How U.S. Newspapers Frame the 2009 H1N1 Vaccine

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ABSTRACT

Past examples of inoculation campaigns have demonstrated that media reporting has strong implications on public reception of vaccines. In this study, I used the sociological concept of framing to analyze media content about the 2009 H1N1 vaccinations. This study [1] identified what common frames writers employed to portray the 2009 H1N1 vaccines and [2] how vaccine supporters and opponents used frames in *USA Today*, *The New York Times*, *The Wall Street Journal*, *Los Angeles Times*, and *The Washington Post* during three time periods: [a] April 1, 2009 to September 30, 2009 (during the anticipation of the vaccine), [b] October 1, 2009 to November 30, 2009 (during a shortage of vaccine), and [c] December 1, 2009 to January 31, 2010 (when the vaccine becomes widely available). I used ATLAS.ti, a qualitative data storage software program to categorize articles into thematic frames and to separate vaccine-supporting and vaccine-opposing frames. Results revealed that pro-vaccine frames highly emphasized the vaccine's protective factors while anti-vaccine frames highlighted its safety concerns. Vaccine-supporting frames dominated opposing frames by being more prevalent in news articles and remaining more consistent over time. However, vaccine supporters allowed the shortage of vaccine in time period [b] to influence their framing. This did not provide the public with a sustained delivery of consistent messaging necessary for vaccine reception to occur. Ultimately, results of this study lay the groundwork for further research in media and vaccine reception.

KEYWORDS

health communication, vaccine promotion, media studies, journalism, content analysis

INTRODUCTION

Media reporting often affects inoculation campaigns, fueling the public's tendency to assume causal links when random morbidity occurs after vaccination (Jefferson 2000). In 1998, a flawed British study suggested a link between the measles-mumps-rubella vaccine (MMR) and autism. This alone prompted a surge of uninformed, anti-MMR reporting in the United Kingdom and United States that decreased the rates of immunization dramatically (Mason and Donnelly 2000; Smith et al. 2008). Such examples suggest that superficiality and scientific inaccuracy in mass media can undermine efforts to promote reception of life-saving vaccinations (Rubin and Hendy 1977). Hence, it is likely that media reporting on vaccinations has impacted the Center for Disease Control's promotion of the recently developed vaccine to control the 2009 swine influenza pandemic (National Center for Immunization and Respiratory Diseases 2009).

The H1N1 vaccine became the center of media attention in 2009 when the influenza A virus subtype H1N1 spread globally (Harris 2009). Pharmaceutical companies collaborating with the World Health Organization began developing the H1N1 vaccine in May 2009 and told media sources the vaccine would be available in October that same year. Not only was the vaccine not ready by October, it was still not widely available in November 2009 because of the virus's unexpectedly slow laboratory growth (World Health Organization 2009). In response to speculative media coverage of the delayed production, the CDC tried to quell concerns by stressing the vaccines' safety and encouraging the American public to receive the vaccines when they became available. Though the CDC gave weekly media briefings regarding the vaccine's safety and availability (National Center for Immunization and Respiratory Disease 2009), journalists were free to interpret these messages as they chose.

In this study, I used the sociological concept of framing to analyze media content that supported and opposed reception of the 2009 H1N1 vaccine, particularly examining journalists' use of "problem frames." Sociologist Erving Goffman (1974) was the first to develop framing as "schemata of interpretation" that allow people "to locate, perceive, identify, and label" events and occurrences. The images, metaphors, and catch phrases used by journalists frame their stories. These choices encourage readers to interpret information in particular ways (Scheufele, 1999). Mass communications specialist Dr. David L. Altheide (1997) theorized that because America is a fearful society, Americans are more attuned to problem-based, fear-inducing news, making "problem frames" a typical form of framing. Furthermore, readers often pay attention to

the implied solutions of the problems presented in such frames (Iyengar 1991; Wallack et al. 1993). News frames affect readers' thoughts and recall of information because people tend to recognize and interpret news in the frame in which the story is presented (Valkenburg et al. 1999). According to this theory, if problem frames were used to describe the 2009 H1N1 vaccine, readers would have focused exclusively on the problems associated with vaccinations and would have identified the avoidance of the vaccine as an implied solution. Other significant aspects, such as the positive effects of immunization, would not have been communicated.

