

THESIS

CLAIMS AND FRAMES:

NEWSPAPER COVERAGE OF THE HUMAN PAPILLOMAVIRUS VACCINE

Submitted by

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WE HEREBY RECOMMEND THAT THE THESIS PREPARED UNDER OUR SUPERVISION BY CAITLIN SHENK ENTITLED CLAIMS AND FRAMES: NEWSPAPER COVERAGE OF THE HUMAN PAPILLOMAVIRUS VACCINE BE ACCEPTED AS FULFILLING IN PART REQUIREMENTS FOR THE DEGREE OF MASTER OF SCIENCE.

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ABSTRACT OF THESIS

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Human papillomavirus, or HPV, a common sexually transmitted infection, has been identified as a primary cause of cervical cancer. With the availability of HPV vaccines, accurate and understandable information about HPV and HPV vaccines will be essential to manage personal and public responses to HPV and vaccine risks. The media play a key role in providing the public with that information.

This content analysis quantitatively explored media treatment of risk associated HPV and the HPV vaccine through the theoretical lenses of framing and claims-making. A coding schema was developed to identify and quantify recurring information, frames, and claims-makers in coverage. Overall, coverage addressed a breadth of background and risk information about HPV and the HPV vaccine, but lacked a depth of discussion that would better inform readers. Dominant frames emphasized moral judgments, positive benefits, preventative behaviors, episodic contexts, institutional responsibility, and ethical values. Claims-makers more commonly made claims about the HPV vaccine over HPV, and the types of claims-makers included for each were relatively consistent.

Although the media are not explicitly tasked with educating people on all the facts and perspectives about HPV and HPV vaccination, it is important to recognize their

influence on the health and risk information people receive. Media coverage of HPV and the HPV vaccine could better inform the public by including more detailed background and risk information and by emphasizing a broader range of frames and claims-makers to provide readers with a more comprehensive understanding of the scope and implications of these issues.

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CHAPTER 1: INTRODUCTION

The purpose of this study is to explore how media present information on a particular controversial health issue. The media's role in discourse about health risks is particularly worthy of exploration, and will be examined in this study in the context of risks related to human papillomavirus and the human papillomavirus vaccine, Gardasil.

It has been firmly established that persistent infection with human papillomavirus, or HPV – the most common sexually transmitted infection in the United States – is a primary prerequisite for squamous cell carcinoma, the most common type of cervical cancer (Walboomers et al., 1999; Cuschieri, Horne, Szarewski, & Cubie, 2006; Conner & Collins, 2008). HPV has also been identified as a primary cause of genital warts in men and women (CDC, 2009b). Despite its prevalence, studies have shown that most women generally lack information about HPV, and many have never heard of HPV (Cuschieri et al., 2006; Goldsmith, Bankhead, Kehoe, Marsh, & Austoker, 2007). Many are unaware that HPV is an STD, or that it exists at all (Baer, Allen, & Braun, 2000; McPartland, Weaver, Lee, & Koutsky, 2005; Sharpe, Brandt, & McCree, 2005; Friedman & Sheppard, 2007). In the U.S. in 2000, only 2% identified HPV as a sexually transmitted disease – fewer than any other sexually transmitted disease – and only 28% of persons aged 18 and older had heard of HPV. Less than half of those who had heard of HPV could link it to

the development of cervical cancer or genital warts (The Kaiser Family Foundation, 2000).

With the incorporation of HPV DNA testing into cervical cancer screenings, and with the availability of two HPV vaccines, the availability of accurate, understandable information about HPV will be essential to help young women and their parents making screening and vaccination decisions and to manage public responses to risks presented by both HPV and HPV vaccination (Wright & Schiffman, 2003; Anhang, Goodman, & Goldie, 2004; Anhang, Stryker, Wright, & Goldie, 2004; Anhang, Wright, Smock, & Goldie, 2004). Ultimately, the impact and efficacy of HPV vaccination will depend on high uptake and compliance by the public (Cuschieri et al., 2006). With the advent of the HPV vaccines Gardasil and Cervarix, there is overwhelming concern about the overall lack of awareness and information about HPV and its link to cervical cancer (Calloway, Jorgensen, Saraiya, & Tsui, 2006). With such limited awareness about HPV among women, there is a critical need for clear, consistent, reliable information about HPV transmission, prevention, detection, and its link to cervical cancer. As a result, it is critically necessary to evaluate the nature of information available to the general population about these issues, as that information could have potentially significant impacts, both positive and negative, on public understanding and perception (Anhang, Goodman, et al, 2004; Anhang, Stryker, et al., 2004; Anhang, Wright, et al., 2004; Calloway et al., 2006; Cuschieri et al., 2006; Goldsmith et al., 2007).

This study aims to observe and analyze the functions of framing and claims-making in media treatment of risk associated with HPV and HPV vaccination, through the theoretical lenses of framing and claims-making. The media have long been

recognized as particularly powerful in promoting the awareness of and education about health issues (Anhang, Stryker, et al, 2004). As such, the content of media messages about health issues such as HPV and HPV vaccination is a topic of particular import. The media can function as a major source of information about both HPV and HPV vaccines, and have the potential to influence perceptions of the disease, the nature and need for the vaccine to prevent it, the efficacy of the vaccine, and its potential impact on health and behavior (Calloway et al., 2006). An examination and analysis of media coverage of relative risks of HPV and the HPV vaccine, as well as the ways in which these issues are socially constructed through the processes of framing and claims-making, could provide a valuable stepping stone for broader efforts to conceptualize the role of the media in structuring discourse, public understanding of health, and public perceptions of risk issues.

A recent content analysis of general information about HPV contained in U.S. television and newspapers reports found that many stories lacked comprehensive information about HPV's link to cervical cancer, and were missing important information about HPV prevention, transmission, symptoms, and prevalence (Anhang, Stryker, et al., 2004). A second recent content analysis focused on U.S. newspaper coverage of the HPV vaccine prior to its FDA approval, and revealed that coverage addressed the vaccine's efficacy and experimental status, described the relationship between cervical cancer and HPV, and identified vaccine manufacturers, often including them as news sources. Detailed information about HPV, however, was frequently missing (Calloway et al., 2006). Content analyses of television and online news treatment of these issues have been conducted with similar results that comprehensive information on HPV, cervical cancer,

and the HPV vaccine continue to be missing from media coverage (Wallace & Ache, 2009; Habel, Liddon, & Stryker, 2009). Currently lacking is a content analysis focusing on printed news coverage of the HPV vaccine after its FDA approval and initial introduction to the public. This quantitative content analysis study helps to fill this gap by examining newspaper coverage about HPV and the HPV vaccine after Gardasil's approval and subsequent marketing.

CHAPTER 2: ISSUE CONTEXT AND BACKGROUND

It is critical to have a contextual understanding of an issue before investigating the frames and claims that have emerged from its coverage in the mass media. This chapter will explore research relevant to the issues surrounding the human papillomavirus and the vaccine to prevent it.

2.1 Definition

Human papillomaviruses, or HPVs, are a group of over 100 related viruses in the *Papillomaviridae* family (Markowitz et al., 2007; National Cancer Institute, 2008). Different forms of HPV are classified as “types,” and numbers are assigned in order of their identification (de Villiers, Fauquet, Broker, Bernard, & zur Hausen, 2004; Conner & Collins, 2008). Types are designated on the basis of the nucleotide sequence of specific regions of the genome (Markowitz et al., 2007). Each HPV type can cause an abnormal growth to develop on a specific part of the body, including genital warts around the genitals or anus, common warts on hands, plantar warts on feet, and warts in the mouth and upper respiratory system (Mayo Clinic, 2009). Approximately 60 of the over 100 HPV types can cause warts in non-genital areas of the body. The other 40 HPV types are considered mucosal types of HPV, which means that they can cause warts around the body’s mucous membranes – the thin, moist, skin-like layers that line internal organs and

body cavities, such as the lining of the vagina and anus. These mucosal types are often referred to as genital or anogenital HPV types because they most commonly affect the genital and anal regions of men and women. Mucosal HPV types infect the squamous epithelial cells in these regions that line membrane surfaces (American Cancer Society, 2009). Figure 2.1 illustrates differences in HPV types and associated diseases.

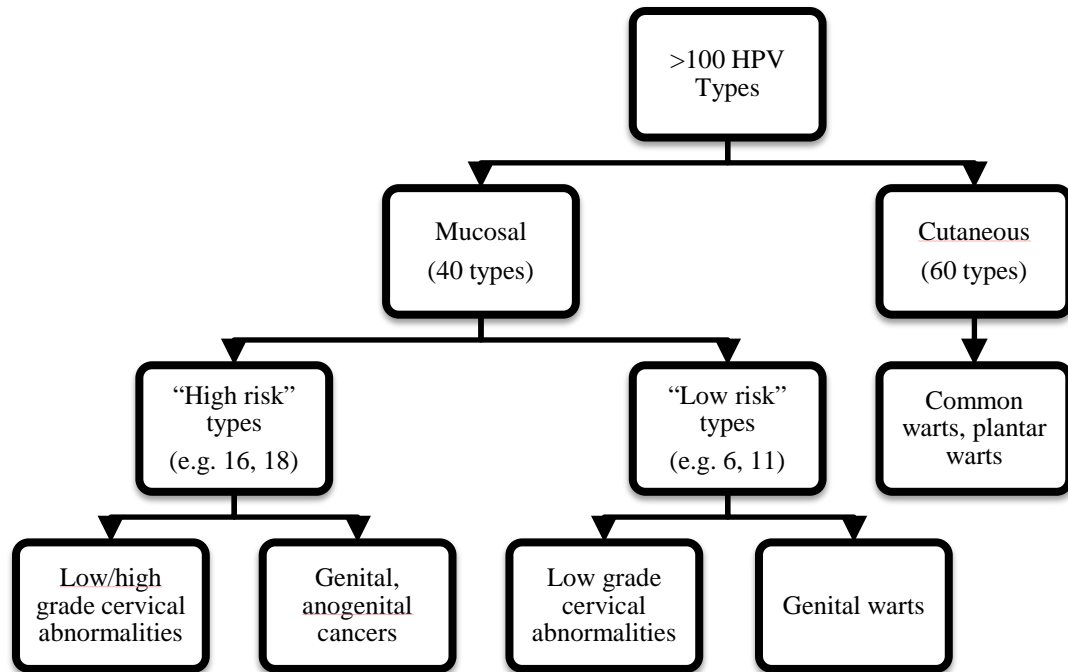


Figure 2.1: HPV types and associated diseases.
Redrawn from Anderson (2008, p. 7).

Infections with one of the 40 genital HPV types are categorized based on their risk for progression to cervical cancer. Genital HPV types can be divided into high-risk (i.e. oncogenic or cancer-associated) types and low-risk (i.e. non-oncogenic) types. HPV 16 and 18 are the most common high-risk types, and cause approximately 70% of cervical cancer (National Cancer Institute, 2008). These high-risk types can also cause pre-cancers and other low-grade and high-grade changes in the cells of the cervix (American Cancer Society, 2009). HPV 6 and 11 are the most common low-risk types,

and cause approximately 90% of genital warts (National Cancer Institute, 2008). These low-risk types can also cause low-grade cell changes in the cervix that do not develop into cancer (American Cancer Society, 2009). Table 2.1 classifies some of the more common HPV types.

Table 2.1: Phylogenetic and epidemiological classification of HPV types.
Redrawn from Munoz, et al. (2003, p. 526).

Phylogenetic classification	Epidemiologic classification	
	High risk	Low risk
High risk	16, 18, 31, 33, 35, 39, 45, 51, 52, 56, 58, 59, 68, 82, 23*, 53*, 66*	70
Low risk	73	6, 11, 40, 42, 43, 44, 54, 61, 72, 81, CP6108

A significant increase in genital HPV infection incidence is evident at the age when individuals become sexually active. The majority of HPV infections are asymptomatic and transient, cleared from the body by the immune system. Approximately 70% of infections with both high- and low-risk types of HPV clear the body within one year, and approximately 91% clear within two years. However, genital HPV is a public health concern because persistent infection with certain types can lead to cervical and other cancers, as well as genital warts. An estimated 5-10% of infected women experience persistent infections, defined as infection with the same HPV type detected in more than one consecutive test over the span of several months. These persistent infections could lead to the development of precancerous lesions on the cervix, which could in turn progress to invasive cervical cancer. This process, however, can take from 15-20 years (American Cancer Society, 2009). Figure 2.2 illustrates the potential progression of a high-risk HPV type to cervical cancer.

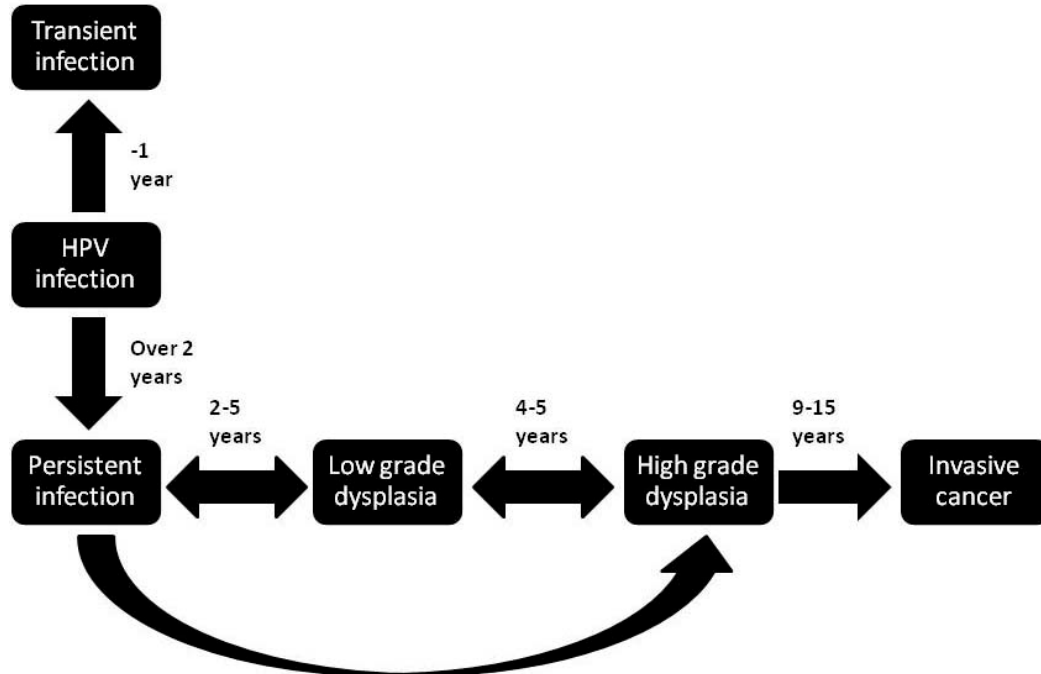


Figure 2.2: HPV-induced cervical cancer development over time. Redrawn from Pagliusi & Aguado (2004, p. 572).

2.2 Prevalence

HPV is a very pervasive virus, so much so that some doctors believe it to be almost as pervasive as the common cold virus (American Cancer Society, 2009). HPV is the most common sexually transmitted infection, with approximately 20 million people in the United States infected at any given time. Each year, an additional 6 million people in the U.S. become newly infected. Of these, 74%, or 4.6 million, are sexually active young women between 15 and 24 years of age (Weinstock, Berman, & Cates, 2004; Steben & Duarte-Franco, 2007). It has been estimated that 75% of sexually active men and women are infected with HPV at least once in their lives (Moscicki, 2005). Approximately 80% of all women will be infected with HPV at least once by the time they reach age 50 (Braaten & Laufer, 2008). HPV and other sexually transmitted diseases especially affect

young women and adolescents; while 15-24 year olds make up only 25% of the total population, they account for almost 50% of all STD infections (Moscicki, 2005). Figure 2.3 illustrates the prevalence of HPV among sexually active 15-24 year olds relative to the prevalence of other common sexually transmitted infections.

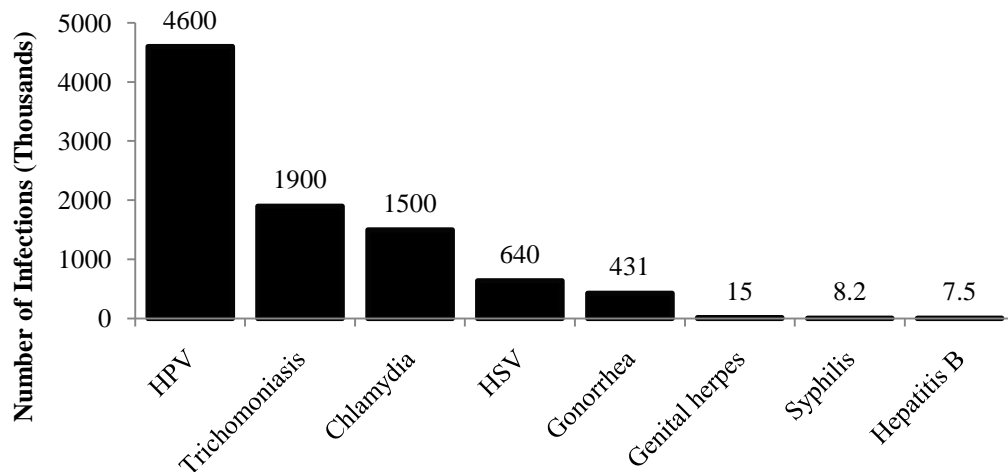


Figure 2.3: Number of sexually transmitted infections in 2000 among 15-24 year olds. Redrawn from Weinstock, Berman, & Cates (2004, p. 8).

2.3 Transmission

Genital HPV is spread primarily by direct genital contact during vaginal, oral, or anal intercourse. Genital transmission without sexual intercourse is not common but is possible, as are oral-to-genital and hand-to-genital transmission. Transmission from mother to newborn during delivery is also possible, but rare, causing warts in the infant's throat called respiratory papillomatosis. Other non-genital HPV types can be passed by skin-to-skin contact (Burchell, Winer, Sanjose, & Franco, 2006; American Cancer Society, 2009).

2.4 HPV-related diseases

HPV is responsible for 5.2% of all forms of cancer. Persistent infection with high-risk HPV types is identified as a cause of almost all cervical cancer cases. About seven out of 10 of these cases are caused specifically by HPV types 16 and 18 (Steben & Duarte-Franco, 2007).

Nearly 500,000 women worldwide are diagnosed with cervical cancer each year, and the disease claims a quarter of a million lives (National Cancer Institute, 2008). The American Cancer Society (2009) estimates that in 2009, approximately 11,270 women in the United States were diagnosed with cervical cancer, and approximately 4,070 U.S. women died from the disease. The CDC (2009) estimates that approximately 1% of sexually active adults in the U.S. have visible genital warts at any given point in time. Over half a million new cases of anal and genital warts are diagnosed each year in the United States (American Cancer Society, 2009).

Persistent infection with high-risk HPV types is also associated with cancers of the vulva, vagina, penis, anus, and oral cavities (Saraiya et al., 2008). In addition, approximately 500,000 pre-cancerous cell changes of the cervix, vagina, and vulva are diagnosed in the United States each year, over half of which are linked to HPV types 16 and 18. These types of pre-cancerous changes are found before they can progress into cancer by having regular Pap screenings (American Cancer Society, 2009).

Genital warts, sometimes called condyloma acuminata, are the most easily recognized sign of a genital HPV infection (National Institute of Allergy and Infectious Diseases, 2009). More than 500,000 new cases of anal and genital warts are diagnosed in the United States each year (American Cancer Society, 2009). Although a range of HPV

types can cause genital warts, approximately nine out of every 10 cases are caused by types 6 and 11 (American Cancer Society, 2009). Genital warts usually are not linked to cancer (American College of Obstetricians and Gynecologists, 2006). While the HPV types that cause genital warts are not the same types that cause cervical cancer, the presence of genital warts caused by low-risk HPV types does not rule out the potential presence of high-risk HPV types, because an individual can be infected with multiple HPV types at any given point in time (CDC, 2009b).

