CHAPTER 6

Framing Infectious Diseases: Effective Policy Implementation and United States Public Opinion

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This study uses both qualitative and quantitative research methods—content analysis\(^1\) and analysis of opinion surveys—to investigate public support for domestic and foreign policies on transnational infectious diseases in the post-Cold war era. The United States has been increasingly concerned with the transnational threat posed by infectious diseases. Infectious diseases and epidemics are not new, but incidence has increased (Centers for Disease Control 1994). Infectious diseases are specified as “those caused by pathogenic microorganisms, such as bacteria, viruses, parasites, or fungi; the diseases can be spread, directly or indirectly, from one person to another” (World Health Organization 2011). Effective policy implementation to contain the spread of these diseases requires active engagement and support of the American public. Public support, compliance, and trust are crucial for the effectiveness of policies on naturally occurring infectious disease and the threat of a bioterrorist attack on the country. In the case of an epidemic or a bioterrorist attack, national governments may have to enforce inconvenient measures such as quarantine

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and increased domestic surveillance. These actions might invite the wrath of civil rights activists or other people unwilling to comply. For these reasons, it is important to know what kind of media messages or frames appeal most to the public.

To influence American public opinion and enlist support for related domestic and foreign policies, both domestic agencies and international organizations have framed infectious diseases as security threats, human rights disasters, economic risks, and as medical dangers. The mass media is the primary arena in which these issue frames come to the attention of the public, interest groups, and policy makers. Some earlier studies have focused on framing of infectious diseases and understanding public attitudes toward infectious diseases (Luther and Zhou 2005; Tian and Stewart 2005; Shih et al. 2008; Dahistrom et al. 2012; Bardhan 2001; Clark 2006; DeMotts and Markowitz 2004). Most of these studies are descriptive in that they examine variations in media coverage of infectious diseases. None of the existing studies evaluated the impact of infectious disease framing on public opinion. In this research design, use of content analysis of news media frames helped me understand the ways media conceptualized and presented these frames. Analysis of public opinion polls at the same time helped me estimate framing effects (measured by changes in responses to survey responses) when respondents were exposed to multiple frames over a corresponding period and identify which frames were the most compelling or effective in influencing public opinion about infectious diseases and why. Unlike many previous experimental studies of framing effects in which respondents were exposed to opposing frames in measured quantities, this study sought to understand framing effects when respondents were exposed to multiple frames in real-world conditions.

This research method which combines both qualitative (study of media content in three case studies) and quantitative studies (correlation between changes in media content and impact on public opinion) also had several advantages over other methods like study of focus groups, interviews, experimental studies, and participant observation in helping me answer my research questions. These qualitative methods of data collection could provide close access to views, beliefs, and attitudes of people, yet when doing a study at the macro level may present problems of data collection, experiment management, of accessibility to people for personal interviews (Harrell and Bradley 2009).

If the focus of my study was on a particular region or community, the above-mentioned methods like interviews and focus groups might have
been more relevant. Collecting data from secondary datasets like media reports and public opinion surveys in an attempt to do national-level study made my project much easier in terms of costs, avoiding extensive monetary, staffing, protocol issues, and technical resources needed to conduct and design interviews and focus group studies (Harrell and Bradley 2009). Additionally, methods like experimental studies, participant observation, interviews, and focus group studies require several kinds of approvals from Institutional Review Boards and other agencies when conducting studies of human populations (Harrell and Bradley 2009). I also received approval from the Institutional Review Board at my university since I was conducting research on human participants, but several other agency approvals are needed when doing field research.