The "problem frame" approach had important implications for the public health community's efforts to promote the H1N1 vaccine. Scientists hoped that if a large percentage of the population received the immunization, herd immunity would have developed, making those susceptible to disease less likely to encounter an infected person and protecting the entire "herd" of people. However, avoidance of the H1N1 vaccine due to fear may have significantly disturbed the herd immunity model and put the entire population at risk (Epstein 2009). Pregnant women, young children, and those with chronic illnesses were among those given priority for immunization (National Center for Immunization and Respiratory Diseases 2009). Fear of potential vaccine side effects might have been high within such vulnerable groups, so the success of vaccine distribution in creating herd immunity likely depended on favorable public perception (Levine and Levine 1997). Because the public learns most of what it knows about science from the mass media (Nelkin 1987), it is critical to examine the media's portrayal of the 2009 H1N1 vaccine, scrutinizing how information about this vaccine was translated into news.

While studies have analyzed media reporting of immunization programs such as MMR (Rubin and Hendy 1977, Smith et al. 2008), the release of this particularly significant vaccine provided a valuable opportunity to explore media portrayal of new vaccinations. In this study, I examined the word selection and content composition of news reporting in order to characterize media framing of the H1N1 vaccine. Using a qualitative content analysis approach, I explored major U.S. news reports about the vaccine over three significant time periods (National Center for Immunization and Respiratory Diseases 2009). Ultimately, this study [1] identified what common frames writers employed to portray the 2009 H1N1 vaccines and [2] how vaccine supporters and opponents used frames in *USA Today, The New York Times, The Wall Street Journal, Los Angeles Times,* and *The Washington Post*

[a] April 1, 2009 to September 30, 2009 (during the anticipation of the vaccine)?

[b] October 1, 2009 to November 30, 2009 (during a shortage of vaccine)?

[c] December 1, 2009 to January 31, 2010 (when the vaccine became widely available)?

METHODS

I assessed stories published in *USA Today, The New York Times, Los Angeles Times, The Wall Street Journal* and *The Washington Post* between April 2009 and January 2010 that were drawn from the Lexis-Nexis Academic and ProQuest databases. These publications are the five most widely circulated newspapers in the United States (Audit Bureau of Circulations 2009) and some of the country's most influential newspapers (Project for Excellence in Journalism 2007). I limited my database search to the five newspapers and used the search term "swine flu vaccine OR swine flu vaccination OR H1N1 vaccine OR H1N1 vaccination" to incorporate articles relevant to this study. All articles found within the search results were included in this study. These articles were treated as a single representative sample of U.S. news reporting over time—I did not compare articles between different newspapers. In order to examine H1N1 vaccine reporting over time, I analyzed my sample in three separate groups corresponding to the time period in which each article was published: [a] April 1, 2009 to September 30, 2009 (during the anticipation of the vaccine), [b] October 1, 2009 to November 30, 2009 (during a shortage of vaccine), and [c] December 1, 2009 to January 31, 2010 (when the vaccine becomes widely available).

Because the study objective was to describe the quality of new vaccine framing, a qualitative content analysis approach was most appropriate for this investigation. To answer the two components of my study question, I conducted a textual analysis. First, I read through articles in each of the three time periods. Because frames are constructed by arguments that share a similar perspective on an issue (Altheide 1997), I identified arguments in articles that were sourced from vaccine advocates (i.e. public health officials) and from vaccine opponents (i.e. skeptics in the general public). Afterwards, I grouped similar arguments together into frames and then divided them into frames within each time period and into pro-vaccine and anti-vaccine frames. I specifically noted the core position, images, metaphors, and catch phrases that were common in the arguments included in each frame. To assist with this textual-level analysis, I used a popular qualitative data storage program, ATLAS.ti v6 produced by ATLAS.ti Scientific Software Development GmbH in Berlin, Germany (ATLAS.ti Scientific Software Development GmbH,

2009). I used the program's textual analysis features to quickly peruse through newspaper articles, identify relevant arguments, and categorize these arguments into frames.