Between seven and eight out of 10 anal cancers are caused by either HPV types 16 or 18 – the same types of genital HPV that cause cervical cancer. Approximately half of cancers of the vulva are linked to high-risk types of HPV. Other genital cancers, including cancers of the penis, vagina, and urethra, as well as some head and neck cancers have also been linked to high-risk HPV types (American Cancer Society, 2009). Table 2.2 lists the frequency of several common HPV-associated cancers and the types that commonly cause them.

Table 2.2: HPV types and associated cancers
 Redrawn from Gonzalez, Intxaurreaga, Stankovic, & Trevisan (2002);
 Markowitz, Dunne, Saraiya, Lawson, Chesson, & Unger (2007).

Cancer	Cases	HPV types	% associated with HPV types
Cervical	11,820	16, 18, 31, 33, 35, 39, 42, 43, 44, 51, 55, 58, 72, 73	• 95%
Vaginal	1,070	16, 18, 31	50%
Vulvar	3,507	16	>50%
Penile	1,059	16	50%
Anal	4,187	16, 18, 31, 33, 35, 39, 42, 43, 44, 51, 55, 58, 72, 73	>70%
Oropharyngeal	29,627	16, 18, 31, 33, 35, 39, 42, 43, 44, 51, 55, 58, 72, 73	20%

Respiratory papillomatosis, resulting from HPV transmission from mother to child during delivery, is most often linked with HPV types 6 and 11. Relatively uncommon, this condition occurs in one in 200,000 infants and children, and may cause potential breathing problems or cancer of the larynx. (Burchell, Winer, Sanjose, & Franco, 2006; American Cancer Society, 2009).

2.5 Diagnosis

At one time, cervical cancer claimed the lives of more women than any other type of cancer. However, increased widespread use of the Pap test in recent decades has significantly decreased cervical cancer incidence and mortality (Markowitz et al., 2007).

To detect abnormal cell changes that could progress to cancer, doctors conduct a cervical Papanicolaou, or Pap, test or smear, named for pathologist George Papanicolaou and introduced in the 1940s, after which it gradually became widely used (Michalas, 2000). The primary purpose and benefit of Pap testing is early detection of abnormal cervical cells, cervical precancers, and cervical cancer (American College of Obstetricians and Gynecologists, 2009). Pap smears identify abnormalities in the epithelial cells of the cervix. Pap tests can also detect infection, inflammation, and other noncancerous conditions. Many such abnormalities are caused by HPV (National Cancer Institute, 2008).

The American Cancer Society (2008) recommends that all women should begin cervical cancer screenings, including Pap tests, approximately three years after they become sexually active, but no later than the age of 21. Pap tests should be performed once per year if a woman is sexually active, and should continue annually until a woman

reaches the age of 30, after which tests can be performed at intervals of two to three years if the woman tested normally three or more times in a row (American College of Obstetricians and Gynecologists, 2009). When Pap tests detect the presence of abnormal cells, doctors will suggest a range of follow-up procedures, including additional Pap testing, HPV testing, colposcopy, and/or cervical biopsy (American College of Obstetricians and Gynecologists, 2009).

Approximately 82% of women in the U.S. have received a Pap screening since 2005 (CDC, 2008b). However, incidence and mortality remains higher in areas with limited access to Pap screenings and other healthcare. Even in the U.S., Pap tests are not available to all women. Such disparities, both domestic and international, have been linked to social class, level of education, income, and occupation (Parikh, Brennan, & Boffetta, 2003). Approximately half of all women diagnosed with cervical cancer have never once received a Pap test, and an additional 10% have not received a Pap test in the previous five years (CDC, 2008b).

To accompany traditional Pap testing, the Digene HPV HC2 DNA test was approved for use by the FDA in March 2003 (FDA, 2003). This test can detect the DNA of 13 of the 18 HPV types that most commonly affect the cervix, and can distinguish between low risk and high risk HPV types, but cannot determine the specific HPV type. The test is used when a woman's Pap test results are mildly abnormal, to determine whether there is HPV DNA present. The test is also used when a woman over the age of 30 presents a persistent infection, because women of this age are at a greater risk for developing cervical cancer (FDA, 2003). According to the National Cancer Institute (2008, para. 11):

Testing samples of cervical cells is an effective way to identify high-risk types of HPV that may be present. The FDA has approved an HPV test as a follow-up for women who have an ambiguous Pap test (a screening test to detect cervical cell changes) and, for women over the age of 30, for general cervical cancer screening. This HPV test can identify at least 13 of the high-risk types of HPV associated with the development of cervical cancer. The test can detect high-risk types of HPV even before there are any conclusive visible changes to the cervical cells.

In addition, the FDA approved two new DNA tests in 2009. The first, Cervista HPV 16/18, detects the presence of DNA sequences for HPV types 16 and 18 in cervical cells, enabling medical professionals to differentiate between these two most common high-risk HPV types. The second, Cervista HPV HR, detects the presence of DNA sequences for nearly all high-risk HPV types in cervical cell samples (FDA, 2009a).

HPV is likely as common in men as in women, but is not as easily diagnosed (American Cancer Society, 2009). Like HPV in women, HPV in men is passed primarily through intercourse. Also similarly, men infected with HPV do not experience identifiable symptoms unless they are infected with an HPV type that causes genital warts. In men, genital warts can appear around the anus, penis, testicles, scrotum, groin, or thighs (CDC, 2008a). Some HPV types have also been linked to penile and anal cancer in men. Penile cancer is rare, affecting one in every 100,000 men, but anal cancer has increased in prevalence, becoming nearly as common in men and women who engage in anal sex as cervical cancer was in women prior to Pap testing (CDC, 2009b; American Cancer Society, 2009). While women have the Pap test and HPV DNA testing, there are no tests to detect the presence of HPV in men (National Cancer Institute, 2008). Anal Pap tests are sometimes used to detect and treat precancerous changes of the anus, but, its effect on anal cancer rates is unknown (American Cancer Society, 2009).

2.6 Treatment

HPV infections cannot be treated or cured. However, the infection more often than not will be naturally cleared by the immune system. If it does not, the cell changes that can result from a persistent HPV infection can be treated, even though HPV itself cannot. For example, genital warts can be treated in a variety of ways, many similar to available treatments for common, non-genital warts. Potential treatment procedures include prescription creams, such as Condylox or Aldara; cryotherapy, which involves freezing off abnormal cells; surgical removal; and electrocautery, which involves burning off warts. HPV-induced pre-cancer cell changes can be detected by Pap tests and treated. Potential treatment procedures include cryotherapy, which involves freezing off abnormal cells; conization, which involves biopsying and removing abnormal cells; and Loop Electrosurgical Excision Procedure, or LEEP, which involves removing the abnormal cells with a painless electric current. Cervical, genital, and anal cancers can be treated, as well. (WebMD, 2009; National Institutes of Health, 2010).

2.7 Prevention

There is no cure for HPV, but there are steps that can be taken to prevent its contraction and spread. The only way guarantee HPV prevention is to abstain from sexual activity. Risk of HPV exposure can be decreased by limiting sexual partners and avoiding sex with people who have had many sexual partners. However, it is often not possible to know for certain who has or has had an HPV infection, and since HPV is so common, even these measures do not guarantee protection from HPV. However, these measures may help limit the number of times a person is exposed to HPV, limit the risk of exposure

to high-risk types of HPV, and lower the overall risk for developing HPV-related disease (American College of Obstetricians and Gynecologists, 2009; CDC, 2009b; American Cancer Society, 2009).

If a person is sexually active, condoms can offer partial, but not complete, protection against HPV. HPV can be transmitted during direct skin-to-skin contact around the genital area not covered by a condom, and before putting on a condom (American Cancer Society, 2009).

Getting an HPV vaccine before exposure to HPV can also help prevent some HPV infections, including those caused by the four HPV types most commonly linked to cervical cancer and genital warts. Two vaccines have been developed to prevent infection by these HPV types (American Cancer Society, 2009).

Two vaccines are currently available to prevent infection by some types of HPV: Gardasil, manufactured by Merck, and Cervarix, manufactured by GlaxoSmithKline. Both vaccines protect against infection with HPV types 16 and 18, which cause 70% of HPV-associated cancer cases. Gardasil additionally protects against HPV types 6 and 11, which cause 90% of genital warts (American Cancer Society, 2009). These vaccines do not protect against all types of HPV that can cause cervical cancer, nor do not protect or treat women who are already infected or have already been infected with these and other types of HPV. Even if a woman has been vaccinated, it is important that she maintain regular cervical cancer screenings and Pap tests (National Cancer Institute, 2008).

Gardasil, the first vaccine developed to prevent cervical cancer, precancerous genital lesions, and genital warts associated with HPV, was approved for use in women and girls by the FDA on June 8, 2006. This quadrivalent vaccine prevents infection with

HPV types 16, 18, 6, and 11. Administered as a series of three shots over a minimum of six months, the vaccine has been recommended primarily for young girls and women prior to the onset of sexual activity, as the vaccine is most effective when a woman has not yet been exposed to one or more types of HPV (FDA, 2006). The HPV vaccine series is recommended for all 11 and 12 year-old girls, and can be started as early as nine years of age. Vaccination is additionally recommended for 13 through 26 year-old females who have not received the vaccination, because while the vaccine can be less effective after the onset of sexual activity, it can still protect against forms of HPV to which a young woman has not yet been exposed (Markowitz et al., 2007). According to the FDA (2006, para. 5), “This is the first vaccine licensed specifically to prevent cervical cancer. Its rapid approval underscores FDA’s commitment to help make safe and effective vaccines available as quickly as possible. Not only have vaccines dramatically reduced the toll of diseases in infants and children, like polio and measles, but they are playing an increasing role protecting and improving the lives of adolescents and adults.” The vaccine is considered effective for a maximum of five years, although the precise length of immunity and potential need for booster shots are unclear (Ault, 2007).

On October 16, 2009, the FDA extended its recommendation for use of Gardasil to include young boys and men. According to the FDA (2009b, para. 5), “This vaccine is the first preventive therapy against genital warts in boys and men ages 9 through 26, and, as a result, fewer men will need to undergo treatment for genital warts.” In addition, vaccinating men and boys will help to lower the risk of spreading HPV to women and will help to decrease HPV’s overall prevalence.

Cervarix was approved for use in women and girls by the FDA on October 16, 2009. This bivalent vaccine is also administered in a three shot series over a six month period, and protects against HPV types 16 and 18. The vaccine is approved for use in females between the ages of 10 and 25. According to the FDA, (2009c, para. 3), “The licensure of Cervarix adds another option in the prevention of cervical cancer...It has the potential to save lives from cervical cancer as well as reduce the need for biopsies and invasive procedures associated with the necessary follow-up from abnormal Pap tests.” Cervarix is currently believed to protect against HPV types 16 and 18 for approximately six years, though additional research are ongoing (FDA, 2009c).

HPV vaccination and their associated risks have become the subject of some controversy from a variety of perspectives, including health, financial, and social perspectives. Health concerns about HPV vaccination are often similar to health concerns about a range of other childhood vaccinations (Boyce, 2007). Financial concerns about HPV vaccination often revolve around the cost of the vaccine, particularly in light of efforts to mandate the vaccine for all young girls (Gostin & DeAngelis, 2007). Social concerns about HPV vaccination take a variety of forms, but predominantly focus on the sexual transmission of HPV, and on the sensitive and stigmatized nature of sexually transmitted diseases and of sexual behavior in general. Some parents have expressed concern that a vaccine for a sexually transmitted infection would encourage sexual behavior and potentially condone unsafe or risky sexual activity (Zimet, 2005; Brewer & Fazekas, 2007; Christian, Christian, & Hopenhayn, 2009). In addition, some parents have expressed concern that vaccination could decrease cervical cancer screening behaviors, which will remain critical even after vaccination (Caskey, Lindau, & Alexander, 2009).

CHAPTER 3: REVIEW OF LITERATURE

Now that the issues of HPV and the HPV vaccine have been defined and contextualized in the previous chapter, this chapter will review literature necessary to inform the operationalization and interpretation of this study. This review will visit certain parts of the literature on mass media, particularly as they relate to risk discourse. This review will include an introduction to risk and risk communication, as well as a review of social construction, building from two grounding theoretical frameworks of framing and claims-making. This review of risk communication research examines conceptions of what risk communication entails, as well as the unique role of the media in risk communication. Specifically, the media's function as makers of meaning will be considered, within the theoretical foundations of social construction, claims-making, and framing, all of which have critical implications for the ways in which members of the public perceive risks such as those associated with HPV and the HPV vaccine. The influence of framing and claims-making functions of and in media coverage of a risk issue will be linked to these broader processes of social construction and risk communication, and will be operationalized for use in this study.

In recent decades, the health of the average citizen in the developed world has improved dramatically and continues to improve. In 1968, surveys found that one in ten people claimed to be “concerned about their health.” Thirty years later, that figure rose to

one in two (Le Fanu, 1999, para. 3). Occurring in tandem with increasing concern for health is expansion of coverage in mass media, with health stories becoming more prominent and profuse (Boyce, 2007).

As media and public interest in health has increased, so has an awareness of health risks. Despite the fact that risks of many varieties have existed “as long as life has existed,” risk perception and communication as areas of research have attracted attention only relatively recently (Dunwoody & Peters, 1992, p. 222). With a public more aware of and concerned about potential health risks, journalists have increasing opportunities to appeal to these interests and fears through their coverage of them. As news coverage of health in general has increased, so has news coverage of health risks (Boyce, 2007).

Since society cannot avoid encountering risk altogether, risk communication is often equivalent to “advocacy for determining which risks are acceptable,” as well as which risks are most in need of concern and consideration (Weigold, 2001; Juanillo & Scherer, 1995, p. 278). When risks are identified in this way, a range of stakeholders, including “experts, policy makers, interest groups, and the general public,” becomes involved evaluating those risks and how to minimize them (Juanillo & Scherer, 1995, p. 279). Media, although not specifically included on this list, are an important component of this process, because media can have significant impacts on risk perceptions through their communication and construction of risk (Weigold, 2001; Kasperson et al., 1988).

3.1 Risk

The very idea of “risk” is extremely broad and incorporates a wide range of issues. Accordingly, researchers interested in examining risk must first grapple with the

fundamental issue of defining the concept (Kitzinger, 1999). It seems that no one consistent, universal definition exists for the term “risk.” Consequently, the study of risk is vast and varied. According to Slovic and Weber (2002, p.3), “a paragraph written by an expert may use the word several times, each with a different meaning not acknowledged by the writer.” At the most basic level of most conceptualizations, risk has to do with uncertainty: the probability or likelihood of something occurring, often resulting from some activity or decision, and usually defined as “the product of the likelihood of some event and the impact, value, or utility of its outcome” (Taylor-Gooby & Zinn, 2006; Maule, 2004, p. 19). Some conceptions of risk are longer or more complex than others, but the majority feature these two main components: a probabilistic, or likelihood, element and a negative consequences or hazard element (Berry, 2004).

Regardless of the term’s definition, however, probabilities and consequences associated with risks were originally assumed to be objectively quantifiable. This perspective continues to be dominant in many fields (Slovic & Weber, 2002). This perspective forms the first facet of risk research, called risk assessment, in that risks need to be measured and quantified in some way. However, these objective definitions often allow little room for the role of potentially significant subjective perceptions and experiences (Berry, 2004). Consequently, most social science rejects this objective approach to risk, arguing that risk perceptions are likely to be affected by subjective influences, in addition to objective information, and that such a purely objective characterization of risk is “incomplete at best and misleading at worst” (Slovic & Weber, 2002, p. 4). As Konheim (1988) observed, people do not always understand and listen to

solely quantitative measures, but also invoke qualitative evaluations in their assessment of risk probabilities and consequences.

Social science approaches, then, focus instead on the impact of and potential for risk on those who might experience them. Thus, there is also significant interest in a second facet of risk, known as risk perception, which plays a significant role in determining acceptability of any particular risk. Dunwoody (1991) asserts that this human perception of risk occurs in two planes – cognitive and affective. Dunwoody (1991) suggests that people may know or believe one thing (cognitively) about a health risk but feel another way (affectively) about it that may be at odds with what they know. For instance, someone may know that a vaccine for human papillomavirus will reduce their chances of developing cervical cancer, but may still be uncomfortable with it as a “risk” based on affective perceptions. Slovic, Finucane, Peters, and MacGregor (2004, p. 1) build on this distinction between cognition and affect by identifying three ways with which people confront risk:

- risk as feelings: approached with intuition and instinct;
- risk as analysis: approached with logic and reason; and
- risk as politics: approached with a combination, or “clash,” of instinct and analysis.

Risk is in large part a result and consequence of social experience, including communication about risk both through interpersonal and mediated channels (Renn, 1991). In this way, risk is largely a product of social construction, and will be examined by this study as such.

Finally, risks need to be managed by individuals and by institutions and organizations, and these aspects of risk are the focus of a third area, known as risk

management. Clearly, these three aspects of risk research are not distinct from each other, nor from the area of risk communication (Berry, 2004).

The main sources of risk and the ways of controlling it have changed dramatically over the centuries. Bogardus, Holmboe, and Jekel (1999, p. 1038) identified five fundamental dimensions of risk:

- identity: some risks are known, while others may not be known;
- permanence: some risks are permanent, while others are only temporary;
- timing: effects may occur immediately, or after several weeks, months, or even years;
- probability: risks differ in terms of the likelihood with which they will occur; and
- value: different people attach different subjective values to particular risks.

In the Middle Ages, the most commonly perceived risks were linked to natural events, such as epidemics and floods. During the 18th and 19th centuries, the concept of risk gradually became increasingly scientific and was extended to also consider man-made activities and events (Berry, 2004). The earliest scientific studies of risk involved observing and predicting people's reactions to risk situations, such as placing a wager or rolling dice. These experiments offered insightful results as to people's risk-taking preferences and tendencies in controlled environments, but did not reflect people's perceptions of real-life risks such as a sexually transmitted disease or a vaccine for that disease (Slovic, Finucane, Peters, & MacGregor, 2004).

In light of this shortcoming of early experimental studies, much contemporary risk research and literature addresses real-life risk, including health risk. Such health risk research tends to focus on the effect of a given health risk on people, and on perceptions of and behaviors toward that health risk. Over the past several decades, media attention has highlighted the diverse array of risks present in daily life. The amount of information

about risk communicated in writing, or via television, radio, or other media, has increased significantly. Much of this increased communication is related to health risks (Berry, 2004).

Research on risk has advanced rapidly across a number of social science disciplines. While an investigation of each will not be included here, a brief overview aids in comprehending the complexity of risk as a research area. Economists tend to approach risk using an objective conceptualization of rationality and rational actions, involving such examinations as cost-benefit analysis and utility analysis (Taylor-Gooby & Zinn, 2006). From a psychological perspective, approaches to risk begin at the individual level, and are primarily concerned with the mental heuristics individuals use to evaluate potential risks and estimate the likelihood of harm. Among psychological approaches to risk are the psychometric paradigm, the optimistic bias approach, and the social representations approach (Wilkinson, 2006). Sociological approaches begin from a somewhat different position, since the discipline's background assumption is that society is best understood as shaped by institutions and culture, rather than directed by rational planning or individual perceptions (Taylor-Gooby & Zinn, 2006). Major theoretical perspectives in sociology related to risk include risk society theory, the cultural/symbolic approach, and the social constructionist perspective (Lupton, 2006). This final perspective will be used as an underlying motivation for this study of the media's role in social construction of risk messages related to HPV and to the HPV vaccine.