**US PUBLIC OPINION AND INFECTIOUS DISEASE POLICY**

While the focus of this work is the public response to framing infectious diseases, this study also adds to the larger debate regarding domestic public opinion as a factor that affects the national and foreign policy decisions of governments in an increasingly interconnected world (Fearon 1998; Powlick 1995; Risse Kappen 1991; Beuno de Mesquita 2002; Jacobs and Shapiro 2000). A body of scholarly work has debated the role of public opinion in foreign policy decision-making in democratic societies. The discussions have centered on the role of the public in foreign policy decision-making, that is, whether public opinion follows, determines, or sets some limits on leaders who avoid making policies that might later evoke “public retribution” (Price 2009). Much of the early literature of the two decades after the Second World War, as represented by the works of Walter Lippmann, Hans Morgenthau, and Gabriel Almond, posits a rather pessimistic view of public opinion on domestic and foreign policy issues (Lippman 1922; Morgenthau 1956; Almond 1956). Studies on public opinion on foreign policy issues were concerned mainly with matters such as war, military intervention abroad, nuclear arms policy, international trade, defense spending, and foreign aid. Policy makers perceived these issues to be far removed from peoples’ lives, and the public was disinterested in these issues. Added to this was the belief that some of the foreign policy issues required secrecy, speed, and flexibility in the use of classified information (Holsti 1992). Decision makers, therefore, felt that there was little need to engage public opinion, which they considered to be erratic, unstable, emotional, and volatile (Almond 1956).
The Vietnam War was a turning point at which policy makers began to understand that public opinion was necessary. Subsequent studies by liberal theorists, including Richard Aldrich, Benjamin Page, Robert Shapiro, Ore Holsti, John Mueller, and Bruce Jentleson, suggested that the public did have stable views and can address serious foreign policy issues (Sullivan and Borgida 1989; Page et al. 1987; Mueller 1973). In the post-Cold War era, researchers such as Richard Sobel, James Larson, Bruce Jentleson, Rebecca Britton, Eugene Wittkoph, Miroslav Nincic, Bruce Russett, Ronald Hinckley, Peter Feaver, Christopher Gelpi, and Richard Eichenberg studied issues like public tolerance of war casualties, international trade, and military involvement (Jentleson 1992). Although no consensus exists among these scholars as to what determines people’s attitudes toward these problems, most scholars assume that the public is both reasonable and reasoned (Gelpi 2010; Aldrich et al. 2006).

The literature, however, is limited to an understanding of traditional security issues. This study investigates public attitudes on a non-traditional security and foreign policy issue—infectious disease—that has a significant impact on the daily lives of people (Williams 2003). With the increased importance of issues such as immigration, infectious diseases, and the environment, the policy-making elite increasingly feels the pressure to consider and respond to domestic public opinion and popular preferences (Berstein 1998).

On this issue, the relationship between public opinion and foreign policy in the United States takes on increased significance (Holsti 2004). First, although scholars agreed that while some issues, such as military conflicts and resulting domestic costs and war casualties, attracted intense public attention, public opinion was, in general, considered to be important only in so far it had electoral implications (Potter and Baum 2010; Price and Zaller 1993). The public was assumed to be more easily manipulated on issues of wars and military crises abroad than on domestic issues, which affected them directly (Domke et al. 2006). The need for speed and secrecy in issues of war and military confrontation were often used as justification by policy makers for denying public engagement in foreign policy decision-making. The same rationale, however, cannot be used for policy making on an issue such as infectious diseases. On the contrary, on this issue policy makers consider an active, informed, and engaged public to be important, and public cooperation is actively sought. Infectious diseases are a major source of concern to people and government alike. They are potentially transferable from one person to the other and can cause
death and disability, impose high health care costs, lead to loss of productivity, and thereby cause social and economic disruption (World Health Organization 2004). Due to the transmissibility of infectious diseases and their direct impact on people, any public health intervention, support for surveillance, or policy decisions regarding funding, prevention, and control of global infectious diseases requires the active engagement of the American public. Secondly, on issues of war and military crisis, local actors, including the executive branch of the government, members of the Congress, interest groups, media, and often academia, have traditionally dominated the elite discourse.3

Challenges arising out of the spread of infectious diseases, however, have put the focus on actors beyond the national states. Intergovernmental organizations such as the United Nations, the World Health Organization, and the World Bank have become increasingly prominent. Many organizations that transcend national boundaries, including multinational corporations, pharmaceutical companies, epistemic communities, and civic society organizations (e.g., Health Action International), have also enriched and participated in the debate on global and national health policies (Walt et al. 2004; Loewenson 2011). To influence public opinion and enlist support for their proposed policies these organizations emphasize different dimensions of infectious diseases (e.g., human rights and economic and biomedical issues) and frame issues in ways that strategically emphasize their political positions (Nisbet and Lewenstein 2002). On this issue, therefore, the public is exposed to frames espoused by domestic, transnational, and international organizations.