I measured the strength of the identified frames by describing the prevalence and consistency of both pro-vaccine and anti-vaccine frames. ATLAS.ti allowed me to examine prevalence by identifying which frames were supported by the most articles. Consistency was observed by comparing the prevalence of pro-vaccine and anti-vaccine frames over time periods [a], [b], and [c]. I detailed my interpretation of these observations in my analysis.

RESULTS

Number of Frames

In the five newspapers, I identified 176 articles in time period [a], 227 articles in time period [b], and 58 articles in time period [c] that all contained arguments about the availability, effectiveness, and benefits of the H1N1 vaccine. Content analysis revealed a total of 22 frames. Several frames were found in multiple time periods. Eleven frames in time period [a] (Table 1), 16 frames in time period [b] (Table 2), and 12 frames in time period [c] (Table 3) characterized the arguments in each of the three periods.

Not all articles contained frames; some articles contained multiple frames. Because of the larger number of total articles found in time period [b], the majority of frames were supported by more articles. With the fewest total articles time period [c], more frames were supported by only one or two articles in this period.

Frame Descriptions

In Tables 1, 2, and 3, frames in gray rows represent anti-vaccine frames and frames in white rows represent pro-vaccine frames. A total of 155 articles contained 15 different pro-vaccine frames and a total of 45 articles contained 6 different anti-vaccine frames. In the three tables, each frame is accompanied by the core position and examples of images, metaphors and catch phrases common to each frame. These are important because they demonstrate the reasoning I used to categorize frames.

Dominant Frames

Though the H1N1 vaccine articles produced a total of 22 frames, few were identified as dominant frames, the most frequently used frames. The dominant frames across all three time periods that supported vaccine receipt were:

(1) *Protect the Vulnerable* (43 total articles): The message is that the vaccine serves a purpose of protecting the vulnerable in society, like children and pregnant women. In this frame, there are images of weak and powerless women and children in homes and schools, having only the H1N1 vaccine as a defense against a viral infection that could result in hospital stays and death. Especially in time periods [a] and [b], children and pregnant women are consistently called the "target" or "priority" groups for vaccination.

(2) *Low Availability* (35 total articles): The message is that there is a severe dearth of vaccine, making it a rare and valuable commodity. This frame was especially well supported in time period [b] when the supply of vaccine did not meet expectations. In this frame, there are images of people struggling to find vaccine and becoming frustrated and angry because of their inability to do so.

(3) *Protect Loved Ones* (15 total articles): The message is that the vaccine keeps loved ones safe. In this frame, there are images of parents getting their children vaccinated to protect them and parents receiving the vaccine to avoid transmitting the virus to those they love. This frame was consistently present in all three time periods. Common phrases include "protect your children" and "protect your family."

Frames that opposed vaccine receipt are represented in gray rows in Tables 1, 2, and 3. The dominant frames that opposed vaccine receipt across all three time periods were:

(1) *Unsafe* (13 total articles): The message is that the vaccine is unsafe because of reasons including rapid production, past experiences, and morbidity after vaccination. The frame portrays vaccination as an elusive treatment, one that provides no certainty whether any harmful effects will result from vaccine reception. This frame is present within all three time periods. Articles describe the vaccination as "risky" or even "killer."

(2) *Government* (12 total articles): The message is that the vaccine is a government mandate that forces people to receive the vaccine when they do not want it. This frame portrays the vaccine as a government experiment that is being forced upon the public. Focus on the government's role in vaccine distribution and policy was especially frequent in time period [a] and [b]. Phrases like "mandate" and "forced" are common in this frame.