All disciplines approach risk by building from core assumptions of that discipline: in economics, the importance of rational action; in psychology, the importance of the

individual; in sociology, the importance of culture and cultural institutions (Taylor-Gooby & Zinn, 2006). The study of risk in communication is no different.

3.2 Risk communication

The National Research Council (1989, p. 21) defines risk communication as “an interactive process of exchange of information and opinion among individuals, groups, and institutions. It involves multiple messages about the nature of risk and other messages, not strictly about risk, that express concerns, opinions, or reactions to risk messages or to legal and institutional arrangements for risk management.” Edwards and Bastian (2001, p. 147) define risk communication as “communication with individuals (not necessarily face-to-face) which addresses knowledge, perceptions, attitudes, and behavior relating to risk.” The literature on risk communication generally addresses problems raised in the exchange of information about the nature, severity, significance, and management of risks. It also addresses strengths and weaknesses of the various channels through which risk information is communicated (Covello, Peters, Wojtecki, & Hyde, 2001). This analysis adopted the definition of risk suggested by Covello, von Winterfeldt, and Slovic (1986, p. 172):

Risk communication is defined as any purposeful exchange of information about health or environmental risks between interested parties. More specifically, risk communication is the act of conveying or transmitting information between parties about (a) levels of health or environmental risks; (b) the significance or meaning of health or environmental risks; or (c) decisions, actions, or policies aimed at managing or controlling health or environmental risks. Interested parties include government agencies, corporations and industry groups, unions, the media, scientists, professional organizations, public interest groups, and individual citizens.

There are many reasons why one would want to communicate about risk. The literature offers several different sets of objectives for risk communication. Most can, in large part, be reduced to the following four items: inducing changes in knowledge, opinions, or attitudes; promoting protective behaviors by individuals and groups; enhancing trust and confidence in risk management organizations; and strengthening conflict resolution and public involvement (Renn, 1991). Communication analyzed in this study may be categorized in one or both of the first two items.

An interest in risk communication inevitably draws attention to the mass media, because the media constitute the source of much of the public's information about risks. The world is far too large and complex for any individual to experience in whole. In large part, members of the general public have no direct experience with many risks aside from the ways in which they are presented in and discussed by the mass media (Wilkinson, 1999). When personal experience is lacking or minimal, individuals can learn about risk to some extent from other people and to a large degree from the mass media (Kasperson, Kasperson, Pidgeon, & Slovic, 2005). Ultimately, through their coverage or non-coverage of issues, the news media set the agenda of public opinion and discourse and affect the priorities guiding personal behavior. Through the information they communicate, the visual and verbal imagery they use to describe that information, and the tone with which they present it, the media do not only define the meaning and significance of information, but can shape public awareness and attitudes and ultimately contribute to the larger process of social construction (Nelkin, 1989).

3.3 Social construction

Social constructionist begins with the assumption that nothing in existence possesses inherent meaning. Meaning does not come attached to objects, people, or experiences. Rather, it is humans that define the world and give meaning to it. The social constructionist approach is less concerned with the physical world itself than it is with how people interpret and make sense of that world, through its attempts to understand the social processes involved in giving meaning to social issues (Loseke, 2003).

A central concept of social construction is that people interacting in a social system form, over time, subjective understanding and expectations of each other's actions, which, over time, become habitualized into societal roles. As individuals play out these roles, they participate in a social reality, and these interactions are said to be institutionalized and legitimized. Meaning is produced, integrated, and embedded in society; people's conception of what reality is becomes embedded in society, and reality is thus considered to be socially constructed (Berger & Luckmann, 1966). Thus, according to social constructionism, humans are not passive, conforming objects of socialization, but rather active, creative participants who construct their social world (Blumer, 1962). Berger and Luckmann (1966) identify language as an important component of this process, because it is through language, both written and spoken, that people are able to define and express in words the reality in which they live.

Since a foundation of social construction is the concept that meaning is not inherent in objects, it follows that meaning is created and attributed by some members of a social system and is evaluated by others. Due to their broad scope of influence, the media become, according to Gurevitch and Levy (1985, p. 19), "a site on which various

social groups, institutions, and ideologies struggle over the definition and construction of social reality.” In this view, according to Trumbo (1996, p. 270) the media “provide a series of arenas in which symbolic contests are carried out among competing sponsors of meaning.”

According to Stallings (1990), the media are one of the most significant factors involved in the social construction of risk. He notes: “By selecting [risk] events to report, by interviewing and quoting experts who interpret those events, and by assembling and distributing news products, news organizations create an important component of public discourse” (Stallings, 1990, p. 80). According to the social constructionist perspective, the media are an important factor in determining how events and conditions become socially constructed, defined, and understood (Loseke, 2003).

Trumbo (1996), on whose research much of the current study is built, suggests that two issues are central to these “symbolic contests”: those who are responsible for social construction of meaning in media messages, and the overall themes that emerge in media messages. For the purposes of this study, those involved in the social construction of meaning in media messages will be defined as claims-makers. The themes that emerge in media messages will be defined as frames. These two concepts form the theoretical foundation for this study and will be explored and reviewed here.

3.4 Claims-making

Many health issues and risks do not rise on their own into the scope of public attention. Like other social issues, they must first be identified and defined, and brought to public attention before they can acquire the status of a “social problem” of which the

public should be aware, and toward which decision-makers should direct attention (Hansen, 2003). This process of identification and construction of social problems depend crucially on claims-makers. Spector and Kitsuse (1977, p. 75) define social problems as “the activities of individuals or groups making assertions of grievances and claims with respect to some putative conditions.”

A claim is defined as “any verbal, visual, or behavioral statement that seeks to persuade audience members to define” a condition, object, issue, individual, or group in a certain way (Loseke, 2003, p. 26). Mulcahy (1995, p. 450) describes claims-making as “the process through which issues are problematized and claims are articulated and advanced. It is an exercise in rhetoric in which claims-makers use persuasive arguments to advance their position, status, or goals.”

The fundamental goal of claims-making is to persuade (Best, 1987). Spector and Kitsuse (1977, p. 83) state that “a claim is a demand that one party makes upon another.” According to Best, (1987, p. 102), “They want to convince others that X is a problem, that Y offers a solution to that problem, or that a policy of Z should be adopted to bring that solution to bear.” While the success of any given claim depends in large part on the interests and opinions of others involved in the process, the ways in which claims are articulated is a key consideration. Claims-making, then, is largely an exercise in rhetoric (Best, 1987).

If definition and construction of social problems depends in part on successful claims-making, then the mass media constitute an important arena in which the voices of various claims-makers are put on display. The media function as gatekeepers for potential claims-makers, because claims and claims-makers can be validated as worthy of

consideration simply by their inclusion in news coverage of an issue (Hansen, 2003; Best, 1987). Rhetoric is critical in this process, as claims and claims-makers must meet the criteria for what Gans (1979) calls “story suitability.”

The media are, however, more than just a public arena. Through the processes and norms of news-making, the media play an active role in the construction and framing of both claims-makers and the issues about which claims are made. Gaining media attention may appear to be the most immediate and important priority for claims-makers, but as Ryan (1991, p. 53) suggests, “gaining attention alone is not what a social movement wants; the real battle is over whose interpretation, whose framing of reality, gets the floor.”

Claims-making theory holds that social problems are constructed from not only physical but social reality. Although the nature and content of claims can vary significantly, they often concern efforts to change the way in which an issue is socially constructed by casting certain aspects of that issue in more positive or negative terms. Claims-makers play a critical role in the process of news production because they offer claims that the media can choose to highlight or ignore. Without claims-makers competing for attention and legitimacy, the news media would not work the way they do. Claims-makers compete for media attention because the claims-makers who most successfully embed their claims about an issue into media coverage will likely gain a foothold in public opinion (Miller & Riechert, 2001).

As stakeholders find access to journalists, they may be able to win visibility for their selective issue definition by exposure in the mass media. Journalists, striving for objectivity, depend on spokespersons as sources for information and comments. This dependence would suggest a win-win situation in which reporters need a quote, and a group of representatives want to publicize their perspective. As issues become more complex, they involve multiple stakeholders or claims-makers who then compete for access to news reporters...Conflict motivates stakeholders to increase their efforts to shape media content. Stakeholders make substantial efforts to have their points of view reflected in the media (Miller & Riechert, 2001, p. 112).

Claims-makers offer varying portrayals of risk issues. These varying claims in turn drive controversy and competition among stakeholders. Conflicting accounts of risk also fuel uncertainty over science, health, and environmental issues. These two factors of controversy and uncertainty are hallmarks of health and risk discourse, because they simultaneously legitimize and complicate coverage of an issue, and also simultaneously encourage public participation but hinder resolution (Friedman, Dunwoody, & Rogers, 1999).

Spector and Kitsuse (1977) link the process of claims-making to the larger process of social construction, in that different claims-makers engage in the struggle over the way in which an issue will become socially constructed and understood. The media are the backdrop for this struggle, which eventually results in certain claims being accepted and others rejected. According to Trumbo, (1996, p. 270), "The media serve as a conduit for communication between social agencies and as a way for those agencies to bring pressure to bear as they champion their claim. Claims that become news are those that have entered one very important arena in the struggle for legitimacy." Policymaking decisions rely on public opinion, or a lack thereof, and public opinion relies on the ability

of claims-makers to make their frames become the frames included in media coverage, consequently shaping public perception of a health risk (Hansen, 2003).

The process of claims-making is an integral part of the larger process of social construction, because it is through claims-making that different perspectives struggle for consideration and acceptance. Claims and claims-makers included in media coverage of an issue such as HPV have the potential to influence media coverage of that issue, as well as the public perceptions that media coverage can foster.

3.5 Framing

The second issue central to the media's role in the struggle over the definition and construction of social reality is what overall themes emerge in media messages, which can be called frames. In tandem with claims-making theory, framing theory is used to describe media coverage and explore the perspectives used to present a range of issues, including risk (Gamson & Modigliani, 1989). According to Seamon, (2005, p. 86), "Perceptions of risk are responsible for creating the issues, legitimizing media coverage of them, and directing public discourse over them. Untangling how claims-makers frame risks, how the media report them and how the public perceives them is crucial."

The media transmit information in a package called a frame, which is a central organizing idea that provides meaning (Gamson & Modigliani, 1989). The concept of a news frame is an important feature of media analysis (Entman, 1993; Gamson, 1988; Gitlin, 1980). According to Gamson, Croteau, Hoynes, and Sasson (1992, p. 384), media sociologists have come to rely on the concept of a frame as "a central organizing

principle that holds together and gives coherence and meaning to a diverse array of symbols.” According to Entman (1993, p. 52):

Framing essentially involves *selection* and *salience*. To frame is to *select some aspects of a perceived reality and make them more salient in a communicating text, in such a way as to promote a particular problem definition, causal interpretation, moral evaluation, and/or treatment recommendation* for the item described. (original emphasis)

The concept of framing is critical in understanding the media’s role in shaping public awareness and perceptions of health risks. All writers utilize frames, but they are fundamental to journalistic work (Dunwoody & Peters, 1992). Issues do not speak for themselves but must instead be woven into a larger framework, from which information assumes meaning (Gamson & Wolfsfeld, 1993). An important role of media is to establish this framework, so that risk events and information can be understood by the public. The media, in effect, make risks visible and define a “frame” or context in which related events can be interpreted and understood (Nelkin, 1989).

Framing is an integral part of the construction of social reality because it helps to form and inform the perspectives through which people understand the world around them (Hallahan, 1999). News frames establish “common-sense” interpretations of information for the public (Entman, 1991, p. 6). “Media frames,” Gitlin (1980, p. 7) writes, “largely unspoken and unacknowledged, organize the world both for journalists who report it and, in some important degree, for us who rely on their reports. Frames enable journalists to process large amounts of information quickly and routinely: to recognize it as information, to assign it to cognitive categories, and to package it for efficient relay to their audiences.”

Goffman (1974) defines a frame as a “schemata of interpretation” through which individuals organize and make sense of information. Practices of everyday life would not have meaning without such schemas. According to Goffman (1974), framing enables individuals to locate, identify, and categorize information and events within their world. By labeling information or events as meaningful, frames function to form and guide an individual’s understanding of reality. On a fundamental level, frames structure which parts of reality become noticed and noted as “real” (Goffman, 1974).

Since news coverage mediates social understanding, it follows that the way in which media frame coverage can influence the ways in which an audience will interpret certain messages. Frames call attention to certain aspects of reality, directing attention away from other aspects. Framing defines how a certain information is packaged in the media to prompt certain interpretations and to rule out others (Gamson & Stuart, 1992). As journalists are professional presenters of symbols and information, media studies largely treat framing as a conscious process (Goffman, 1974). According to Gitlin (1980, p. 6), “Frames are principles of selection, emphasis and presentation composed of little tacit theories about what exists, what happens, and what matters.” The framer of the message can choose what to emphasize and deemphasize in the message (Goffman, 1974). Through framing, journalists place information in the communication process where it assumes a certain meaning and function. Media framing thus takes into account not just the topic, but how the journalist or media in general “package” an issue (Pan & Kosicki, 1993).

News frames exist on two levels: as characteristics of the text itself and as readers’ memory-based schemata for processing the text (Gamson, 1988). In other words,

studies of news framing describe both the production and the consumption of news stories. Entman (1991) suggests that there is a reciprocal relationship between frames in news text and event schemata or mental frames in the audience's thinking. Several models of news framing integrate sociological and communication theories with information-processing theories (Cappella & Jamieson, 1997).

Framing by those making the claims involves highlighting certain viewpoints and descriptions of an issue while discounting others. Framing by media researchers involves searching for patterns of and relationships among words and phrases embedded in text. While agenda-setting indicates which issues are addressed in media messages, framing provides insight into the content and quality of those messages (Entman, 1991).

There exist several different approaches to analysis of media frames on risk. Six approaches that will be used in this study can be identified as functional framing, consequence framing, behavior framing, contextual framing, responsibility framing, and value framing. For the purposes of this study, this review will examine these approaches within the context of media coverage of cervical cancer, HPV, and the HPV vaccine. Each of the six models is summarized in Table 3.1 and examined in detail next.

Table 3.1 Typology of Six Models of Framing for Health Risk Issues

Subject of Frame	Description	Potential Frames
Function	Poses a health risk situation as an object of definition, diagnosis, evaluation, and/or prescription	Define problems; Diagnose causes; Make moral judgments; Suggest remedies
Consequence	Poses the consequences of alternative choices in a health risk situation in positive or negative terms	Gains; Losses
Behavior	Poses a health risk situation in terms of potential behaviors related to its prevention, detection, and/or treatment	Prevention; Detection; Treatment
Context	Poses a health risk situation in terms of how it might be understood independently or as part of a larger social experience	Episodic; Thematic
Responsibility	Poses a health risk situation in terms of who might be responsible for addressing it	Institutional; Individual
Value	Poses a health risk situation in terms of what types of values are prioritized	Ethical; Material

3.5.1 Functional framing

Functional framing refers to the intended rationale and desired result of emphasizing certain pieces of information over others. Since media coverage of a health risk is a key shaper of public awareness and perception of that health risk, it follows that the function of framing that is most prominent in media coverage will help the audience place the issue in one of several conceptual boxes. Entman (1993, p. 52) proposed four primary functions played by frames:

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

These four functions of framing weigh heavily on similar actions, both psychological and physical, that an audience might take in response to an identified risk. For instance, if a media report on the social risks of the HPV vaccine makes judgments about the vaccine and its potential for harm, readers might be more likely to consider and evaluate the vaccine from a moral perspective. Contrarily, if a media report focuses on the HPV vaccine as a potential solution or remedy to a problem posed by HPV, such as increased likelihood of developing cervical cancer, readers might be more likely to consider HPV in a positive light.

3.5.2 Consequence framing

Consequence framing relates to the ways in which the consequences of a risk decision are presented in media reports. Almost all health information included in media reports can be framed in terms of either benefits and gains or costs and losses (Rothman & Salovey, 1997). Positively and negatively framed information have been shown to differentially and predictably influence an individual's decisions, preferences, attitudes, and behaviors (Tversky & Kahneman, 1981). Because health behaviors frequently involve risk and uncertainty, the process of linking framing of consequences to impact on behavior has been considered particularly relevant to understanding and promoting health behavior (Meyerowitz & Chaiken, 1987; Rothman & Salovey, 1997).

The framing postulate of Prospect Theory suggests that individuals will respond to information presented in terms of gains differently than they will to information presented in terms of losses (Tversky & Kahneman, 1981). The underlying assumption of Prospect Theory, as displayed in Figure 3.1, is that people respond differentially to

positively framed information and to negatively framed information. According to Prospect Theory, “outcomes are expressed as positive or negative deviations (gains or losses) from a neutral reference outcome, which is assigned a value of zero...The value function is commonly S-shaped, concave about the reference point and convex below it” (Tversky & Kahneman, 1981, p. 622). Prospect Theory suggests that individuals will avoid risk, or will be risk-averse, when evaluating gains but will prefer risk, or will be risk-seeking, when evaluating losses. As a result, reactions to and perceptions of risk are linked to whether a behavior is framed positively in terms of gains, or framed negatively in terms of losses (Rothman, Salovey, Antone, Keough, & Martine, 1993).

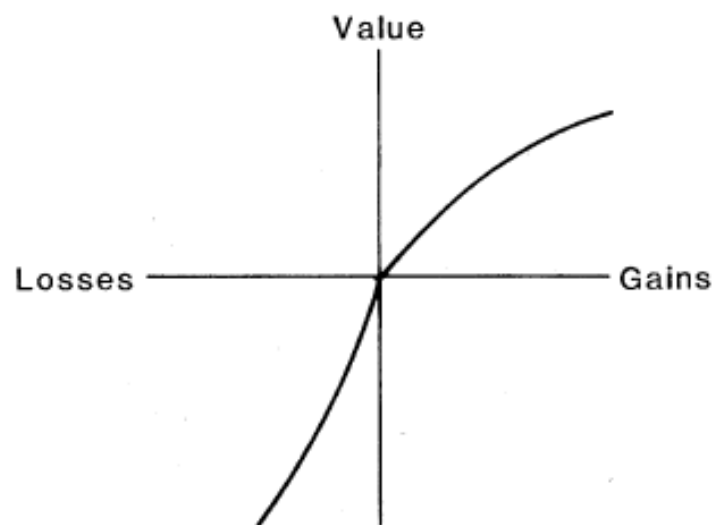


Figure 3.1 A hypothetical value function. (Tversky & Kahneman, 1981, p. 454).

When considering framing effects under Prospect Theory, two main variations exist. Information about health can be framed to identify either positive or negative consequences of the same behavior, such as cervical cancer screening or receiving the HPV vaccine. This type of framing manipulation is defined as different consequences framing (Rothman et al., 1993). For example, Karen reads a news story about cervical cancer screening that states, “If cervical cancer is detected, 4 out of 5 growths are

treatable.” Ashley reads a news story that states, “If cervical cancer is detected, 1 out of 5 growths is not treatable.” In this instance, Karen’s positive frame emphasizes the positive consequences of a behavior, whereas Ashley’s negative frame emphasizes the negative consequences of that same behavior.

Same consequences framing is a second way of framing information. Rather than presenting the different consequences of performing the same behavior, same consequences frames depict the same consequences in terms of performing or not performing the behavior. Although both frames highlight the same consequences, in the positive frame consequences are obtained and in the negative frame consequences are failed to be obtained. Positively framed information emphasizes the gains and advantages that result from performing a given behavior. Negatively framed information emphasizes the costs and disadvantages that result from not performing a behavior (Rothman et al., 1993; Sherman, Mann, & Updegraff, 2006). For instance, Jill reads a news story about cervical cancer screening that states, “If cervical cancer is detected early, it can be treated before it becomes life threatening.” Sarah reads a news story about cervical cancer screening that states, “If cervical cancer is not detected early, it cannot be treated before it becomes life threatening.” Although both Jill and Sarah read messages about cervical cancer screening, the information differs in its emphasis: one message emphasizes the benefits of being screened, while the other emphasizes the costs of not being screened.

