strengthen the authority of the FDA, mandatory food-safety regulations, enhancement of financial and human resources in related areas, and advanced trackback systems (e.g., computerized record system). Content analysis also revealed that several news stories were devoted to investigating the issue in a broad social context, including food safety systems (e.g., Fulton, 2008; Schmit, 2008; Shin, 2008). Such attempts of news media are believed not only to help build public opinion regarding the issue, but also to facilitate social consensus for subsequent actions (e.g., legislative actions). In fact, the outbreak of salmonella became a focus of consideration again and accelerated dialogue when discussion of food irradiation rose in the public sphere in late August. From this standpoint, the outbreak of an illness is not only an eye-catching developing story; but it is also a trigger for public conversation. The role of news media should be considered in such a social context.

However, this study also suggests some points that the media may consider for reporting similar crises in the future. This study found that information delivered by newspapers was heavily focused on governmental sources, while consumers were considerably disregarded. It is also noteworthy that of the information given by government agencies, statistics about the salmonella outbreak and the agencies' investigative efforts were the prominent content, while only 6.9% of the news articles provided general knowledge about the salmonella infection, such as symptoms and preventive techniques. A news article in *The Washington Post* titled "Digesting the Alert and Staying Safe" (June 11, 2008) was one of a few articles that primarily addressed prevention and detection issues regarding the salmonella outbreak. By presenting the information provided by the FDA in a Q&A format, this article provided its readers with valuable information about the illness itself. We hope to see more such types of information in news reports of food-borne illnesses. Considering news coverage to be an educational tool for promoting public health, general information about diseases is essential. When people are involved in the issue and pay significant attention to it, knowledge gained from newspapers could be more effective, and what people learn is likely to be incorporated in their lives afterwards.

This study also points out that media coverage of post-crisis and pre-crisis phases has been extremely neglected. Given the possibility of a variety of food-borne illnesses in the recent

decades and its potential impact on the public health, continuous attention of media to the issues is desirable. News coverage should be not only a reactive report of the developing illness, but also a guideline for preventing future illnesses. David Acheson, FDA associate commissioner for food protection, summarized this idea, stating, "The key is not to react but to prevent" (*cited in* Schmit (2008)).

Limitations and Suggestions for Future Research

By examining news coverage of salmonella-tainted tomatoes, this study shed light on the dynamics of the government's strategic crisis management in a national food-borne illness. However, this study has limitations. This study only employed content analysis of newspaper coverage of the salmonella crisis. Future research may include news releases of the federal agencies and transcripts of conference calls to better understand the government's responses to the crisis before they are filtered through media gatekeeping. By combining these raw materials with media coverage, the results are expected to more comprehensively show how the government handled the crisis and how the media functioned in the crisis. Additionally, examination of other channels of information (e.g., television news, the Internet) would also be meaningful. For example, how related information was circulated in popular social network websites during the crisis and how the shared information led to public discussion on the problems and solutions regarding the food safety issues would be an important venue for supporting the research questions posited in the current study. Also, how either TV news or local newspapers portrayed the same issue, compared to national newspapers, would be an interesting topic. Presumably, for example, TV news and local newspapers may have used more sources of consumers or consumer organizations. In fact, we attempted to examine the local newspapers in Texas and New Mexico, where the outbreak was initially reported, as opposed to national newspapers. However, a Lexis-Nexis search did not bring forth any local news articles regarding the issue. Therefore, why it was the case would be another study to worthy investigating.

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