(3) *Unnecessary* (6 total articles): The message is that people do not need to receive the vaccine because natural immune systems are strong enough to defend against the virus. Often, there are images of young and healthy individuals that claim they do not need the

vaccine because they have never experienced the flu and have never received a flu shot. This frame primarily exists in time period [b] and highlights that the vaccine is unnecessary by using phrases like "H1N1 is not a threat."

Table 1. H1N1 vaccine frames in time period [a]. April 2009 to September 2009.

Frame Title	Number of Articles	Core Position	Images/Metaphors	Catch Phrases
Protect the Vulnerable	17	The vaccine protects the most vulnerable of the population: children and pregnant women.	Schools plan on making vaccine available to students; pregnant women vying to be part of clinical trials	"shot protects children"; "vaccine protects 'priority' population"
Tested/Approved	7	The vaccine is safe because it has been tested and approved by authorities.	FDA and CDC representatives insisting that vaccine has gone through multiple tests and trials	"no side effects found in tests"; "clinical trials"
Protect Loved Ones	8	The vaccine protects loved ones from the H1N1 virus.	Family steps up to prevent another flu loss; after child's death, his siblings take part in vaccine testing	"protects co-workers and families"; "advice to parents:…shots for all"
Benefits>Costs	5	The vaccine's protective benefits outweigh its costs.	Airports offering shots for convenience; Schools offering free vaccinations	"benefit far greater than risks"; "free"
Weapon	4	The vaccine is a weapon that helps fight the H1N1 virus.	Individuals taking charge and arming themselves to fight the flu.	"vaccine combats the flu"; "brace for pandemic fight"
Government	4	The vaccine is something dangerous that is being forced onto people who don't want it.	Health care workers scared that they're to receive a vaccine when they think it's going to harm them.	"mandatory flu shots"; "oppose…a mandate to put something in my body"
Unsafe	3	The vaccine is unsafe because it was quickly and recently produced.	People thinking back to 1976 swine flu vaccine, recalling the drastic side effects.	"getting the vaccine is a risk"; "doubtful safety"
Misconceptions	2	All doubts of vaccine safety are misconceived and the vaccine is safe.	People assuming that what occurs after receiving the vaccine is the direct cause of the vaccine.	"the vaccine is not responsible"; "vaccine skeptics"
Low Availability	2	The lack of vaccine availability is endangering the public.	Uncertainty regarding whether there will be enough vaccine to go around.	"low initial supply"; "a greater demand"
Public Benefit	1	Receiving the vaccine protects the public through herd immunity.	People participating in trials of vaccine because they believe they are contributing to public benefit.	"contribution to public effort"
Endanger the Vulnerable	1	The vaccine is dangerous because it is being used on the most vulnerable of the population.	Pregnant women are cautious about receiving the vaccine, fearful that it might hurt their babies.	"pregnant women loathe getting vaccine"

Table 2. H1N1 vaccine frames in time period [b]. October 2009 to November 2009.