3.5.3 Behavior framing

Behavior framing relates to the ways in which certain health behaviors are presented in media reports. According to Salovey, Schneider, and Apanovitch, (2002, p.

394), “considering the type of behavior being promoted helps to clarify the influence of message framing on health behavior.” The distinction between prevention behaviors and detection behaviors has particularly significant implications for predictions about risk perception, assessment, and continuity of behavior change (Rothman & Salovey, 1997). Health behaviors can be defined according to one of three functions. First, a health behavior can prevent the onset of a health concern, such as the use of condoms preventing the spread of sexually transmitted diseases. Prevention behaviors focus on avoiding the development of a potential health problem, allowing people to maintain their health status and lower the risk of future problems. Second, a health behavior can detect the development of a health concern, such as a Pap smear detecting pre-malignant and malignant changes in cervical cells. Detection behaviors focus on investigating the presence or absence of a potential health problem. Third, a health behavior can address and treat an ongoing health concern, such as chemotherapy shrinking a cancerous growth (Rothman et al., 1993; Rothman & Salovey, 1997). According to Rothman and Salovey (1997, p. 9), “Although some health behaviors might serve multiple functions, thus blurring the distinctions among the categories, these classifications have helped conceptualize the primary function of certain behaviors.”

Rothman et al. (1993) predict that these types of behaviors, prevention and detection most notably, have significant implications for message framing because these behaviors very often involve some perceived risk or certainty. For example, performing a behavior to detect a health problem might be considered risky, because it could potentially identify an illness. On the other hand, performing a behavior to prevent a

health problem might be considered relatively safe, because it could help maintain one's health status (Rothman & Salovey, 1997).

In addition to the nature of behavior framing, there are also suggested relationships between the framing of behavior and the framing of consequence (Rothman et al., 1993; Rothman & Salovey, 1997; Rothman, Martino, Bedell, Detweiler, & Salovey, 1999; Salovey, Schneider, & Apanovitch, 2002; Gerend, Shepherd, & Monday, 2008). According to Rothman et al. (1993, p. 409), "Characteristics of both the decision maker and the behavior being promoted may also moderate the influence of positive versus negative frames." Various studies have observed that loss-framed messages are most effective in promoting detection behaviors, while gain-framed messages are most effective in promoting prevention behaviors (Salovey, Schneider, & Apanovitch, 2002). As cited in Rothman and Salovey (1997), this finding has been supported in studies examining the role of message framing to promote such detection behaviors as mammography, BSE, and HIV testing, as well as to promote such prevention behaviors as use of sunscreen, exercise, and infant car seat use. Research suggests that the perceived risk associated with detection behaviors causes loss-framed messages to be more effective frames with which to communicate that information. Conversely, it has been suggested that the perceived safety associated with prevention behaviors causes gain-framed messages to be more effective frames with which to communicate that information (Salovey, Schneider, & Apanovitch, 2002). According to Rothman and Salovey (1997), it is generally the match between a message's consequence frame (gain or loss) and the message's behavior frame (detection or prevention) that especially motivates changes in behavior.

3.5.4 Context framing

Context framing relates to the ways in which health risks are presented in media reports in the context of the societies in which they exist. Among the most influential ways in which the framing of media messages affects public perceptions of and responses to risk are what Iyengar (1990; 1991) characterizes as episodic and thematic frames. According to Iyengar (1991, p. 2) “The episodic news frame focuses on specific events or particular cases, while the thematic news frame places...issues and events in some general context.” Much of the research on contextual framing has come in the form of studies on framing of political issues, such as terrorism and war, or social issues, such as poverty and racial disparity (Iyengar, 1990; Iyengar, 1991; Gandy & Li, 2005).

Frames are defined as “mentally stored clusters of ideas that guide individuals’ processing of information” (Entman, 1993, p. 53). Scheufele (1999, p. 107) suggests two approaches that can be used to engage in this processing of information: “global and long-term political views and short-term, issue-related frames of reference.” Gandy and Li (2005) posit that people often understand and interpret the news as stories, and that these stories often focus on the lives and experiences of people. This is the function served by an episodic frame, which offers a personalized story discussing a given issue. For example, a news story might focus on the challenges of one woman in dealing with HPV or cervical cancer. Gandy and Li (2005) make the distinction between this episodic frame and the thematic frame, which places the details of a given issue within its context and background in society. These stories often opt for average summary statistics over the personal experiences of a specific individual. For example, a news story might discuss the broader impact of HPV and cervical cancer on young women.

3.5.5 Responsibility framing

Responsibility framing relates to the ways in which the responsibility for addressing health risks is presented in media reports. According to Gandy and Li (2005, p. 73), “The study of hazard and risk communication naturally invites our attention to the assignment of blame and responsibility.” This attribution of responsibility in media messages is often closely linked to Iyengar’s (1990; 1991) proposed dichotomy between thematic and episodic framing. The thematic frame suggested by Iyengar (1990) has been shown to foster a stronger sense of societal or institutional responsibility, whereas the episodic frame fosters a stronger sense of individual responsibility. According to Iyengar (1991), the use of thematic or episodic frames has significant implications for the public’s attribution of responsibility for certain issues.

This distinction is made clear in a recent study of the ways in which obesity has been framed. According to Lawrence (2004, p. 57), “who is blamed and burdened in a public debate can be analyzed in terms of ‘individualizing’ versus ‘systematic’ frames.” An individualizing frame, or individual responsibility frame, often constrains responsibility for a problem to particular individuals, often those who are experiencing the problem, often those individuals that may be the subject of Iyengar’s episodic frames. A systematic frame, or social responsibility frame, on the other hand, often extends responsibility for a problem to include a broader focus, assigning responsibility to society at large or to larger societal institutions, such as government or the market. According to Lawrence (2004, p. 58), “as with many other social problems, in the United States public health issues face cultural and political resistance to claims of systematic causation and government responsibility for solutions.”

3.5.6 Value framing

Value framing relates to the ways in which values related to health risks are presented in media reports. Shah, Domke, and Wackman (2001, p. 227) discuss framing in terms of the “different sets of *values* that provide the underlying rationale for particular policy discussions.” Brewer (2001, p. 46) defines a value frame as “an association between a value and an issue that carries an evaluative implication: It presents one position on this issue as being right (and others as wrong) by linking that position to a specific core value.” Shah, Domke, and Wackman (2001, p. 227) argue that two overarching sets of values come into play when evaluating media coverage of an issue: ethical values, which are most closely linked to considerations of “rights, morals, and basic principles; and material values, which are most closely linked to considerations of “economics, pragmatics, and practicality” (Shah, Domke, & Wackman, 2001, p. 227-228). In the case of the HPV vaccine, the issue could be ethically framed in terms of concerns about discussing sexual behavior with young children, since the target age for recipients of the vaccine brings up such concerns. On the other hand, the issue could be materially framed in terms of the cost of the vaccine, or the convenience of having to receive multiple injections.

3.6 Application of theory

The theories of claims-making and framing contribute individually and collectively to the larger process of social construction. Important additional considerations in this process, particularly as it relates to health issues, are context and background, as they form the foundation of knowledge on which frames and claims can

be introduced and assessed. In addition, risk discussions are integral to this process. This study built from these theoretical approaches to analyze selected coverage of HPV and the HPV vaccine in U.S. newspapers.

3.7 Research questions

The preceding discussion of theory provides the foundation for this investigation.

This study explored the following questions:

- RQ1: What risks of HPV are addressed in media coverage?
- RQ2: What risks of the HPV vaccine are addressed in media coverage?
- RQ3: What background information on HPV is included in media coverage?
- RQ4: What background information on the HPV vaccine is included in media coverage?
- RQ5: What frames are used in news reports on HPV and the HPV vaccine?
- RQ6: What claims-makers are included in news reports on HPV and the HPV vaccine?

CHAPTER 4: RESEARCH METHODS

Print media, particularly newspapers, have been found to be an effective medium for influencing the general public as well as opinion leaders on issues of health, as well as a stable and accessible media source for analysis. Consequently, news content analysis is essential to studying the effects of news (Bullock, Wyche, & Williams, 2001). Berelson (1952, p. 204) defines content analysis as “a research technique for the objective, systematic, and quantitative description of manifest content of communications.” According to Krippendorff (2004, p. 18), content analysis is “a research technique for making replicable and valid inferences from texts (or other meaningful matter) to the contexts of their use.” For the purposes of this study, content analysis was defined as “a research tool used to determine the presence of certain words or concepts within texts of sets of texts” (Palmquist, 2005, para. 1).

The content analysis research method is used to identify words and concepts within text and to observe their relationships to one another. Wimmer and Dominick (2006) identify five primary purposes for using content analysis as a research method, including describing communication content and tracking trends in that content, testing hypotheses of message characteristics, comparing media content to the “real world,” assessing the image portrayed by the media of particular groups in society, and establishing a starting point for studies in media effects. While content analysis studies

can fall into any of these categories, the first, traditional aim is often the most common (Wimmer & Dominick, 2006, p. 151).

Content analyses that describe communication content catalog characteristics of a certain body of communication content over a particular period of time. These studies demonstrate content analysis used in the traditional, descriptive manner: to identify what exists. One issue that has been extensively examined in a descriptive context is the media's role in dealing with health issues. The media have long been recognized as particularly powerful in promoting the awareness of and education about health issues (Anhang, Stryker, et al, 2004). As such, the content of media messages about health is a topic of particular import.

Media coverage of the human papillomavirus (HPV) and the recently released HPV vaccine is one such issue. The news media can serve as a major source of information about HPV and the HPV vaccine and have the potential to influence perceptions of the nature and need for the vaccine, its efficacy, and its anticipated impact on human health and behaviors (Calloway et al., 2006). This purpose of this study was to examine media coverage of these issues, from the theoretical perspectives of framing and claims-making.

4.1 Population

To answer the study's research questions, this study systematically analyzed the content of selected U.S. newspaper articles discussing HPV and the HPV vaccine. U.S. newspapers were selected for the study because of growing interest in and awareness of HPV and the HPV vaccine in the United States, and because of newspapers' potential

impact on medical professionals, policy makers, industry, and publics involved with these issues.

The newspaper story was the study's unit of analysis. Newspaper stories for the purposes of this study were defined as written news content containing references to HPV and the HPV vaccine. Editorials, letters to the editor, opinion columns, advertisements, and other non-news articles were excluded from the study's population to focus the study's analysis on facts over opinions, as many aspects of this issue are controversial. Additionally, stories from wire services were excluded to minimize redundancy. Newspaper stories analyzed in this study were obtained from a search of the U.S. Newspapers and Wires section of the Lexis-Nexis Academic Database. The time frame for this study began on January 1, 2005 and continued through December 31, 2008. This time period was chosen because it afforded the opportunity to build off existing analyses of media coverage of HPV and the HPV vaccine, which have examined coverage of these issues in a variety of media over time (Anhang, Stryker, et al., 2004; Calloway et al., 2006; Wallace & Ache, 2009; Habel et al., 2009). Anhang, Stryker, and colleagues (2004) examined print coverage of HPV from 1995 – 2002. Calloway et al. (2006) also examined print coverage of HPV and also of the HPV vaccine from 2002 – 2005. Additional studies by Wallace and Ache (2009) and Habel et al. (2009) examined television and online news coverage, respectively. The current study would extend the scope of print content analysis to include the time since Gardasil's approval and implementation.

Headlines and lead paragraphs were searched for the following search terms, as shown in Figure 4.1: (vaccine! OR Gardasil OR Cervarix) AND (risk! OR concern! OR

problem! OR issue!) AND (HPV OR human papillomavirus OR human papilloma virus OR human pappillomavirus OR human pappilloma virus OR human papilomavirus OR human papiloma virus OR human pappilomavirus OR human pappiloma virus) OR (STD OR sexually transmitted disease OR STI OR sexually transmitted infection) OR (cervi* AND cancer).

The screenshot displays the search interface of the Lexis-Nexis Academic Database. At the top, there are two radio buttons: "Terms and Connectors" (selected) and "Natural Language". Below this, the search terms are entered in a text box: "vaccine! OR gardasil OR cervarix". The interface includes several dropdown menus for selecting search locations, all set to "In Headline & Lead Paragraphs". Connectors between the groups are "And", "And", "Or", and "Or". The second group of terms is: "risk! OR concern! OR problem! OR issue!". The third group is: "HPV OR human papillomavirus OR human pappillomavirus OR human pappillomavirus OR human papilomavirus OR human papilloma virus OR human pappilloma virus OR human pappiloma virus OR human papiloma virus". The fourth group is: "STD OR sexually transmitted disease OR STI OR sexually transmitted infection". The fifth group is: "cervi* AND cancer". Below the search terms, there is a section for "Add index terms" with a "+ Show" button. Under "Sources", a dropdown menu is set to "US Newspapers and Wires", and a list of sources is shown with checkboxes: "U.S. Newspapers & Wires" (checked), "Advertising Age", "Advertising Age Creativity", and "The Advocate (Baton Rouge, Louisiana)". At the bottom, the "Specify date" section is set to "Date is between..." with dropdowns for "Jan", "1", "2005", "and", "Dec", "31", "2008".

Figure 4.1: Search parameters used in Lexis-Nexis Academic Database

The first group of terms was included in the search to identify articles that specifically addressed one or more vaccines for HPV. The second group of terms was included in the search to represent the conceptual motivation for the sample. While the inclusion of these terms reduced the number of articles returned by the search from 1808

to 276, these terms prioritized risk-related content in the study population. The third, fourth, and fifth group of terms was included in the search to identify articles that specifically addressed either HPV, sexually transmitted disease, or cervical cancer, as well as to include articles with potential misspellings of the virus. Boolean search terms were denoted with truncation (!) and wildcard (*) symbols, including variations of root words in the returned articles.

One person reviewed the 276 articles that resulted from the preliminary database searches to first cull those that did not meet the definition of a news article or an article appearing in a newspaper. To determine the type of article, the Lexis-Nexis categories of Document-Type and Section were screened for references to letters, columns, editorials, commentary, and opinion. To determine where the article appeared, the Lexis-Nexis category of Publication-Type was screened for references to online publications, newsletters, newswires, and magazines. Articles that did not pass either of these screenings were eliminated from the study population. Articles were also screened for duplicates, as well as for insignificant attention to HPV and the HPV vaccine, defined as having less than half the article devoted to HPV content. Additionally, articles shorter than 100 words in length were eliminated to allow the analysis to be devoted to substantive content rather than brief mentions.

The study analyzed content of all news stories meeting these criteria, thus making the study a census of all content deemed suitable for inclusion in the study population, rather than a sample taken from that population. A census refers to a study in which every unit in a population is included in the analysis (Riffe, Lacy, & Fico, 2005). Due to the relatively small population of content in this study (n=74), a random sample would not

identify all the stories and would likely distort the results. As such, a census was the most suitable technique for this analysis.

It should be noted that while this study was considered a census, it should not be assumed to reflect the nature of news content on this topic as a whole. The inclusion of risk-related search terms significantly limited the search results to those articles that addressed risk explicitly, thereby eliminating those articles that may have included relevant background information, risk information, frames, and claims-makers but that did not include the specific set of risk-related terms included in the search. These terms are not exhaustive, and likely did not capture the full range of potential articles. As such, findings of this study are limited to the specific subset of articles on these topics and are limited in their generalizability to the broader population of news content on these topics.

In addition, the inclusion of risk-related search terms likely limited the population to articles that focused on the controversial elements of this issue, and may have neglected articles that included more substantive background and context discussions, as is often the case with issues involving health and environmental risk (Friedman & Dunwoody, 1999). As such, findings of this study related to background information should be considered in light of a focus on risk, and on the balance between the two types of content competing for news coverage.

4.2 Measurement and data collection

Coding is a critical part of the content analysis method. During coding the text is broken down into categories. From there the categories can be more closely examined (Hsieh & Shannon, 2005). To quantitatively analyze the information contained in

included news stories, a coding instrument was developed and tested. A coding schema was designed, in which many categories were developed over the course of the analysis rather than established prior to the analysis. This coding schema captured information about four main categories:

- included background information about HPV and the HPV vaccine;
- included risk information about HPV and the HPV vaccine;
- the story's overall themes or frames; and
- the primary news sources or claims-makers.

In addition, the instrument captured general information about each article, such as article title, length, location, and date of publication. The precise structure of the coding instrument was open-ended, and depended largely upon common factors and themes that emerged from the content.

Frames. For the purposes of this study, the concept of frame was defined and operationalized as the claim present in the headline and lead paragraphs, at the top of the inverted pyramid. According to Trumbo (1996, p. 272), "Journalistic tradition holds that the headline and lead should be written to inform readers as to what is most important about the story...The top of the story is generally the point of the readers' first contact with the story and often the substance of what the reader retains from the story." Identifying a frame at the top of the inverted pyramid draws from framing theory's emphasis on salience, as defined by Entman (1993). Within that emphasis, salience "means making a piece of information more noticeable, meaningful, or memorable to audiences. An increase in salience enhances the probability that receivers will perceive the information, discern meaning, and thus process it, and store it in memory" (Entman,

1993, p. 53). Frames were categorized and assessed according to the six framing categories previously defined: functional, consequence, behavior, context, responsibility, and value.

Functional frames were identified in the headline and lead paragraphs based on the dominant purpose for a given article – whether that article served to define the problem, diagnose its causes, make moral judgments, or to suggest remedies. Consequence frames were identified based on the dominant valence of outcomes – whether the article emphasized positive consequences or negative consequences. Behavior frames were identified based on the dominant type of action emphasized – whether the article encouraged behaviors to prevent or detect HPV. Context frames were identified based on how the issues in the article were presented relative to one’s experience with them – whether the article placed these issues within an episodic or thematic framework. Responsibility frames were identified based on who was suggested in the article as being responsible for managing these issues and their related risks – whether these were issues worthy of public and institutional attention or personal and individual attention. Value frames were identified based on the priorities emphasized in the article – whether the article valued material or ethical considerations more highly.

Claims-makers. For the purposes of this study, the concept of a claims-maker was defined and operationalized as an attributed source, or a source named and quoted within an article. According to Trumbo (1996, p. 270), “While journalists bring a great deal more to a story than a collection of sources – things like background and emphasis – it is in the source that the broader authority of the story resides. Attribution is the first lesson in journalism.” Claims-makers were categorized and assessed according to the following

categories: government agencies/officials; elected officials; university agencies/officials; non-governmental/non-profit organizations/representatives; pharmaceutical companies/representatives; insurance companies/representatives; medical organizations/professionals; private individuals; research studies and reports; and other.

The key components of the coding instrument are described below and are included in Appendix A.

General article attributes. The first section of the coding instrument assessed basic information about each article, including an identification number, which newspaper published the article, the date of publication, the title and main subject of the article, the name and type of reporter, the article length, and the location of the article in the newspaper.

HPV and vaccine background. The second section of the coding instrument assessed background information included in the article about both HPV and the HPV vaccine, including types of information included, depth of background information provided, valence of information, and valence of the article as a whole.

Risk information. The third section of the coding instrument assessed risk information included in the article about both HPV and the HPV vaccine, focusing primarily on potential health, social, and financial risks. Questions addressed the types of risk information included, whether risks were discussed in relation to HPV and/or the HPV vaccine, and whether HPV or the HPV vaccine received a more substantial risk emphasis.

Frames. The fourth section of the coding instrument assessed frames present in the headlines and lead paragraphs of articles examined in the study. Frames were

analyzed according to six framing categories: functional, consequence, behavior, context, responsibility, and value. Each article was analyzed for frame dominance across these six categories.