Within the context of this persistent debate, there was agreement among scholars of public opinion and foreign policy about the sources of information about international events and foreign policy issues and the accessibility of this information to the public. Because many ordinary citizens were inattentive to international affairs and foreign news, public opinion about foreign policy issues often was activated through elite discourse (e.g., policy-making elite and opinion leaders) and by the media (Page 1996). Extensive research has shown that the media is most able to activate opinion when these elite debates are presented as “frames” to which people are particularly receptive and which seem to have an impact on people’s lives (Powlick and Katz 1998). The concept of “framing” and “framing effects” has been studied widely in the social sciences (Scheufele and Tewksbury 2007; Scheufele 2006). Studies of agenda setting and framing as developed in research on social movements, communication,
and foreign policy all suggest that public opinion may be shaped by the
way in which an issue is framed (Gamson and Modigliani 1987). Framing
may be seen as an attempt by leaders and other actors to insert into the
policy debate-organizing themes that will affect how the public and other
actors such as the media will perceive an issue. Framing effects occur
when the media’s decision to highlight or emphasize only certain aspects
of an issue causes individuals to base their views and opinions on these
salient aspects (Gamson and Modigliani 1987).

A review of the existing literature on framing effects reveals there is no
consensus among scholars about which frames will appeal most to the
public (Iyengar 1990; Feldman and Zaller 1992; Coy and Woehrle 1996;
Benford 1993; Druckman 2001; Brewer and Gross 2005) and why some
frames are more successful in persuading audiences when presented as part
of multiple frames (Coy and Woehrle 1996; Benford 1993; Druckman
2001; Lupia 2000; Miller and Krosnick 2000; Mondak 1993). Scholars
also have shown that frames may not necessarily be oppositional in nature
and that audiences may adopt only a portion of frames (Gross and
Ambrosio 2004). In other words, they might embrace mixed frames.

There is no consensus among scholars about which frames will appeal
most to the public and why some frames are more successful in persuading
audiences when presented as part of multiple frames (Payne 2001). The
above review indicates there is no consensus among scholars if any frame
is effective in all situations, and some feel that only an “operational
approach of asking people directly to evaluate the relative strength of vari-
ous frames” will allow assessment of frame strength (Chong and Druckman
2007). Hence it becomes relevant to use a research method that gives an
understanding of evolving frames that are issue-based or content frames
and assess their impact on public opinion (Scheufele 2006; Entman 2003;
Baumgartner and Leech 2001).

**Research Method and Design**

Content analysis combined with surveys of public opinion has several
advantages over research methods that have been chosen to study framing
effects. Many previous studies conducted to understand framing effects
had several flaws. Most of these studies were conducted as laboratory
experiments, although some involved focus groups (Chong et al. 2001).
First, when conducted as laboratory experiments, they lacked external
validity (Barabas and Jerit 2010). Since the study was done under strictly
controlled conditions it was very difficult to generalize the result in outside settings and to general populations (Campbell and Stanley 1996). Second, in most of these studies, subjects were exposed to single frames. In simple laboratory experiments the researcher strictly controlled the experiments and randomly assigned participants to these groups (Shanto and Kinder 1987). Participants were exposed to contrasting frames one after the other, and then their opinion was recorded. The researchers could gauge which frame was most influential in changing opinion of participants (Nelson et al. 1997). This kind of study had two limitations. One, the experimenters were not able to determine what kinds of reactions would be evoked if subjects were exposed to dual or multiple frames at the same time, as usually happens in the real world. Second, these studies in the absence of a control group failed to gauge the impact of either frames when experimenters did not expose them to contrasting frames that run in opposite directions (Druckman 2011). These studies, therefore, were also unable to establish which kinds of frames were more powerful or influential in determining public preference for one frame over the other (Chong and Druckman 2010). In response to this concern, scholars (Sniderman and Theriault 2004; Aldrich et al. 2006) studied framing in competitive environments in which individuals were exposed to dual frames in equal quantities in controlled laboratory experiments. These scholars set out to prove that exposure to more than one frame would neutralize or cancel the effect of the other frame (Sniderman and Thériault 2004). These studies, however, failed to explain why in some cases one frame could be more influential than another. The studies also were conducted as laboratory experiments and thus were subject to the same criticisms of external validity. They failed to capture the effects of the manifold, complex, and variegated framing environments that citizens face in the real world (Kinder 2007). In more recent studies, subjects were exposed to multiple frames in varying quantities at the same time. These studies were conducted either in an experimental setting or in a non-experimental setting like focus groups or by combining content analysis of news reports with survey research to understand the effects of framing on public attitudes (Wise and Brewer 2010; Mira 2003). Other studies showed that in such a competitive environment, some frames were more persuasive than others and not all frames were successful in changing public opinion (Druckman 2010). These findings, however, indicated that in a very competitive environment, framing results were not as powerful as they were when subjects were exposed to single frames in laboratory settings.
Third, most of these experiments were performed in single sessions, making it impossible to assess changes over a long period; however, the temporal component is important, as the same messages may not hold as much sway as they did when they were first exposed to frames (Chong and Druckman 2010).