Frame Title	Number of Articles	Core Position	Images/Metaphors	Catch Phrases
**Low Availability*	33	The lack of vaccine availability is endangering the public.	Doctors and nurses in offices receiving a deluge of angry calls from people demanding a shot.	"shortage"; "scarce"; "delays imperil those at risk"
**Protect the Vulnerable*	24	The vaccine protects the most vulnerable of the population: children and pregnant women.	Childcare workers getting vaccine with the intention to protect the children they work with.	"priority shots for the vulnerable"; "prevent a hospital stay for child"
**Unsafe*	9	The vaccine is unsafe because it was quickly and recently produced.	A young child dies a week after receiving the vaccine.	"brand-new vaccine…is it safe?"; "doubts about safety"; "risks"
**Government*	8	The vaccine is something dangerous that is being forced onto people who don't want it.	People comparing government mandates to Tuskegee.	"government over-promises, under delivers"; "I'm not trusting the government"
**Misconceptions*	6	All doubts of vaccine safety are misconceived and the vaccine is safe.	Officials lamenting that people continue to doubt vaccine safety after 60 years of experience and technology.	"confusion and rumors in flu fight"; "here are myths and why they're wrong"
Unnecessary	6	The vaccine is unnecessary because natural immunity is strong enough to withstand H1N1.	College students scoff at swine flu vaccine, believing that the threat of H1N1 is a media-concocted sensation.	"don't view H1N1 as a threat"
Comparison	5	The vaccine is safe because it was produced in the same way as all other vaccines.	Officials responding to skeptics by saying that the vaccine is produced just like the seasonal flu vaccine.	"as safe and the seasonal flu vaccine"; "made just like we have been making for 60 years"
**Protect Loved Ones*	5	The vaccine protects loved ones from the H1N1 virus.	Children at school telling adults they wanted to receive a vaccine after seeing their classmates sick.	"single best way to protect yourself and loved ones from a deadly virus"
Competition	5	One must compete with others in order to receive the vaccine.	People clogging hospital phone lines, fighting each other for a chance to receive the vaccine.	"race"; "vying"; "parents stalk the elusive swine flu vaccine"
Untrustworthy	5	The vaccine can't be trusted because it is new and experimental.	People on Twitter feeds posting comments about their skepticism of vaccine.; Doctors don't believe in it.	"the vaccine has not been out long enough to trust it"; "just too new and untested"
**Tested/Approved*	4	The vaccine is safe because it has been tested and approved by authorities.	Trials have not detected any problems with the vaccine.	"testing and clinical trials"; "safety trials going well"
**Benefits>Costs*	3	The vaccine's protective benefits outweigh its costs.	Comparison of the outcome of being seriously ill to the outcome of not being ill.	"benefits greatly exceed the risks"; "free"; "convenient"
Effective	3	Less occurrences of H1N1 could be attributed to vaccine efficacy.	Flu levels going down shortly after H1N1 vaccine is released.	"vaccinations rise while infections remain low"
Costs>Benefits	3	The costs of receiving the vaccine, including risks and side-effects, outweigh the benefits.	Someone refusing to receive a vaccine because it takes too much time to track down the vaccine and get in line.	"inconvenient"; "possible price gouging"; "benefit not outweighed by possible risk"
**Weapon*	2	The vaccine is a weapon that helps fight the H1N1 virus.	Producer of vaccine making money by fighting the virus with their product.	"combat"; "fight"
**Public Benefit*	1	Receiving the vaccine protects the public through herd immunity.	A person arguing that getting vaccinated is a moral obligation to the public.	"well being of society"; "individual rights take back seat"

*frames that continued on from time period [a].

Table 3. H1N1 vaccine frames in time period [c]. December 2009 to January 2010.

Frame Title	Number of Articles	Core Position	Images/Metaphors	Catch Phrases
Abundance	6	One should receive the vaccine because it is available.	States not restricting people from getting the vaccine. Low-risk groups receive the vaccine.	"have so much"; "plentiful"; "all stocked"
Ineffective	5	Some vaccines may be ineffective due to loss of potency.	800,000 doses of vaccine being recalled for loss of potency.	"lost potency"; "recall"
Preparation	3	The vaccine will prepare individuals should another wave of H1N1 strike.	Despite lower rates of H1N1, doctors advise vaccination because of potential third wave of disease.	"prepare for a third wave"; "don't know if there will be a third wave"
**Protect the Vulnerable*	2	The vaccine protects the most vulnerable of the population: children and pregnant women.	Mother confident in volunteering child for clinical trials.	"hopeful on flu vaccine"; "vaccine holds promise"
**Protect Loved Ones*	2	The vaccine protects loved ones from the H1N1 virus.	Official saying that vaccine will prevent virus from being taken home to families.	"gift of vaccination"
***Competition*	1	One must compete with others in order to receive the vaccine.	A parent strategizing a way to get past a mob of parents to get her child a vaccine.	"get past others"
**Weapon*	1	The vaccine is a weapon that helps fight the H1N1 virus.	Official calling the vaccine a weapon.	"weapon in our defense"
**Tested/Approved*	1	The vaccine is safe because it has been tested and approved by authorities.	A second review done by unbiased sources says that the vaccine is safe.	"review"; "shows safety of H1N1 vaccine"
***Effective*	1	Less occurrences of H1N1 could be attributed to vaccine efficacy.	Government is citing no spikes in adverse events months after the campaign began.	"safe, effective vaccine"
Job	1	Being vaccinated will increase hiring opportunities.	Nannies who don't have the flu shot are being fired by their employers.	"edge in the job market"
Unsafe	1	The vaccine kills people.	A child died days after receiving the H1N1 vaccine.	"killer"