Claims-makers. The fifth section of the coding instrument assessed claims-makers present in news coverage of HPV and the HPV vaccine. Claims-makers were categorized as discussing only HPV, discussing only the HPV vaccine, and discussing both. Latent claims-makers, or claims-makers that were mentioned but not directly quoted, were also coded. Claims-makers were also categorized by their type and affiliation.

After the coding instrument was developed, each article in the population was coded by hand. Most questions included in the coding instrument included established categories and responses. Several questions included in the coding instrument, such as included background information and risk information, were open ended, and these categories were developed and refined throughout the course of the study.

After coding was completed, variables were entered into SPSS 17.0 for analysis.

4.3 Analysis

As variables analyzed in this study were counted for presence or absence in order to assess the media's attention to those variables, this study was descriptive in nature and relied predominantly on frequencies of variables. In some instances, the frequencies of several related variables were combined to create indices. Distribution of these variables over time was also examined. Other descriptive statistics, such as mean and standard deviation, were also collected.

4.4 Reliability

To ensure reliability of the study's results, intra-coder reliability tests were conducted on a range of measures. To establish an appropriate sample for tests of intra-coder reliability, two articles were randomly selected from each four month period of the study population. It should be noted that of the twelve four-month periods included in the population, three did not include any articles. In addition, several included only one or two articles. In these instances, such articles were automatically included in the reliability sample. A total of 15 articles were re-coded for reliability, representing approximately 20% of the total population (n=74). Results of these tests are listed by variable in Appendix C.

As a whole, variables analyzed in this study were found to be reliable. All 30 variables and scores exceeded a Scott's pi value of .70 and a percent agreement of 80%. Three variables achieved a Scott's pi value of .70. Eleven variables achieved a Scott's pi value of .80. Two variables achieved a Scott's pi value of .90. Thirteen of the 30 achieved a Scott's pi value of 1 and a percent agreement of 100%, with an additional variable also achieving 100% agreement with an undefined Scott's pi value due to invariant values.

Those variables with the lowest reliability coefficients were among the most complex analyzed in the study. The three variables with the lowest Scott's pi values were HPV health risk score (0.781), HPV social risk score (0.798), and vaccine social risk score (0.735). These scores were calculated by summing the number of individual health risk items discussed in an article. In many articles, these three types of risks were discussed in the most detail. The higher number of items included in each of these three categories (see Table 5.6, Table 5.10, and Table 5.11), as well as their higher frequency

relative to other risk categories (see Table 5.5), caused these scores to be quite complex. Reliability of these scores might have been increased if items included in these scores had been developed as part of an a priori coding scheme, as opposed to the scheme used in the current study. Additionally, some items in these scores might be collapsed into more general risk items, thereby reducing the complexity of the score. The same could be said for other scores analyzed in the study, such as background information, other risk information, and claims-makers.

CHAPTER 5: RESULTS

A total of 74 news articles published between January 1, 2005 and December 31, 2008 were included in this study. Stories were coded to capture and analyze information about four main categories: included background information about HPV and the HPV vaccine; risk information about HPV and the HPV vaccine; the story's overall themes or frames; and the primary news sources or claims-makers. In addition, general information about each article, such as article title, length, and date of publication, was collected.

5.1 General article attributes

Articles spanned a 48-month period beginning January 1, 2005 and continuing through December 31, 2008. Though these dates were used as search parameters, actual article publication dates spanned from October 7, 2005 to September 4, 2008. Of the 74 articles included in the population, five (6.8%) were published in 2005, 15 (20.3%) were published in 2006, 47 (63.5%) were published in 2007, and seven (9.5%) were published in 2008. Figure 5.1 presents the distribution of news articles over time. Specific dates of publication are listed in Appendix A.

Articles were published in a total of 53 publications, which are listed in Appendix A. However, most publications failed to address the issues of HPV and the HPV vaccine in multiple articles. The average number of HPV-related stories per publication per year

was 1.25. Forty publications (75.5%) published only one article that fit the study’s search parameters. Nine publications (17.0%) published two articles, and four publications (7.5%) published four articles. The four publications that published four articles included *The Washington Times*, *The Washington Post*, *The Houston Chronicle*, and *The Austin-American Statesman*.

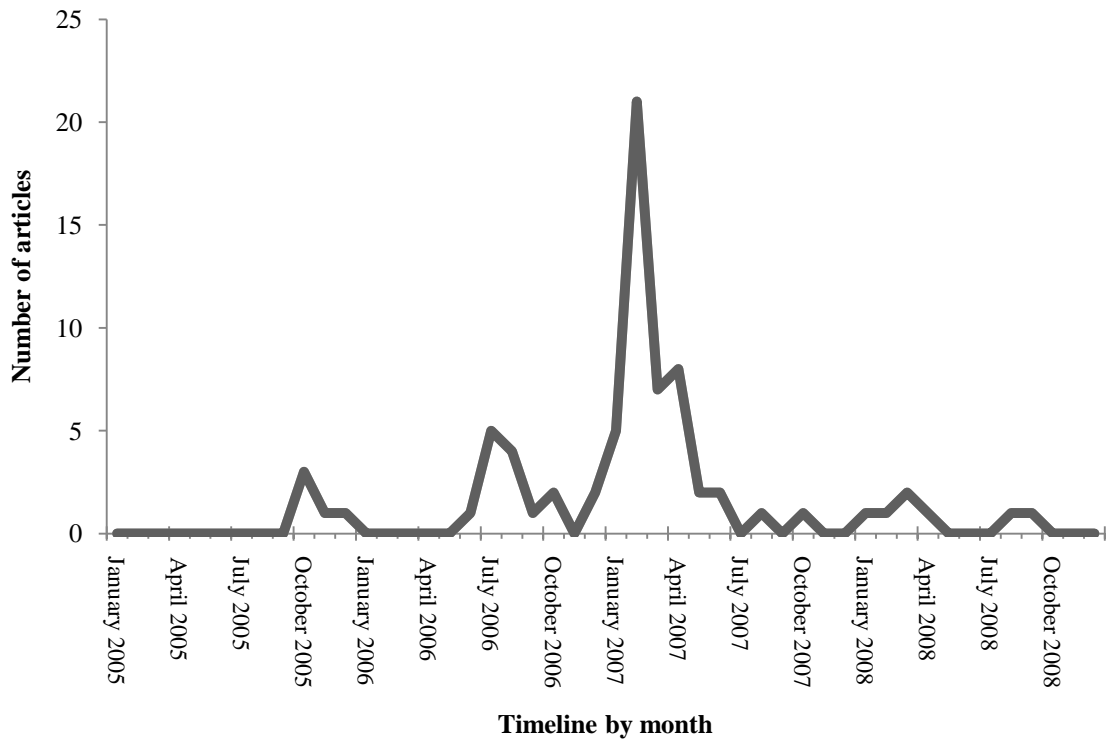


Figure 5.1: Distribution of news articles over time

In tandem with a lack of continuity of coverage across publications, there was also a lack of continuity of reporters writing HPV-related articles. The majority of articles (86.5%) were written by reporters who wrote no other articles included in the population. Reporters who wrote multiple articles were affiliated with publications including *The Houston Chronicle*, *The Austin-American Statesman*, and *USA Today*.

A number of common main themes were identified within the population. The most common theme, occurring in 31 articles (41.9%), was a response to proposed or enacted legislation related to the HPV vaccine. Other common themes are presented in Table 5.1.

Table 5.1: Main themes of news articles

Main theme	n	%
Response to legislation	31	41.9
Pros and cons of HPV vaccine	8	10.8
Campus perspectives on HPV vaccine	7	9.5
Interviews with medical experts	6	8.1
Positive opinions and reactions to HPV vaccine	4	5.4
Negative opinions and reactions to HPV vaccine	4	5.4
Concerns about availability and cost	4	5.4
Potential vaccine availability for boys and men	3	4.1
Information on vaccine trials	2	2.7
Parent opinions about HPV vaccine	2	2.7
Research on how HPV develops	2	2.7
Competition between vaccine manufacturers	1	1.4
	74	100

News articles in the sample were generated by a range of events and announcements. Regulatory action related to the HPV vaccine generated the largest number of news articles (37.8%). Other common news events are presented in Table 5.2. Twenty-four articles (32.4%) were not generated by a specific news event.

Table 5.2: News events generating news articles

News event	n	%
Regulatory action	28	37.8
Scientific studies released	7	9.5
Announced availability of vaccine supplies	4	5.4
Scientific meetings	3	4.1
Vaccine clinical trials	3	4.1
Federal approval of the HPV vaccine	2	2.7
Public discussion or debates	2	2.7
Cervical cancer awareness month	1	1.4
No news event	24	32.4
	74	100

Article length was evaluated by the number of words and paragraphs in each article. Word count ranged from 109 to 3371. The mean number of words was 823.4, with a standard deviation of 471.9. Paragraph count ranged from 3 to 85. The mean number of paragraphs was 22.4, with a standard deviation of 12.6.

5.2 HPV and vaccine background

Articles included a range of background information on HPV. Frequency of HPV-related background items is outlined in Table 5.3. These background items were not mutually exclusive, and each item was treated as a dichotomous variable and coded as either present or absent. Most articles presented information linking HPV and cervical cancer (100.0%), identifying HPV as an STD (85.1%), linking HPV and genital warts (60.8%), mentioning the specific types of HPV that cause cervical cancer (59.5%), providing background statistics on cervical cancer (58.1%) and HPV (55.4%). Comparatively less attention was paid to transmission routes of HPV, behavior of HPV in the body, and treatment for HPV and related health issues.

Articles also included a range of vaccine background information. Frequency of vaccine-related background items is outlined in Table 5.4. These background items were not mutually exclusive, and each item was treated as a dichotomous variable and coded as either present or absent. Most articles presented information describing recommended vaccine recipients (75.7%), highlighting the vaccine's federal approval (67.6%), discussing the vaccine's administration as a three-shot series (68.9%), identifying the brand Gardasil (66.2%), stating the vaccine's cost (59.5%), and identifying Merck as vaccine manufacturer (52.7%). Comparatively less attention was paid to how the vaccine

is produced, the potential need for booster immunizations, general impact of the vaccine, and GlaxoSmithKline's Cervarix as an alternative.

Table 5.3: Frequency of HPV background information

Information	n	%
HPV and cervical cancer		
States that HPV causes cervical cancer	74	100.00
Mentions HPV types that cause cervical cancer	44	59.5
Provides background statistics on HPV	41	55.4
Provides background statistics on cervical cancer	43	58.1
HPV and transmission		
States that HPV is an STD	63	85.1
Discusses sexual transmission of HPV	9	12.2
Discusses other means of HPV transmission	11	14.9
Addresses effectiveness of condoms in preventing HPV	7	9.5
HPV to cervical cancer progression		
Description of how HPV behaves in the body	4	5.4
States that most HPV infections are short-lived	5	6.8
States that most HPV infections clear the immune system naturally	19	25.7
States that HPV usually has no symptoms	16	21.6
States that a small percentage of HPV cases progress to cancer	12	16.2
States that persistent HPV infections cause cancer	9	12.2
Treatment of HPV and cervical cancer		
Mentions importance of Pap tests for HPV, cervical cancer	29	39.2
No treatment/cure for HPV	6	8.1
Mentions amount of money spent on cervical cancer treatment	3	4.1
HPV and genital warts		
States that HPV causes genital warts	45	60.8
Mentions HPV types that cause genital warts	29	39.2
Provides background statistics on genital warts	1	1.4
Describes HPV as very common	27	36.5
States that HPV can cause other cancers	14	18.9
Mentions different types/strains of HPV	23	31.1
Provides comparative statistics in developing countries	8	10.8
Provides comparative statistics in minority populations	3	4.1

Table 5.4: Frequency of vaccine background information

Information	n	%
Discuss HPV vaccine approval by FDA and/or CDC	50	67.6
Discuss efficacy of vaccine	21	28.4
How the vaccine was labeled		
Cervical cancer vaccine	23	31.1
STD/STI vaccine	10	13.5
HPV vaccine	41	55.4
Information on vaccine manufacturers		
Both manufacturers referenced by name	14	18.9
Merck referenced only	39	52.7
GlaxoSmithKline (GSK) referenced only	1	1.4
Nonspecific reference to vaccine manufacturers	3	4.1
Mention competition between vaccine manufacturers	5	6.8
Information on vaccines		
Both vaccines referenced by name	8	10.8
Gardasil referenced only	49	66.2
Cervarix referenced only	0	0.0
Nonspecific reference to vaccines	2	2.7
Specific HPV types listed		
All four HPV types referenced in Merck vaccine	34	45.9
One or two HPV types referenced in Merck vaccine	7	9.5
Two HPV types referenced in GSK vaccine	3	4.1
One HPV type referenced in GSK vaccine	1	1.4
Mentions that some strains are not included in vaccine	10	13.5
Vaccine administration		
Administered as a 3 shot series	51	68.9
Administered over a 6 month period	29	39.2
Describe recommended recipients of vaccine	56	75.7
State that vaccine is most effective prior to first sexual activity	31	41.9
Include cost of vaccine	44	59.5
Mention potential need for booster immunizations	14	18.9
Impact of vaccine		
Discuss continued importance of Pap tests with vaccine	14	18.9
Describes vaccine as preventative, not a treatment	6	8.1
States vaccine can protect against strains not previously contracted	11	14.9
Describes vaccine as genetically engineered	6	8.1

Article depth was evaluated by the amount of background and explanatory information included in each article in the population. A score was created that totaled the number of background items present across 25 HPV categories and 29 HPV vaccine categories. This score was used to evaluate the overall amount of background content related to both HPV and the HPV vaccine that was included in each article. Score values for HPV background information ranged from one to 17, with a mean value of 7.35, and

a standard deviation of 4.1. Score values for vaccine background information ranged from one to 14, with a mean value of 7.81, and a standard deviation of 2.9. Figure 5.2 illustrates the distribution of mean score values over time.

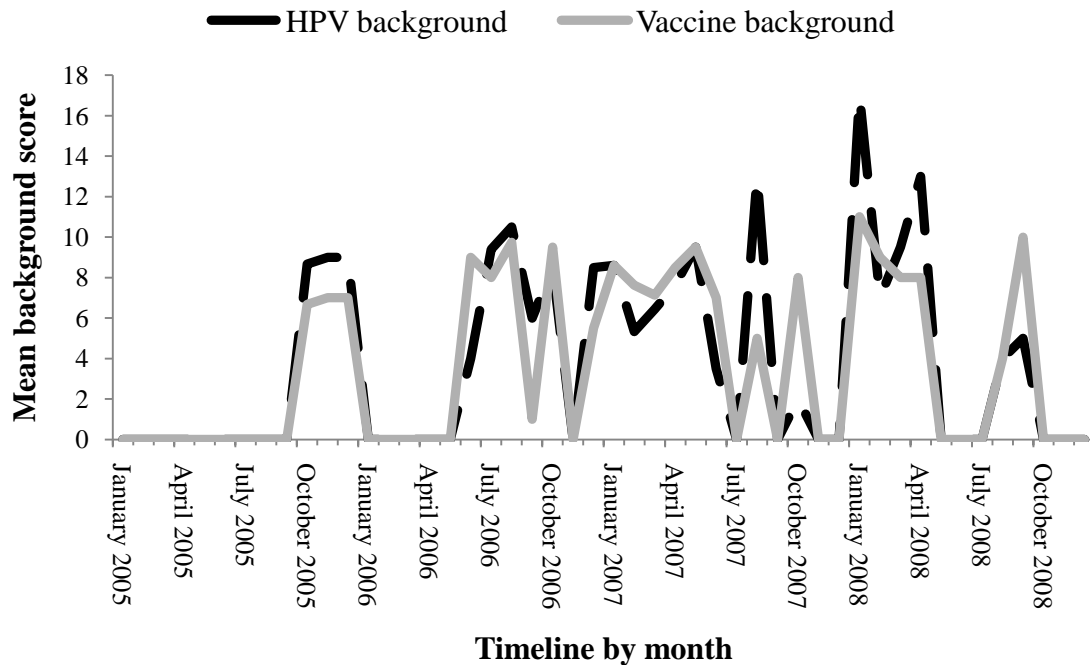


Figure 5.2: Distribution of mean background score values over time

5.3 Risk information

Articles in the population were coded for discussion of any risk information related either to HPV or to the HPV vaccine. These risks were categorized as health, financial, and social. Frequency of risk-related information discussed in newspaper articles is outlined in Table 5.5. These risk items were not mutually exclusive, and each item was treated as a dichotomous variable and coded as either present or absent. Articles in the study population addressed a range of risks in all three categories, both related to

HPV and to the HPV vaccine. Specific risks within each of these three categories were also coded.

Table 5.5: Frequency of risk-related information

Type of risks	Related to HPV		Related to Vaccine	
	n	%	n	%
Health risks	74	100.0	29	39.2
Financial risks	8	10.8	50	67.6
Social risks	64	86.5	65	87.8

Health risk. Relative health risks of HPV and the HPV vaccine were shifted heavily toward HPV, with 74 articles (100%) raising health risks related to HPV and 29 articles (39.2%) raising health risks related to the HPV vaccine. Frequency of specific HPV health risks are outlined in Table 5.6 Most articles included information about the following health risks associated with HPV: cervical cancer (100.0%), genital warts (63.5%), and death (58.1%).

Table 5.6: Frequency of HPV health risk information

Information	n	%
Cervical cancer	74	100.0
Genital warts	47	63.5
Death	43	58.1
Abnormal Pap tests	7	9.5
Pain	2	2.7
Psychological burden	2	2.7
Other cancers		
Lesions/cancer of the anus	9	12.2
Lesions/cancer of the vagina	7	9.5
Lesions/cancer of the vulva	6	8.1
Lesions/cancer of the penis	8	10.8
Lesions/cancer of the skin	1	1.4
Lesions/cancer of the head and neck, mouth, or throat	5	6.8
Unspecified health risk	7	9.5

Comparatively less attention was paid to discussing less commonly known HPV health risks, including a range of other cancers. Frequency of specific vaccine health risks

are outlined in Table 5.7. While few vaccine health risks received substantive attention in media coverage, over 20 different potential risks were raised.

Table 5.7: Frequency of vaccine health risk information

Information	n	%
Discomfort at injection site		
General discomfort	10	13.5
Swelling	1	1.4
Erythema	2	2.7
Pruritis	3	4.1
Numbness and/or tingling	1	1.4
Fever	5	6.8
Fainting	3	4.1
Dizziness	4	5.4
Nausea	3	4.1
Vomiting	1	1.4
Allergic reaction	2	2.7
Death	2	2.7
Miscarriage or other pregnancy complications	2	2.7
Guillain-Barre syndrome	2	2.7
Paralysis	1	1.4
Efficacy of vaccine		
Difficult to establish continuity of care	5	6.8
Uncertainty how long immunity will last	7	9.5
Less effective if previously infected	2	2.7
Could foster strengthened HPV strains	1	1.4
Could hinder natural immunity to HPV	1	1.4
Unanticipated side effects	13	17.6
Unspecified health risk	5	6.8

A score was created that totaled the number of health risks included in each article. This score was used to evaluate the overall amount of health risk content related to both HPV and the HPV vaccine that was included in each article. Scores for HPV health risk information ranged from one to nine, with a mean value of 2.9 and a standard deviation of 1.7. Scores for vaccine health risk information ranged from zero to nine, with a mean value of 1.0 and a standard deviation of 1.9. Figure 5.3 illustrates the distribution of mean health risk score values over time.