Fourth, in most of these studies, students were used and several scholars have questioned if students as samples of study are representatives of the most general populations (Brewer and Gross 2010). Scholars have questioned the use of this “narrow data base” (Sears 1986). However, several scholars have defended the use of students in laboratory experiments claiming they are equally good to gauge framing effects as are many nationally representative population-based surveys (Mullinix et al. 2015).

The research method I chose addressed some of the above-mentioned limitations and offered several advantages over the existing methods. Content analysis of newspaper reports about infectious diseases was used to determine which frame was more prevalent at different times. Qualitative content analysis of health frames and a brief historical discussion of the resulting public opinion supplement this analysis. Public opinion poll data are used to present a measure of the public reaction to these frames. This research method not only addressed limitations of past studies, but it also was the best method that could help me understand evolution of frames and framing effects on respondents. By relying on content analysis and public opinion data, I could address some of the above-mentioned limitations of past studies on framing effects that involved participant observation, interviews, focus groups (Chong 1993), and laboratory studies (Kinder 2007). There were several other benefits of using this research method of combining content analysis of media frames and studying survey opinions.

First, content analysis of media frames allowed me to research new reports on infectious diseases over a long time. I could capture an evolving debate on policies and discussions around transnational infectious diseases from 2001 to 2007 and analyze a large amount of data. Second, compared to other research methods like participant observation, controlled laboratory experiments, focus group studies, and interviews, conducting content analysis was an unobtrusive method (Blackstone 2012). Unobtrusive methods are those where the data collector does not interfere in any way with the participants and respondents of the study (Krippendorff 2013). This prevents a bias on the part of the researcher and results obtained are fair and truly acknowledge the role of media
frames. Third, it was an inexpensive method and solved my problem, like many other researchers who are unable to leave homes and travel to gather research data. I used Lexis Nexis Academic database to retrieve content. While students and researchers need to be trained in the use of the database, it is still a very inexpensive research method. Most universities and research institutions provide this database and research can be conducted without requiring extensive funding for fieldwork and conducting experiments and interviews. Polling data for the study including public opinion polls was also easily accessible, and available (Krippendorff 2013).

Though content analysis is considered mainly as a quantitative method, it can adequately encapsulate qualitative content as well (Stempel 1989). More specifically studies using content analysis usually involve the following six steps: (1) formulation of the research question or objectives; (2) selection of communication content and sample; (3) developing content categories; (4) finalizing units of analysis; (5) preparing a coding schedule, pilot testing, and checking inter-coder reliabilities; and (6) analyzing the collected data (Prasad 2008).

**Impact of Media Frames on Public Perception of Infectious Diseases**

In my study, the influence of media frames on public perception of infectious diseases is examined through content analysis of newspaper reports. Stories on severe acute respiratory syndrome (SARS), avian flu, and HIV/AIDS were sampled from coverage in *The New York Times* and *The Washington Post* between 1999 and 2007. These newspapers were chosen as sources for three main reasons. First, newspapers are still a primary source of information for millions of people in the United States (Chaffee and Stacey 1996). Second, these newspapers devote substantial resources to coverage of national and international affairs and have a large reporting staff with expertise in science, technology, and medical issues (Nisbet and Huge 2006). Third, some national news sources like *The New York Times* and *The Washington Post* are considered the “gatekeeper” or “elite” sources of news, in that they influence news coverage made in other national and regional newspapers (Paletz 2002; Jamieson and Campbell 2001). Analysis of these two newspapers indicates reporting trends likely to be followed by other news reports.