*frames that continued on from time period [a].
**frames that continued on from time periods [a] and [b].

DISCUSSION

Problem frames

As expected, problem frames were highly prevalent in both pro-vaccine and anti-vaccine reporting. Vaccine-supporting frames emphasized problems of illness and suffering for vulnerable family members to incite the public to take action and get vaccinated. In contrast, vaccine critics highlighted problems of government control and the uncertainty of a new product to alarm the public about the potential dangers of being vaccinated.

Such problem frames often lead to the creation of fear (Altheide, 1997). Fear appeals are often used to frighten people, consequently motivating them to engage in certain behaviors (Witte and Allen, 2000). It is interesting to note in this study that time period [b] is the period with the most problem frames and also the most fear-inducing language—largely because this is the time where there existed the least certainty regarding the availability and safety of the vaccine. Key phrases in frames changed dramatically when problems escalated. For example, in the *Protect the Vulnerable* frame in time period [a], messages were rather mild and direct: the vaccine protects women and children. However, in time period [b], with an escalated problem frame, the phrases became more fear inducing, like "prevent a hospital stay" along with images of children dying from H1N1. The same can be said with frames that opposed the vaccine. The *Unsafe* frame transitioned from a skeptical tone to a panicked, fear-inducing tone between time periods [a] and [b].

Fear appeals in problem frames are successful when there is a strong indication of threat. Pro-vaccine frames strongly indicated a threat from the virus, while anti-vaccine positions promoted the threat of vaccine uncertainty. Consequently, these opposing problems frames contradicted each other in the media and competed for public attention.

Dominance of pro-vaccine frames

However, results of the content analysis clearly revealed dominance of pro-vaccine frames over anti-vaccine frames through sheer number of articles. While there were 155 articles that contained pro-vaccine frames, only 45 articles contained anti-vaccine frames. The high number of pro-vaccine frames demonstrates that vaccine supporters were able to communicate their messages to the public more frequently than vaccine opponents.

Because journalists needed to ground their stories in factual information, it is likely that pro-vaccine frames greatly outnumbered anti-vaccine frames because pro-vaccine frames provided the more reliable argument. Journalists reporting on H1N1 vaccines heavily depended on evidence for their arguments from three sources: government officials, experts in the vaccine field, and people in the general public. The third source was arguably the weakest and was often only used to illustrate and support a claim made by a more official authority. For example, in the *Low Availability* frame, writers typically used stories of people unable to find a vaccine only after presenting factual data about vaccine availability from government officials. Because of the journalistic norm to emphasize stories with more grounded evidence (Boykoff and Boykoff,

2007), vaccine makers and government health promoters were often the center of attention in news stories.

Furthermore, pro-vaccine frames also dominated anti-vaccine frames through their consistency in messaging. The *Protect the Vulnerable* and *Protect Loved Ones* frames remained highly prevalent throughout all three time periods. A sustained delivery of consistent messages is important when trying to promote health behaviors such as the reception of a vaccine (Nutbeam and Harris, 2004). Hence, the ability for pro-vaccine frames to remain present and consistent over time positively contributes to the H1N1 vaccine campaign.