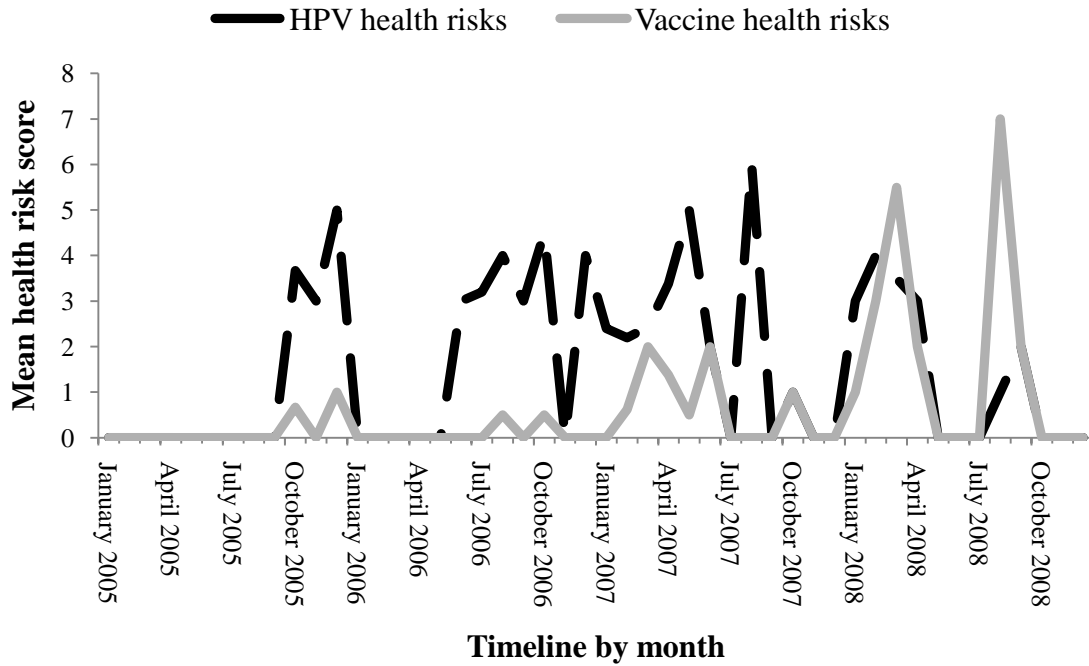


Figure 5.3: Distribution of mean health risk score values over time

Financial risk. Relative financial risks of HPV and the HPV vaccine shifted heavily toward the vaccine, with eight articles (10.8%) raising financial risks related to HPV and 50 articles (67.6%) raising financial risks related to the HPV vaccine. Frequency of specific HPV financial risks are outlined in Table 5.8. Only three categories of HPV financial risks were discussed in a small number of articles within the study population.

Table 5.8: Frequency of HPV financial risk information

Information	N	%
Health care cost of detection (e.g. Pap tests)	2	2.7
Health care cost of treatment related to HPV and/or cervical cancer	5	6.8
Unspecified financial risk	1	1.4

Contrary to discussion of HPV financial risks, several vaccine financial risks were discussed by the majority of articles, including the high cost of shots (60.8%) and concerns about insurance coverage (52.7%). Frequency of specific vaccine financial risks are outlined in Table 5.9.

Table 5.9: Frequency of vaccine financial risk information

Information	N	%
High cost of shots	45	60.8
Concerns about insurance coverage		
General insurance concerns	39	52.7
Concerns for uninsured children	17	23.0
Concerns for low-income adults	10	13.5
Cost-effectiveness of vaccine	1	1.4
Cost to medical providers to offer	11	14.9
Cost of medical liability	1	1.4
Cost to government, taxpayers to mandate	4	5.4
Might jeopardize future funding for other childhood vaccinations	2	2.7
Cost concerns in poorer countries	1	1.4
Unspecified financial risk	3	4.1

A score was created that totaled the number of financial risks included in each article. This score was used to evaluate the overall amount of financial risk content related to both HPV and the HPV vaccine that was included in each article. Scores for HPV financial risk information ranged from zero to one, with a mean value of .1 and a standard deviation of .3. Scores for vaccine financial risk information ranged from zero to six, with a mean value of 1.8 and a standard deviation of 1.6. Figure 5.4 illustrates the distribution of mean financial risk score values over time.

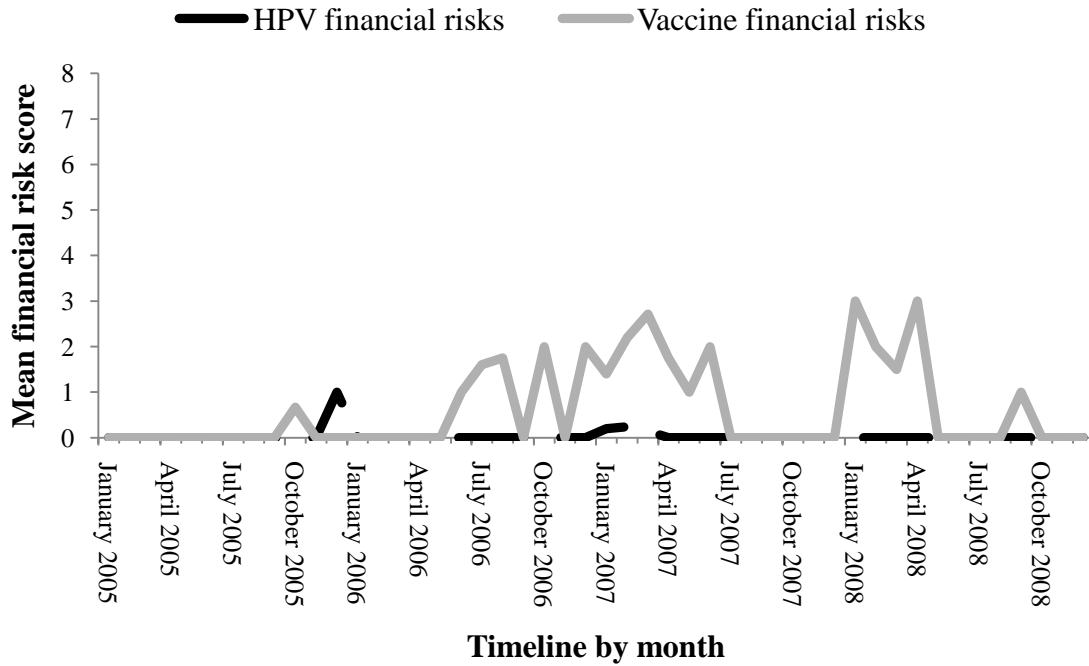


Figure 5.4: Distribution of mean financial risk score values over time

Social risk. Relative social risks of HPV and the HPV vaccine were relatively balanced, with 64 articles (86.5%) raising social risks related to HPV and 65 articles (87.8%) raising social risks related to the HPV vaccine. Frequencies of specific HPV social risks are outlined in Table 5.10. Most articles (89.2%) identified the sexual transmission of HPV as a social risk. A range of other social risks were raised, but received notably less attention.

Table 5.10: Frequency of HPV social risk information

Information	n	%
Sexual transmission	66	89.2
Stigma of STI/STD	4	5.4
Condoms do not provide full protection	4	5.4
Can be passed on without knowledge of infection	3	4.1
Lack of education, awareness	18	24.3
“Invisibility” of disease	3	4.1
Differential effects on developing countries	5	6.8
Differential effects on minority populations	4	5.4
Unspecified social risk	7	9.5

Frequencies of specific vaccine social risks are outlined in Table 5.11. Most stories raised social risks related to mandating the vaccine (56.8%) and endorsing sexual behavior (54.1%). Other risks were identified to a lesser degree, including concerns about requiring the vaccine, parental rights, availability, and Merck’s ethical practices.

Table 5.11: Frequency of vaccine social risk information

Information	n	%
General concerns over vaccinating for an STD	20	27.0
Could endorse/promote sexual behavior	40	54.1
Could force discussions about sex between parents and children	11	14.9
Concerns over mandating for school-age girls		
General concerns about mandating vaccine	42	56.8
Could usurp parental rights	20	27.0
Concerns about Merck’s contributions to officials, push for mandate	16	21.6
Children could be barred from school if not vaccinated	2	2.7
Concerns over clauses that allow parents to opt-in versus opt-out	23	31.1
Lack of education, awareness	22	29.7
HPV as a “different kind of disease”	8	10.8
Availability concerns		
General concerns about availability	8	10.8
Lack of availability for boys	19	25.7
Lack of availability for women older than 26	5	6.8
Cultural/moral considerations of other cultures and countries	1	1.4
Objections to Merck’s direct-to-consumer (DTC) advertising	1	1.4
Could promote a culture of vaccine refusal	6	8.1
Could create false sense of security/reduction in Pap smears	13	17.6
Unspecified social risk	14	18.9

A score was created that totaled the number of social risks included in each article. This score was used to evaluate the overall amount of social risk content related to both HPV and the HPV vaccine that was included in each article. Scores for HPV health risk information ranged from zero to five, with a mean value of 1.5 and a standard deviation of .9. Scores for vaccine health risk information ranged from zero to 11, with a

mean value of 3.1 and a standard deviation of 2.4. Figure 5.5 illustrates the distribution of mean social risk score values over time.

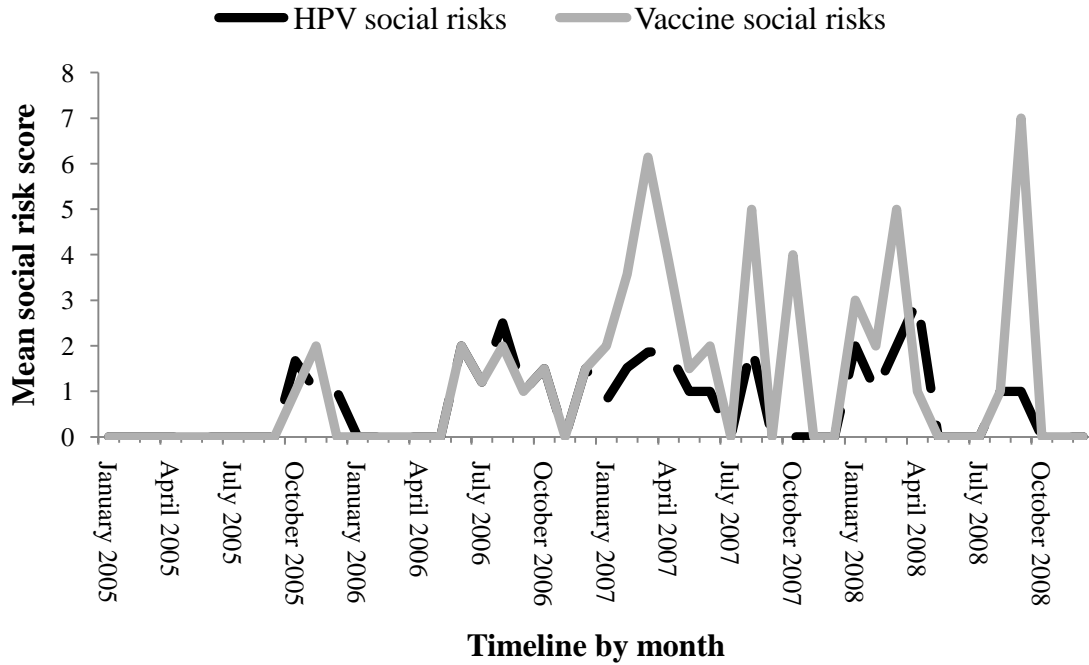


Figure 5.5: Distribution of mean social risk score values over time

5.4 Frames.

A range of frames were found to be present within articles included in the study population. Table 5.12 presents the frequency of these frames.

Table 5.12: Frequency of frames in news stories

Frames	N	%
Functional framing		
Define problems	15	20.3
Diagnose causes	2	2.7
Make moral judgments	36	48.6
Suggest solutions	17	23.0
None present	4	5.4
	74	100
Consequence framing		
Gain-framed	43	58.1
Loss-framed	20	27.0
None present	11	14.9
	74	100
Behavior framing		
Prevention	71	95.9
Detection	1	1.4
None present	2	2.7
	74	100
Context framing		
Episodic	40	54.1
Thematic	31	41.9
None present	3	4.1
	74	100
Responsibility framing		
Institutional	33	44.6
Individual	36	48.6
None present	5	6.8
	74	100
Value framing		
Ethical	51	68.9
Material	11	14.9
None present	12	16.2
	74	100

The function of framing dominant in the majority of articles in the study population was to make moral judgments. This frame appeared in the headline and lead paragraphs of 36 articles (48.6%). The second most common function was to suggest solutions, which appeared in 17 articles (23.0%), followed by defining problems in 15 articles (20.3%) and diagnosing causes in two articles (2.7%). The following is an excerpt from an article in the study population with a moral judgments frame.

Gardasil, on the market since summer 2006, seems like a miracle treatment, but the vaccine has caused controversy and raised issues ever since it was introduced (Johnson, 2008, para. 2).

The consequence frame dominant in the majority of articles in the study population was positive or gain-framed, which appeared in 43 articles (58.1%). Negative or loss-framed consequence frames appeared in 20 articles (27.0%). Eleven articles (14.9%) had no dominant consequence frame present in the headline and lead paragraphs. The following is an excerpt from an article in the study population with a positive consequences frame.

An experimental vaccine to prevent cervical cancer protected virtually all the women who took it during a large international trial, boosting chances that future generations of girls throughout the world might live their lives free of risk of the disease (Russell, 2005, para. 1).

The behavior frame dominant in the majority of articles in the study population was prevention, which appeared in 71 articles (95.9%). Detection frames appeared in one article (1.4%). Two articles (2.7%) had no dominant behavior frame present in the headline and lead paragraphs. The following is an excerpt from an article in the study population with a prevention behavior frame.

Despite growing concerns about the side effects of Gardasil – a new vaccine manufactured by Merck and Co. that targets the human papillomavirus, a sexually transmitted disease – Dartmouth Medical School professor Diane Harper recommends women take the drug as one of a number of preventative measures against HPV, which has been shown to cause cervical cancer. (Boggiano, 2008, para. 1).

The context frame dominant in the majority of articles in the study population was episodic, which appeared in 40 articles (54.1%). Thematic frames appeared in 31 articles (41.9%). Three articles (4.1%) had no dominant context frame present in the headline and lead paragraphs. The following is an excerpt from an article in the study population with an individual context frame.

Austin doctor Lisa Savage was thrilled when a human papillomavirus vaccine became available last summer. But since then, Savage, like many other doctors, has found she can't afford to offer it to her patients. (MacLaggan, 2007, para. 1).

The responsibility frame dominant in the majority of articles in the study population was individual, which appeared in 36 articles (48.6%). Institutional frames appeared in 33 articles (44.6%). Five articles (6.8%) had no dominant responsibility frame present in the headline and lead paragraphs. The following is an excerpt from an article in the study population with an institutional responsibility frame.

Is a law requiring Virginia girls to have a vaccine to protect them against cervical cancer an intrusion or a life-saving breakthrough? That's the question posed Thursday night to a panel organized by several departments of Old Dominion University. Virginia this year became the first state to require sixth-grade girls to get the human papillomavirus, or HPV, vaccine, unless their parents opt them out. (Simpson, 2007, para. 1-3).

The value frame dominant in the majority of articles in the study population was ethical, which appeared in 51 articles (68.9%). Material frames appeared in 11 articles (14.9%). Twelve articles (16.2%) had no dominant value frame present in the headline and lead paragraphs. The following is an excerpt from an article in the study population with an ethical value frame.

When several states tried earlier this year to require the vaccination of schoolchildren with Gardasil, which protects against cervical cancer and genital warts, a firestorm of resistance sprang up over the concern that giving the human papillomavirus (HPV) vaccine to girls as young as 9 would encourage them to have sex at earlier ages (Interlandi, 2007, para. 1).

Figures 5.6-5.11 illustrate the distribution of frames in each model over time. Data were collapsed into four-month periods, as monthly displays were not optimal due to the number of months in which no articles included for analysis.

- Define problems
- Diagnose causes
- ▨ Make moral judgments
- ▨ Suggest remedies
- None