These three diseases—HIV/AIDS, SARS, and avian flu—were chosen as case studies for two primary reasons: They have greatly affected the
United States, and they have their origins outside the United States. These infectious diseases have spread from countries in Africa and China to the United States and have raised pressing biomedical, human rights, economic, and security concerns in the United States. Public health officials, international organizations, government agencies, and many nongovernmental groups have drawn attention to the impact of infectious diseases on human rights and the economic development of countries, and they have urged global collaboration and pooling of resources to fight the increased threat of epidemics.

Statistical analysis tests the relationship between media framing of diseases and changes in public opinion. I wanted to research that frame was the most powerful in shaping public attitudes, and many studies agree that only an “operational approach of asking people directly to evaluate the relative strength of various frames” will allow assessment of frame strength (Chong and Druckman 2007). I posed the following research questions. Does it matter if the framing of infectious diseases stresses medical dangers, economic costs, human rights infringement, or strategic threats? If it does, which issue frame is the most compelling or persuasive in influencing public perception of threat and concern over the disease? Public opinion poll data are used to present a measure of the public reaction to these frames.

Previous research indicates that two factors may considerably enhance the impact of a frame. First, repeated exposure to a frame may magnify its accessibility and make it more persuasive. Second, perceived relevance of an issue frame may also increase its influence. Frames that are more directly related to the United States, for example, may have the effect of increasing public anxiety. Consistent with this, and building on previous research, the following hypotheses were tested:

**Hypothesis 1** Frames represented prominently in the media will tend to mobilize public support for policies associated with those frames. Increased repetition of the frame will enhance its effect. Frequent exposure to the frame will increase the accessibility and thereby the relevance of the issue and people will pay more attention to considerations underlying the problem. This claim relies on the accessibility and memory-based model of public opinion formation.
Hypothesis 2: When the medical and economic frames dominate media coverage, which is the most common scenario, people will be worried about the disease. They will be likely to support potentially inconvenient policies intended to address the dangers of the disease. On the other hand, when security and human rights frames dominate, which should be less often, people will be less worried and concerned about the spread of disease. In this case, people would be less likely to support inconvenient public policies because they will view these frames as less personally relevant.

In testing these hypotheses, a content analysis of newspaper reports about infectious diseases was used to determine which frame was more prevalent at different times. Qualitative content analysis of health frames and a brief historical discussion of the resulting public opinion supplement this analysis.

The most prominent frames identified in the articles were the biomedical, economic, security, and human rights frames. In fact, the choice of these four frames emerges, in part, from pre-test content analysis showing that they are the most prominent infectious disease frames. Other frames, such as entertainment, political, and humanitarian, were not as common in news stories. A fellow student was given 10 percent of the stories (randomly selected) to code, and she recorded the data on a separate coding sheet. This test of inter-coder reliability showed an overall level of 86 percent agreement between me and the other student. Such reliability figures are acceptable by most communications scholars (Daniel et al. 2005).

The following themes were considered when coding for the biomedical frame: transmission and epidemiology of the disease; the possibility of it taking the form of an epidemic or pandemic; focus on different strains of viruses that caused these infectious diseases; diagnosis and symptoms of disease; cure, rehabilitation, and biophysical issues surrounding the disease; treatment/medication related to the disease; and employment of quarantine and isolation as intervention strategies to contain the disease. With regard to HIV/AIDS, debates about prevention and treatment (i.e., needle exchange, use of condoms, abstinence only, and blood transfusion) were considered. The roles of the World Health Organization, Centers for Disease Control and Prevention, National Institutes of Health, doctors, health care professionals, virologists, and scientists in relation to the disease were also indicators of the biomedical frame.
To measure the security frame, news reports were coded for mention of threat to the state’s capacity (i.e., its military and peacekeeping forces, a threat to state borders, and public institutions) due to the pandemic of HIV/AIDS, SARS, or avian flu. Mention of deliberate use of microbes to inflict bioterrorism was also included in the security frame.