In comparison, frames used by vaccine opponents changed over time. Few anti-vaccine frames identified in time period [a] remained present throughout all three time periods. The *Unsafe* frame, one of the most prevalent anti-vaccine frames, was introduced with three articles in time period [a] and nine articles in time period [b]. By time period [c], however, only one article containing the frame remained present. A potential explanation is that vaccine opponents may have had to continually change or adjust their framing because of occurrences that invalidated their previous frames. For example, the vaccine had already been widely released with no major safety concerns in time period [c], making the *Unsafe* frame invalid at that point.

Implied solutions

One shortfall of pro-vaccine reporting was the frequent use of frames that focused on availability in time periods [b] and [c]. An important consequence of the framing of a public health issue is the solution to the problem that the frame implies (Iyengar 1991, Wallack et al. 1993). When journalists mentioned the *Protect the Vulnerable* frame in their stories, the problem they identified was the danger faced by society's vulnerable and the implied solution was for the public to receive the vaccine in order to protect such vulnerable populations. However, when journalists mentioned the *Low Availability* frame, the problem they identified was the low availability of vaccine and the implied solution was to enhance vaccine production. Rather than addressing H1N1 as a threat to personal and community health and encouraging people to find and receive the vaccine when available, the *Low Availability* frame focused solely on production difficulties.

While frames like *Low Availability* and *Abundance* might have been useful in helping the public understand whether vaccines were obtainable, it is crucial that vaccine advocates continually remind the public that the vaccine helps save lives by creating herd immunity and

providing protection against the H1N1 virus. Once the vaccine was released in October 2009, media reporting on the vaccine's protective qualities was overshadowed by a focus on vaccine availability. The CDC and other vaccine supporters diluted the strength of their public health communication by focusing on an issue that did not directly contribute to their primary campaign message: get the vaccine because it saves lives. In contrast, the implied solution to most anti-vaccine frames was to avoid the vaccine. Because of the dilution of pro-vaccine messaging, people may have been less likely to receive the vaccine even when it became available.

Limitations

A major limitation of this study was that the identification and categorization of frames were highly subjective processes. Qualitative studies with similar methods typically have multiple researchers perform separate content analyses and methodically combine their categorizations afterwards. Due to a lack of time and resources, the implementation of such a process was unfeasible in this study. However, the results of this research provide an overview of the current media climate in public health reporting and lay groundwork for future studies.

Implications and future research

Despite limitations, the findings presented here are adequate in providing a general understanding of vaccine framing in the United States media. This information is useful for officials wishing to distribute public health messages, as they can learn from the successes and missteps of pro-vaccine media communication in the case of the 2009 H1N1 vaccine. Firstly, public health officials and scientists should continue to distribute information through the media, as journalists have tended to allow their vaccine-supporting problem frames to dominate over opposition from non-official sources. However, the public health community must remain consistent in their framing and be wary of the implied solutions of their frames. In the case of the H1N1 vaccine, officials were consistent in framing the vaccine as a product that would protect individuals and the public. However, they allowed a campaign setback—the brief shortage of vaccine—to influence and ultimately overshadow their framing. Frames that do not imply a solution involving vaccine reception should be used sparingly, as the public requires constant and consistent messaging for such health behaviors to occur.

While this study identified the main frames used to describe H1N1 vaccines, much is still unknown about the frames' effects on public reception of vaccines. In order for campaigns such as the 2009 H1N1 vaccine campaign to succeed, they must overcome the arguments made by

critics and skeptics. Further research could delve deeper into methods of arguing and justifying the use of vaccines through methods other than problem frames and fear appeals. More insight could be found by surveying the public about their perception of vaccines after reading different news frames. Theoretical health behavior models could be compared to vaccine reporting to examine whether current frames promote belief that vaccines save lives. Finally, researchers could also examine the rates of vaccination over time and compare these rates to the release of different vaccine frames in the news.

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