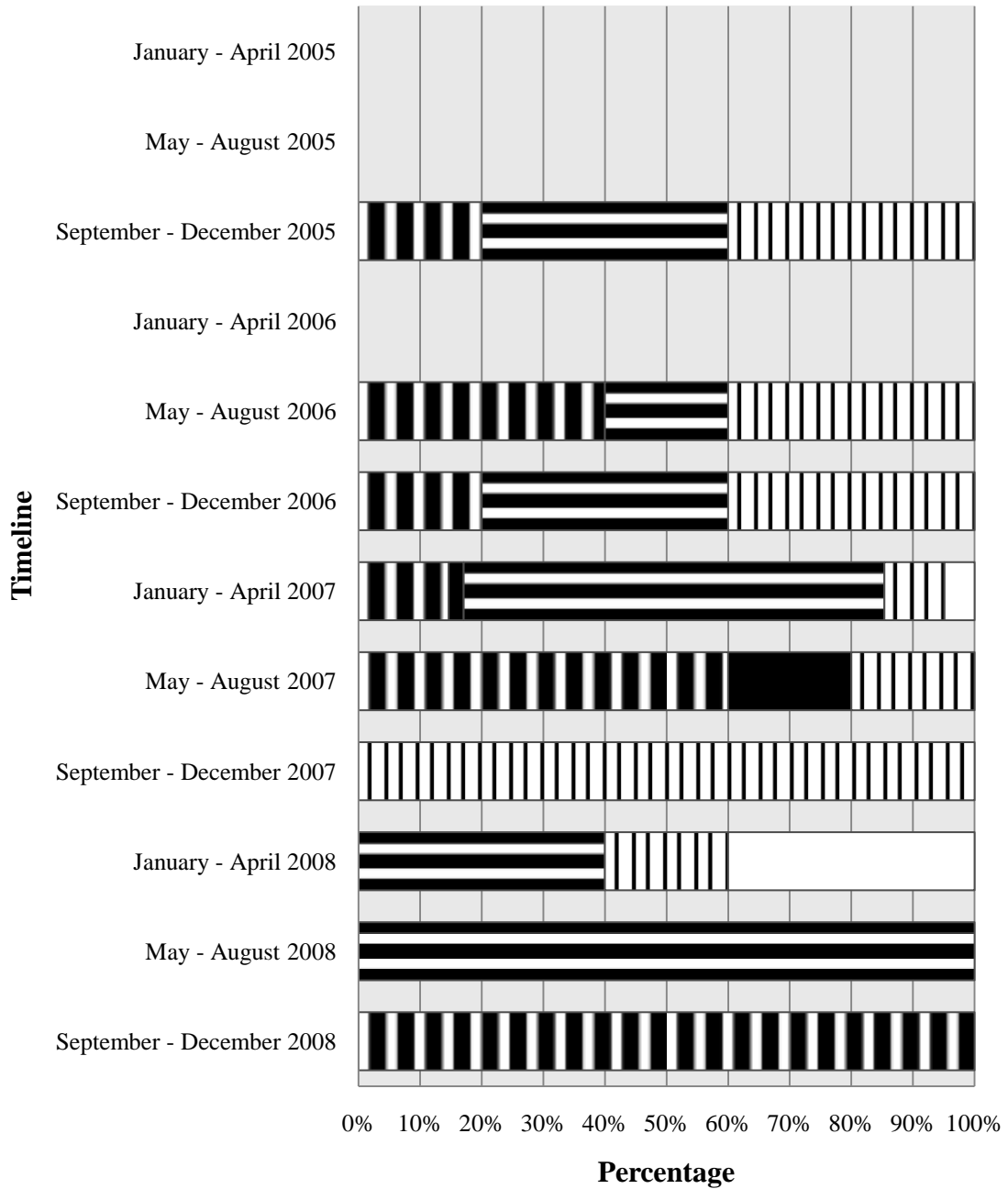


Figure 5.6: Distribution of dominant function of framing over time

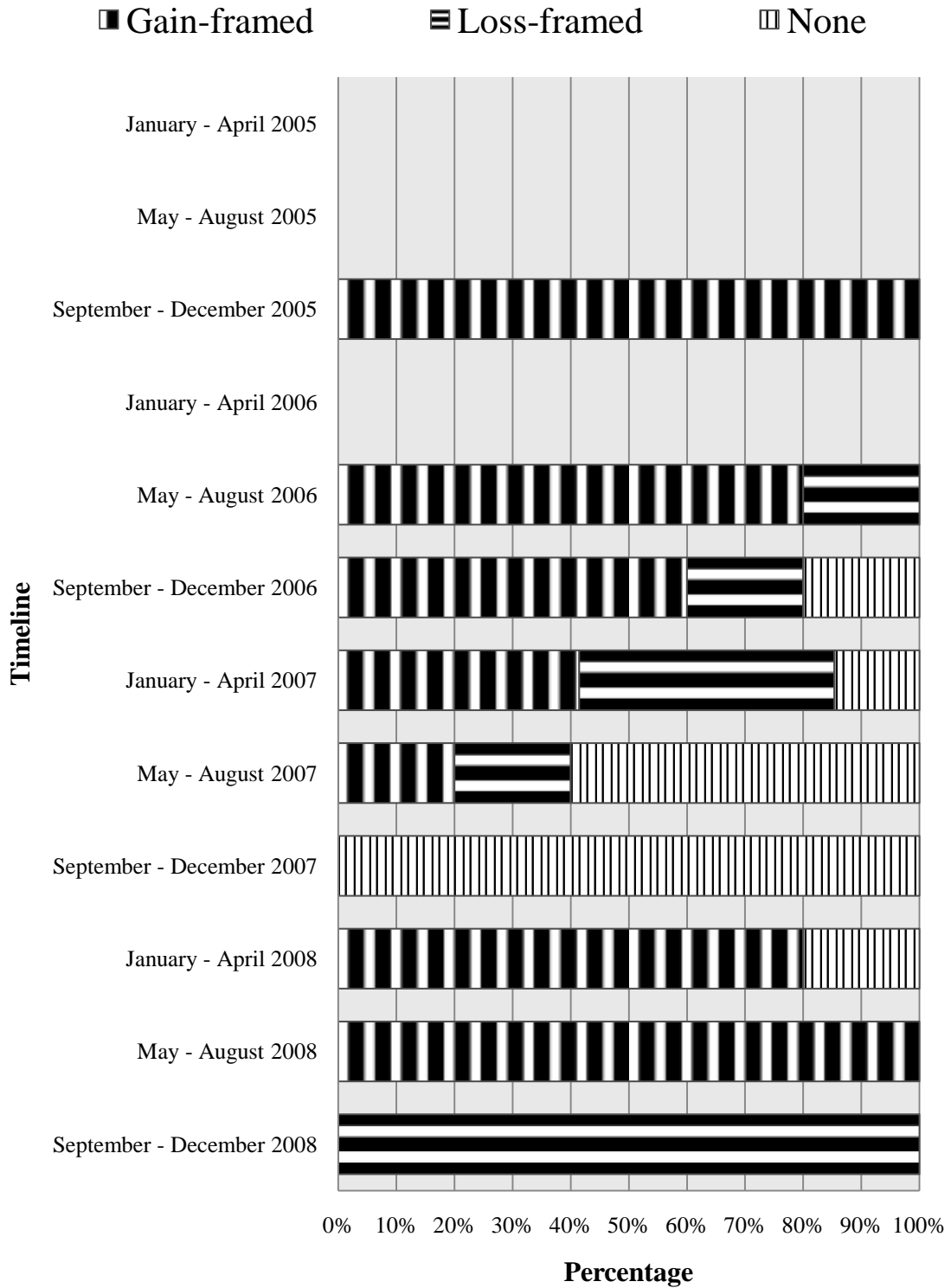


Figure 5.7: Distribution of dominant consequence framing over time

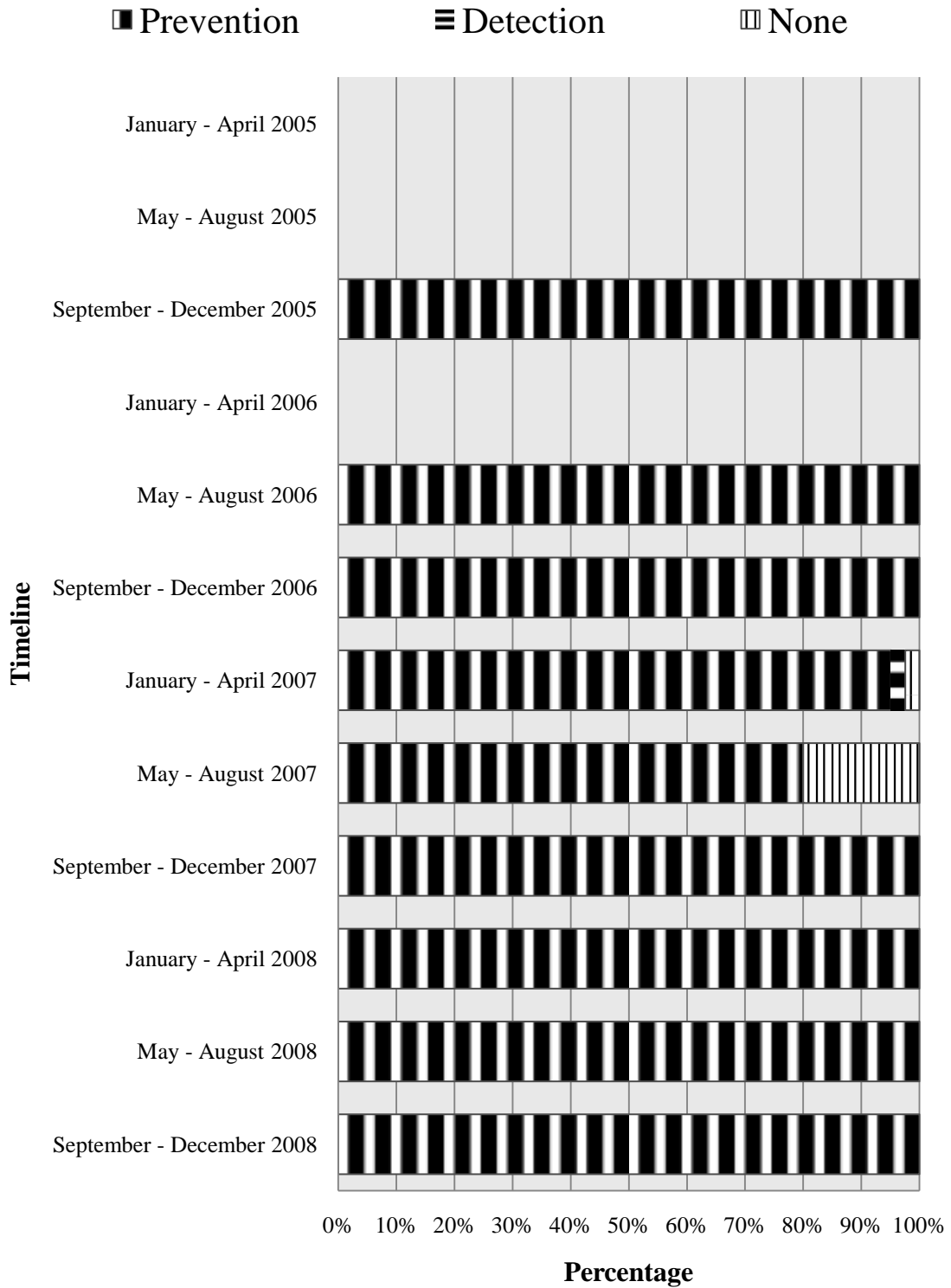


Figure 5.8: Distribution of dominant behavior framing over time

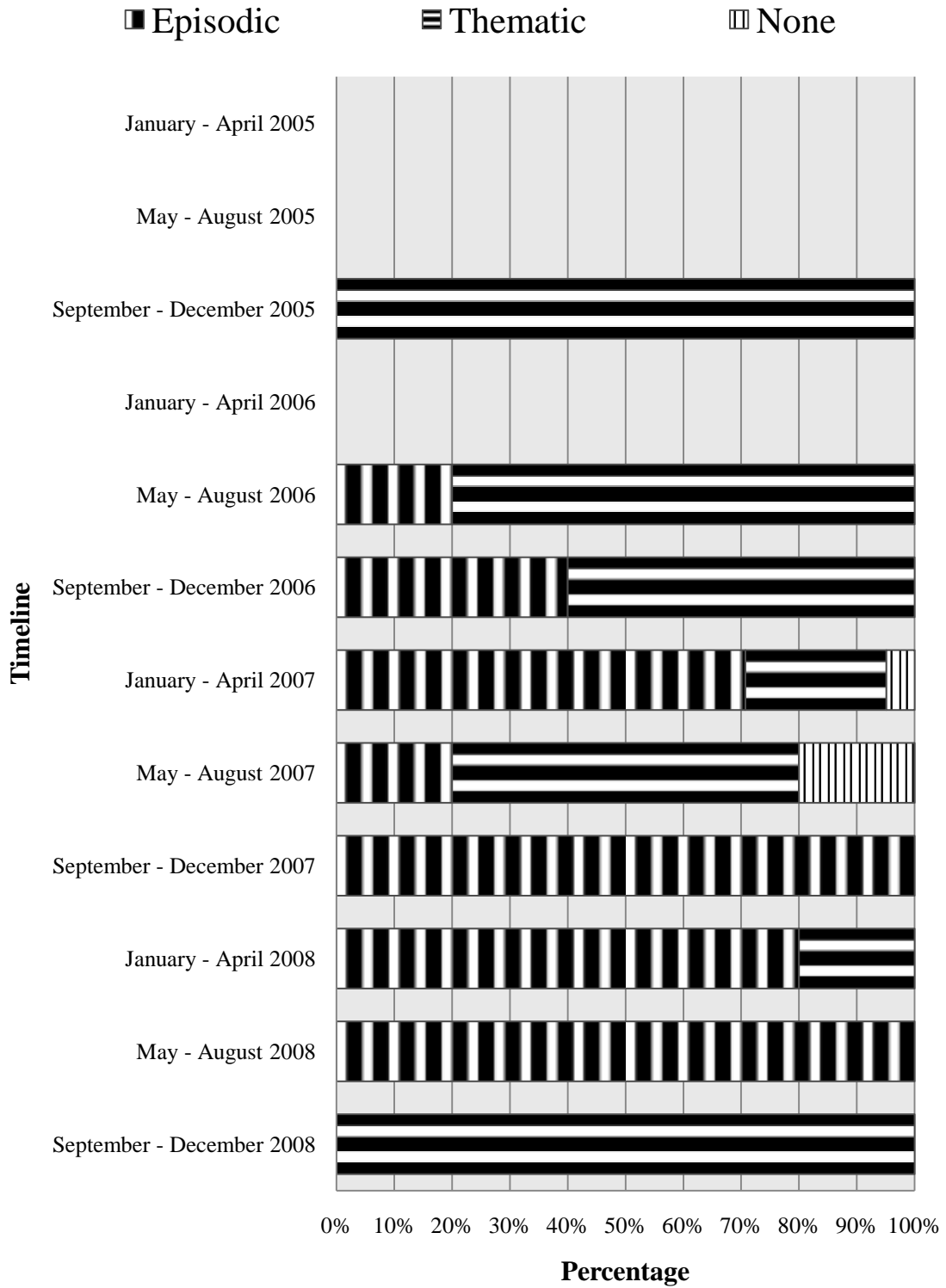


Figure 5.9: Distribution of dominant context framing over time

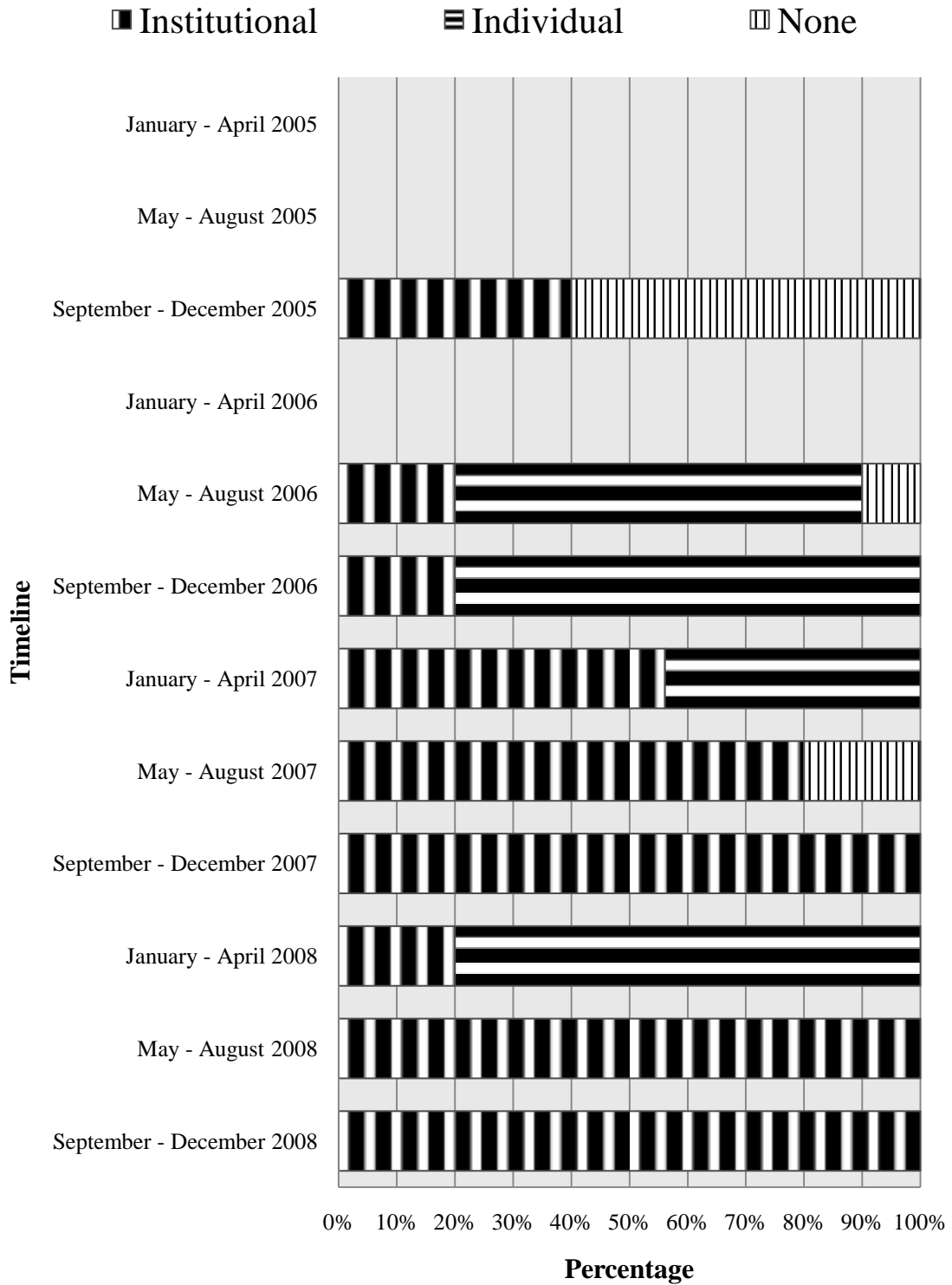


Figure 5.10: Distribution of dominant responsibility framing over time

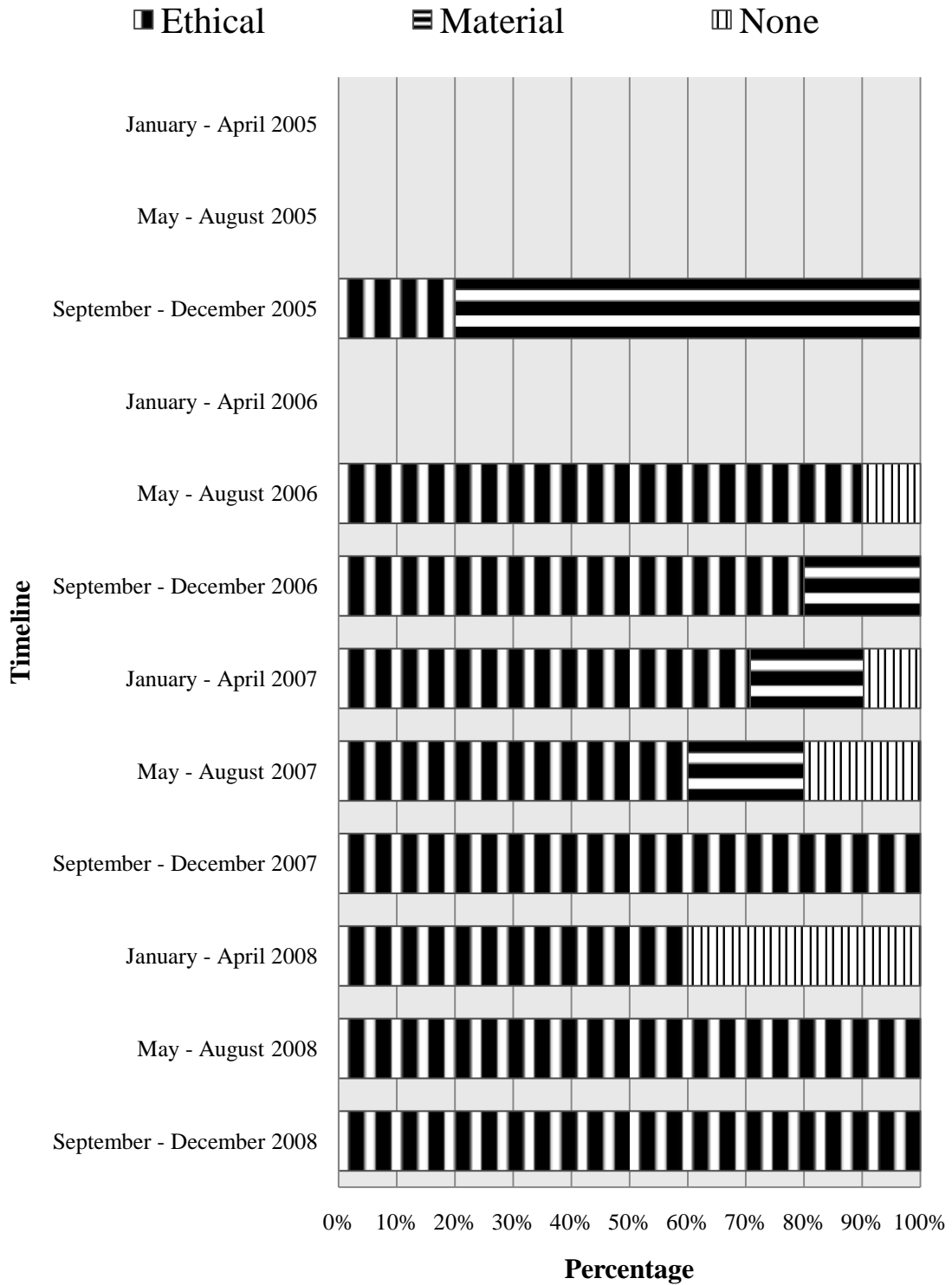


Figure 5.11: Distribution of dominant value framing over time

5.5 Claims-makers.

A range of claims-makers were present in articles in the study population. Claims-makers were assessed for frequency and for content of their claims, specifically whether claims were made in reference to HPV or to the HPV vaccine. Latent claims-makers, or claims-makers not actively making claims but still mentioned in articles, were also counted. Categories assessed by this study, their frequencies, and the nature of claims made, are presented in Table 5.13.