The following themes defined the economic frame: indications that the spread of disease caused financial losses, decline in investments, investments, decline of gross domestic product, loss of exports, losses to manufacturing units, loss of trade and commerce, and decline in tourism; references to absenteeism at work, loss of skilled workers, and health insurance payments as a result of the disease; and mention of costs and expenses to the federal and state governments or global funds to fight the disease and financial costs of vaccine research and production incurred by pharmaceutical industries. Economic factors leading to the spread of disease were also coded, including: smuggling of uninspected meat/chicken to avoid custom duties; prostitution or forced sex on women; poverty causing people to sell blood infected with HIV in poor countries where blood often is not screened for infection; slums, squalor, urbanization, and nutritional deficiencies leading to the spread of infectious diseases; and changes in land use or economic development associated with disease transmission. Finally, stories about economic activities such as human encroachment on forests, which can bring people into closer contact with insects and animals carrying disease, and stories that mentioned lack of infrastructure (e.g., roads) and higher tariffs (if they are a hurdle in the shipment and transfer of medicine to poorer countries) were also coded for the economic frame.

The key words in the human rights frame for HIV/AIDS were stigmatization and discrimination against people infected with the disease. Also coded were stories about protests by the homosexual population of the United States against mandatory screening of blood when donating blood; and, protests against the “partner notification program” in the case of HIV/AIDS.

Demands for freedom of the press and against censorship by countries (like China) that censored news about the outbreak of disease in their country were voiced. Human rights groups protested mandatory quarantine and isolation in some countries as infringement of peoples’ civil and political rights. In the case of avian flu, the issue of compensation to farmers whose poultry was culled was raised by many private and international organizations.
Each news article was coded at the sentence level. Each frame was a variable and was assigned a numerical value based on the number of times the frame was mentioned in each given news article. This numerical score was then converted into a weighted measure for each frame, which is defined as the ratio of the number of times a given frame is mentioned in the news article and the total number of sentences in the news article. The weighted measure was used primarily for two reasons: (1) to normalize the measure so that it is comparable across news articles of varying lengths; and (2) to allow comparison of the relative scores across frames in each news article. The stories also were coded as follows for the region or country that was the focus of the story: United States, countries other than the United States, global impact, or geographic region not mentioned. The changes in media coverage in terms of the number of articles published (including ratios of the four frames) were summarized using monthly and weekly intervals over the course of the outbreak period to examine the trends at a much more detailed level. The timeline of key events for each of these diseases was also plotted in the graph to show the key events that triggered a change in media coverage. A brief historical discussion of the evolution of frames supplemented the analysis.

The public opinion surveys were drawn from a secondary database corresponding to the period in which these news stories were published. Public opinion data were collected mainly from the I Poll data bank, Polling the Nation, and the Health Poll Search of the Kaiser Family Foundation. All survey results are based on representative national samples of adults aged 18 or older. With very few exceptions, the sample sizes of these studies were at least 1000 respondents. Shifts in public opinion toward infectious diseases were assessed by considering exact and similarly worded questions about issues related to avian flu, HIV/AIDS, and SARS (Ho et al. 2007). Specifically, these questions measured the following: (a) willingness to support harsh public health measures such as quarantine to curb the spread of disease; (b) precautionary steps taken and behavioral changes made in personal lives due to fear of the disease; and (c) concerns about the spread and likelihood of contracting the disease. Positive responses to these questions would indicate a higher level of awareness and concern about the disease in response to media coverage of these diseases. Further correlation analyses were conducted to understand the relationship between changes in media coverage of infectious diseases and changes in public opinion.
This study used a research design that studied framing effects (measured by changes in responses to survey responses) when respondents were exposed to multiple frames in the corresponding period. Unlike many previous experimental studies of framing effects in which respondents were exposed to opposing frames in measured quantities, this study sought to understand framing effects when respondents were exposed to multiple frames in real-world conditions.

Case studies of three infectious diseases explored variations in framing regarding the number of articles published and the ratios of the four frames at quarterly, monthly, and weekly intervals. Results indicate that no one frame was persuasive across all diseases. The economic frame had a significant effect on public opinion about SARS, as did the biomedical frame in the case of avian flu. Both the security and human rights frames affected opinion and increased public support for policies intended to prevent or treat HIV/AIDS. My analysis produced three major findings. First, the biomedical frame was the dominant frame in all three case studies, and the economic frame was the second most represented frame. The human rights and security frames were less prominent in all the three case studies. Second, framing effects were present, although the degree of the respondents’ opinion changes was not particularly extensive. Finally, different frames seemed to evoke a differing pattern of responses about the three distinct infectious diseases.

As hypothesized, some frames seemed to invoke more worry and concern over the disease than others. Increased prominence (frequency) of some frames also increased public anxiety. This finding supports Shanto Iyengar’s observation that repeated exposure to a frame, such as frequently hearing a news story emphasizing economic losses, increases the accessibility of the frame and enhances its effect (Iyengar 1990). When any concept is recently or frequently repeated, it comes quickly to one’s mind when making judgments on policy (Fiske and Taylor 2008; Liberman et al. 2007). Other frames, even if they did not appear most frequently, apparently prompted concern over the disease because they were perceived to be more relevant or stronger frames. In this fashion, the economic frame may have increased public anxiety about SARS when coverage pertained specifically to the United States. The findings of this study are generally consistent with those of Paul Brewer, David Wise, Paul Sniderman, and Sean Theriault, who posited that framing results are not as robust when respondents are exposed to dual or multiple frames, compared with
single frames (Wise and Brewer 2010; Sniderman and Theriault 2004). On the other hand, this study of infectious disease framing does not support the claim that exposure to competing frames necessarily mitigates the impact of any one frame. As Rodger Payne puts it:

No frame is an omnipotent persuasive tool that can be decisively wielded and it would be virtually impossible to know in advance if an apparently compelling frame in one situation would also prove persuasive when applied to an analogous case. (Payne 2001)

There are some significant implications of this research for the development of international relations theory, and for policy makers and researchers involved in communications research and study of public opinion and foreign policy. The study of public opinion on a transnational issue like infectious diseases also contributes to the existing debates in international relations theory. In a world faced with pressing non-military issues and with domestic and transnational actors linked to these concerns, international behavior could be the result of a “multiplicity of motives, not merely the imperative of systemic power balances” (Holsti 2004). Issue framing is likely to be relevant to international agreements about surveillance, border controls, immigration issues, and distribution of vaccines and antiviral drugs to control transnational diseases.

**Conclusions and Implications**

My research design combined content analysis of news reports of three case studies with nationally representative surveys about infectious diseases retrieved from survey data banks. This method is very beneficial to all researchers and policy analysts who seek to analyze large data on implications of policy issues. As many scholars who have used this method have pointed out, readers who analyze the text can understand the content and themes and can make inferences and assess effects of these messages (Krippendorff 2013).

The strength of this research (content analysis) is that it is a systematic and methodological tool to analyze texts and as far as it involves reading of the text and assigning categories to it, the distinction between qualitative and quantitative content analysis may not be that significant (Krippendorff 2013). Media content analysis is a part of the broader study of content analysis that studies texts of many kinds. Combining content analysis with survey opinions, this investigation helps us in understanding
public opinion and public response to health communication. This method may also be useful to researchers in many fields—policy research, organization scholars, health research, social movements, and health communication studies.

NOTES

1. Some of the earliest and most important works on content analysis were by Harold Laswell (1949), Abraham Kaplan (1943), Bernard Berelson (1952), Riffe et al. (2005), Klaus Krippendorff (1980). It is an analysis of both data collection and data analysis and has wide application in many fields and disciplines.

2. Experimental studies have the built-in advantage of controlling the environment in which media effects take place and making sure no other factor leads to changes in media effects.

3. A growing body of research documents how public support for military intervention increases if the public feels that the action had the approval of international organizations. See Joseph M. Grieco, Christopher Gelpi, Jason Reifler, and Peter D. Feaver, “Let’s Get a Second Opinion: International Institutions and American Public Support for War,” International Studies Quarterly 55, no. 2 (2011): 563–83.

4. Communication scholars categorize framing effects as either “equivalency” framing effects or “emphasis” framing effects: see Alex Mintz and Steven B. Redd, “Framing Effects in International Relations,” Synthese 135, no. 2 (1997): 193–213; James N. Druckman, “The Implications of Framing Effects for Citizen Competence,” Political Behavior 23, no. 3 (2001): 225–48.

5. Some recent studies have added control groups in their experiments. See, Dennis Chong and James N. Druckman, “Dynamic Public Opinion: Communication Effects Over Time,” American Political Science Review 104, no. 4 (2010): 663–80.

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