Following are two examples of claims about HPV that were found in the study population.

“Your body can fight [HPV] off like it would fight a cold,” according to Melanie Gold, a professor in the University of Pittsburgh School of Medicine and the Graduate School of Public Health (Johnson, 2008, para. 6).

Cervical cancer can be caused by human papillomavirus, or HPV, the most common sexually transmitted disease, according to the U.S. Centers for Disease Control and Prevention (Bregel, 2008, para. 4).

Following are two examples of claims about the HPV vaccine that were found in the study population.

“We really support and encourage the development and implementation of the vaccine,” said Dr. Gene Rudd, associate executive director of Christian Medical and Dental Associations (Bard, 2005, para. 25).

“I think the priorities now ought to be to assure there is adequate funding for the vaccine for all age groups for which it is recommended,” said Dr. Joseph Bocchini, chairman of the committee on infectious diseases for the American Academy of Pediatrics (Davidoff, 2007, para 10).

The top three most frequent HPV claims-makers included government agencies, present in 21 articles (28.4%); university officials, present in 20 articles (27.0%); and medical organizations and professionals, present in 19 articles (25.7%).

The top three most frequent vaccine claims-makers included university officials, present in 38 articles (51.4%); medical organizations and professionals, present in 30 articles (40.5%); and non-governmental organizations and representatives, present in 29 articles (39.2%).

Table 5.13: Frequency of claims-makers

Category	Making claims about HPV		Making claims about vaccine		Latent claims-maker	
	n	%	n	%	n	%
Government agency/official	21	28.4	26	35.1	43	58.1
Elected official	13	17.6	28	27.8	24	32.4
University official	20	27.0	38	51.4	9	12.2
Non-governmental organization/representative	16	21.6	29	39.2	14	18.9
Pharmaceutical company/representative	5	6.8	19	25.7	39	52.7
Insurance company/representative	1	1.4	2	2.7	10	13.5
Medical organization/professional	19	25.7	30	40.5	12	16.2
Private individual	5	6.8	23	31.1	2	2.7
Study or report	3	4.1	6	8.1	0	0.0
Other	3	4.1	7	9.5	13	17.6

The top three most frequent latent claims-makers included government agencies and officials, present in 43 articles (58.1%); pharmaceutical companies and representatives, present in 39 articles (52.7%); and elected officials, present in 24 articles (32.4%). The total number of HPV claims-makers per article ranged from zero to six, with a mean value of 1.8 and a standard deviation of 1.5. The total number of vaccine claims-makers per article ranged from zero to 12, with a mean value of 4.5 and a standard deviation of 2.8. The total number of latent claims-makers per article ranged from zero to

11, with a mean value of 3.3 and a standard deviation of 2.6. Figure 5.12 illustrates the distribution of mean claims-makers in each category over time.

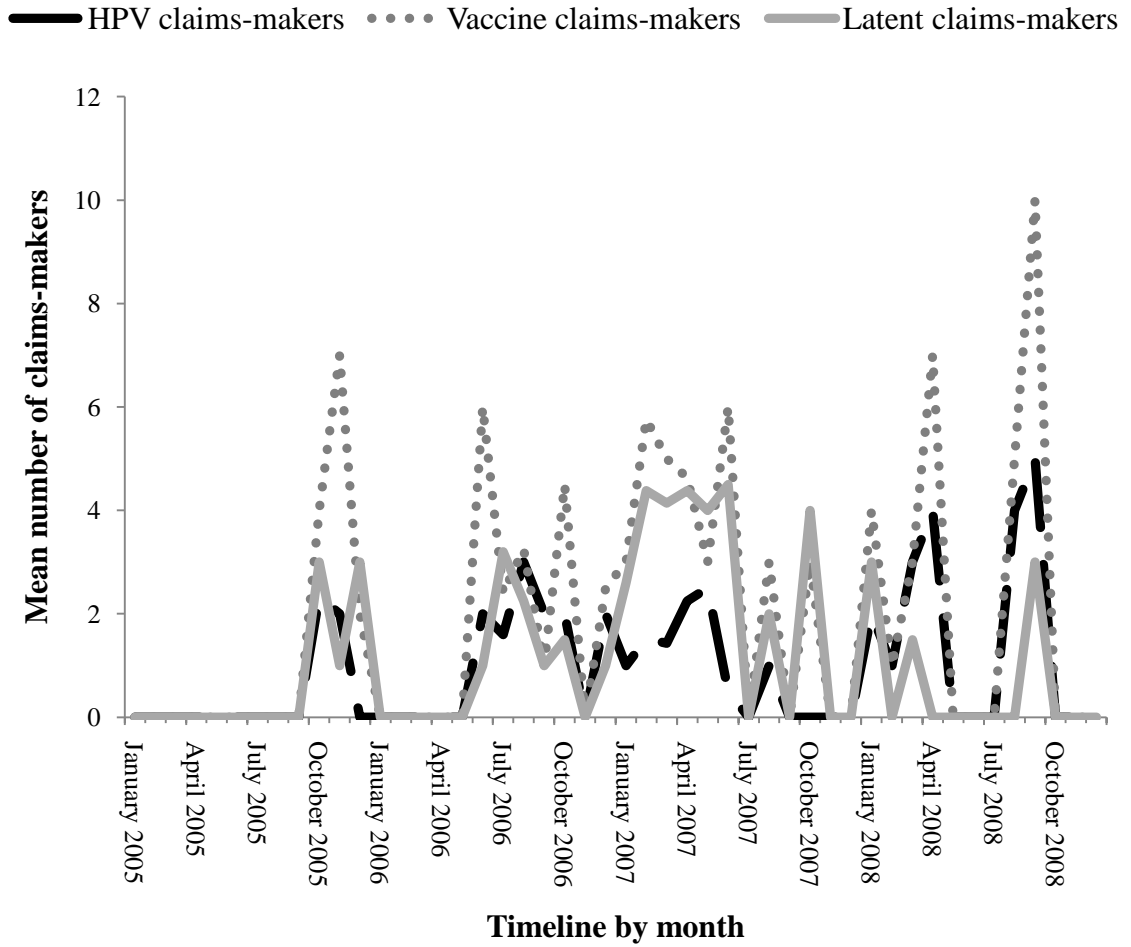


Figure 5.12: Distribution of claims-makers over time

CHAPTER 6: DISCUSSION AND CONCLUSIONS

As public perceptions of the surrounding world and issues within it are largely based in the definition and interpretation of language, the media, a key source of information for the public, play a critical societal role by constructing and circulating perspectives on risk and in giving meaning to risk issues. This role, while important in everyday life, becomes particularly important when dealing with a health issue that raises both risk and controversy on a number of fronts. The human papillomavirus vaccine is one such issue. The background and risk information included in media coverage of this issue, as well as framing of and claims-making about that information, were four critical considerations explored by this study. These considerations, as well as general attributes of articles included in the study population, are discussed here.

It should be noted that while this study was a census, the study population was limited to those 74 articles that included a specific set of search terms. As a result, the findings of this study are limited to a specific subset of articles on HPV and the HPV vaccine, and are consequently limited in their generalizability to the broader population of news content on these topics. Future research is needed to investigate these issues in a broader context and to determine how the trends discussed here compare to the trends visible in media coverage of these issues in its totality.

6.1 General article attributes

This study's evaluation of general attributes of articles included in the study population revealed three key findings. First, noticeable peaks in coverage occurred during the study's timeline, including mid 2006 and mid 2007. Second, noticeable gaps in coverage occurred during the study's timeline, including early 2006 and mid 2008. Third, articles lacked continuity over time across publication and reporter.

Peaks in article frequency over the timeline for the study could be explained, at least in part, by several significant events surrounding the development, efficacy, and controversy regarding HPV vaccination. For example, the first noticeable peak in coverage visible in Figure 5.1, from June to September 2006, is likely in reaction to the approval of Gardasil by the Food and Drug Administration on June 8, 2006 (FDA, 2006). A second, larger peak in coverage, occurring between January and May 2007, is most likely related to issues of mandating the vaccine, as raised by Texas governor Rick Perry's efforts to require the vaccine for young girls, as this was a common recurring theme among articles analyzed in the study. An additional issue raised by a number of articles, in tandem with concerns over mandating the vaccine, was concern about Merck's involvement in lobbying for mandatory Gardasil use. Results from the study support this link, as a significant percentage of articles focused on legislating and mandating the vaccine (see Table 5.1 and Table 5.2). While this link was not explicitly explored in this study, future research should further investigate the link between major events and resulting newspaper coverage.

Gaps in newspaper coverage of HPV and the HPV vaccine were identified from January to October 2005, January to June 2006, November to December 2007, and May

to July 2008, in addition to a number of isolated months which lacked coverage. While this study did not specifically investigate a lull in media coverage of HPV and the HPV vaccine, the identification of these gaps is a valuable finding. Future research investigating the causes, and potential effects, of these gaps in coverage is needed.

The lack of continuity of coverage across publications and across reporters is another area where future research should focus. This trend would be expected for news topics with a relatively short lifespan, but was surprising for an issue with a clear evolution over time because prior experience with such an issue would likely aid in its continued coverage. Future research could explore this relationship within the context of news specialization and niche journalism, and might also explore the evolution of newspaper journalism from print to multimedia as a potential explanation for low visibility in print publications.

6.2 HPV and vaccine background

This study's evaluation of background information about HPV and the HPV vaccine included in newspaper coverage revealed two key findings. First, like news stories regarding other science and health issues, media coverage of HPV and the HPV vaccine covered a breadth of background information. Second, also like news stories regarding other science and health issues, media coverage of HPV and the HPV vaccine lacked a depth of background information.

First, like many news stories regarding other science and health issues, media coverage of HPV and the HPV vaccine covered a breadth of background information. Articles yielded 17 categories of HPV background information and 14 categories of HPV

vaccine background information. All articles included in the study population addressed at least one piece of background information for both HPV and the HPV vaccine. These ranges were similar to those found in other content analysis studies (Anhang, Stryker, et al., 2004; Calloway, et al., 2006).

Despite the breadth of background information present in the sample, however, individual articles often lacked a depth of background information about both HPV and the HPV vaccine. Many articles in the study population failed to include basic information about the human papillomavirus and about the vaccine to prevent it. Notably lacking information about HPV included information about the virus' progression to cervical cancer, the importance of Pap smears in detecting the presence of HPV, and the efficacy of condoms in preventing the spread of HPV. Notably lacking information about the HPV vaccine included the continued importance of Pap tests after vaccination, and information about the specific types of HPV included and not included in the vaccine. These pieces of information may have the potential to influence perceived susceptibility to HPV, as well as behavior to prevent it, including the HPV vaccine. Of the 17 potential HPV facts and the 14 potential vaccine facts compiled by this study, articles in the study population included an average of 7.35 HPV facts and 7.81 HPV vaccine facts. While this is certainly an improvement over previous research on the completeness of HPV and HPV vaccine information (Anhang, Stryker, et al., 2004; Calloway et al., 2006; Habel et al., 2009), articles included in the study population are still not creating a complete picture of many basic HPV and vaccine facts. In addition to lacking specific key pieces of information, the majority of articles lacked a depth of overall background information, with less than one quarter of articles were classified as being in depth. Paired with a lack

in continuity across publications, this raises serious questions about whether the public is being exposed to the information they need to make critical decisions about their health.

Despite an overall lack of depth among news articles, several critical pieces of information were included in the majority of articles. For instance, all articles linked HPV to cervical cancer, and 60% linked HPV to genital warts, although previous studies found that news stories failed to consistently establish these links (Anhang, Stryker, et al., 2004; Calloway et al., 2006). However, almost half of the articles that established these links failed to provide related background information on cervical cancer and genital warts, such as the HPV types that cause the diseases and background statistics on their incidence. Similar results were found in a recent content analysis of online news stories by Habel and colleagues (2009). According to Habel et al. (2009, p. 405), “In regard to the importance of providing an accurate and complete picture of the vaccine’s potential, it is problematic that articles are establishing a link without providing a broader, comprehensive picture of HPV infection and the incidence of cervical cancer and genital warts.” Future research should explore this issue in more detail.

A likely explanation for the findings related to background information can be found in the population’s emphasis on risk, resulting from the inclusion of risk-related search terms. Numerous studies have found that as media reports often focus on controversial aspects of issues, including risk, they likewise often neglect background information about those issues in efforts to focus on what might be deemed more “news-worthy” (Friedman & Dunwoody, 1999). Future research should investigate whether articles that do not include an explicit mention of risk-related terms reflect this same trend.

6.3 Risk information

This study's evaluation of risk information about HPV and the HPV vaccine included in newspaper coverage revealed two key findings. First, the presence of different categories of risk varied depending on their relation to HPV or the HPV vaccine. Second, all three categories of risk included a breadth, but not a depth, of information, similar to the trend found with background information. While many potential risks were raised, few received substantive attention.

Risks related to HPV were more dominant in news coverage than risks related to the HPV vaccine only when those risks were health-related. This represents a notable departure from existing trends in media coverage of childhood vaccines, such as the MMR vaccine, as described by Boyce (2007). Financial risk discussions were heavily weighted toward the HPV vaccine, which may indicate an important priority for individuals considering the HPV vaccine. This public priority should be considered by pharmaceutical companies, insurance companies, government agencies, and medical organizations involved in distribution of and access to the vaccine. Discussions of social risk were comparable across both HPV and the HPV vaccine. This balance of HPV social risk and HPV vaccine social risk suggests an area where the pros and cons of the decision to vaccinate may be difficult for the public to prioritize, and an area with which individuals might struggle more than with health and financial risk.

All three categories of risk – health, financial, and social – included a breadth of information but lacked a depth of discussion. Similar to the trend found for included background information about HPV and the HPV vaccine, this trend toward a broad range of risks but away from a deep discussion of those various risks may indicate that

certain pieces of information that might guide public decision-making is missing from news coverage. A small number of risks across the risk categories appeared in a majority of articles, but the majority of risks appeared in a minority of articles. Articles included an average of 2.9 of nine HPV health risks, 1.0 of nine HPV vaccine health risks, .1 of 1 HPV financial risks, 1.8 of six HPV vaccine financial risks, 1.5 of five HPV social risks, and 3.1 of 11 HPV vaccine social risks. Future research might compare studies of risk concerns expressed by the public with risks addressed in media coverage, to assess whether coverage is providing the kind of information the public needs. Future research might also investigate the validity of less commonly discussed risks, to evaluate their relatively low visibility in coverage.

6.4 Frames

This study's evaluation of frames included in newspaper coverage of HPV and the HPV vaccine revealed six key findings. First, the dominant function of framing in articles included in the study population was to make moral judgments. The least common function of framing was to diagnose causes. Second, gain frames were more frequent than loss frames. Third, almost all articles utilized the prevention behavior frame. Fourth, the use of context frames was relatively balanced overall, though the increased use of episodic value frames over time suggest additional influences worthy of future research. Fifth, the use of responsibility frames was also relatively balanced overall, though the use of institutional responsibility frames showed a marked increase over time. Sixth, ethical considerations superseded material considerations as a dominant value frame.

The dominant function of framing throughout the study was to make moral judgments. This finding likely resulted from the large amount of coverage directly linked to vaccine mandation concerns, particularly surrounding legislative efforts in Texas to require the vaccine for young girls. This type of evaluative frame should be broken down further in future research to parse out the particular values on which judgments in news coverage are being based. The least common function of framing throughout the study was to diagnose causes. This finding was particularly interesting because it suggests that a preponderance of media coverage is evaluating an issue without first providing the context for understanding it. This finding relates to an overall lack of background information on both HPV and the HPV vaccine, as well as information about the various types of risks associated with each. It is possible that coverage occurring before the scope of this study included more extensive background, and that later coverage gradually shifted toward evaluation. Future research should look at an expanded time period to trace the evolution of framing function more broadly.

When considering consequences, gain frames were more frequent than loss frames. This corresponds with existing research, as analyzed by O’Keefe and Jensen (2007, p. 623), who found through a meta-analysis of 93 studies that “gain-framed appeals, which emphasize the advantages of compliance with the communicator’s recommendation, are statistically significantly more persuasive than loss-framed appeals, which emphasize the disadvantages of noncompliance.”

O’Keefe and Jensen’s research (2007) analyzed existing studies of disease prevention messages only. The current study falls in that category, as almost all articles included in the study population utilized the prevention behavior frame over the detection

behavior frame. This supports existing research findings, which have observed that gain-framed messages are more effective in promoting prevention behaviors (Salovey, Schneider, & Apanovitch, 2002; Rothman & Salovey, 1997). Future research should continue to investigate the link between prevention frames and gain frames, as well as the link between detection frames and loss frames. Future research should also consider the impact of an absence of detection framing for this issue in particular, as it may potentially contribute to actual behavior imitating that trend, manifested in a decrease in Pap testing among vaccinated women.

The use of context frames was relatively balanced over the scope of the study, but the distribution of these frames suggests additional influences worthy of future research. The use of episodic context frames increased over time, which might suggest a trend toward personalizing this issue. This supports existing research by Gandy and Li (2005), who suggest that people often understand and interpret the news as stories, focusing on the lives and experiences of individuals. Future research should examine the nature of coverage in terms of context, particularly as it might relate to HPV vaccine direct-to-consumer advertising, which featured mothers and young girls giving their reasons for getting vaccinated, making this issue relatable for audiences.

Like context frames, the use of responsibility frames was relatively balanced overall, though the use of institutional responsibility frames showed a marked increase over time. This finding, which identifies HPV and the HPV vaccine as broader issues, seems to clash with the gradual increase in episodic context frames, which identify HPV and the HPV vaccine as more personal issues. This finding also diverges from research by Iyengar (1990; 1991), who found that thematic context frames are more often linked

with institutional responsibility frames, whereas episodic context frames are more often linked with individual responsibility frames. Future research should continue to investigate this dichotomy as it relates to this and other health risk issues.

When considering values, articles included in the study population prioritized ethical frames over material frames. This corresponds to the larger number of articles emphasizing social risks, which would threaten ethical values, over financial risk, which would threaten material values. Value framing as a framing category is an area in which research is particularly scattered, and as such one which would benefit substantially from future studies.

6.5 Claims-makers

This study's evaluation of claims-makers included in newspaper coverage of HPV and the HPV vaccine revealed three key findings. First, articles in the study population consistently included more total HPV vaccine claims-makers than HPV claims-makers, both as a whole and across individual claims-maker categories. Third, university officials and medical professionals were among the most common claims-makers for both HPV and the HPV vaccine. Fourth, a substantial number of articles included latent claims-makers, which may indicate grounds for future research.

The dominance of HPV vaccine claims-makers over HPV claims-makers may be explained in part by the study's time frame, as it included several seminal events in the development of Gardasil. This dominance is also likely linked to the framing emphasis on prevention rather than detection, since discussions about the vaccine necessarily prompt considerations of preventative action, whereas discussions about HPV would instead

prompt considerations of detection. This trend may, however, indicate that such considerations of preventative action may not be occurring with appropriate, balanced context and background about HPV itself from credible sources. This could be problematic because an overemphasis on prevention over detection behaviors may minimize the critical need for women to continue regular Pap tests after vaccination.

The dominance of medical professionals as claims-makers was not surprising based on the content examined in this study. The dominance of university officials, however, was not anticipated, and may be fertile ground for future research. As HPV and the HPV vaccine are issues particularly pertinent to young women, it is encouraging to see such a presence of university officials as claims-makers, as it may reflect particular attention to these issues in collegiate newspapers and local newspapers near higher education institutions. Future research could examine the links between news media and awareness, attitudes, and behavior about HPV and the HPV vaccine specifically among college-aged women to further investigate this trend and its potential implications.

In addition to HPV and HPV vaccine claims-makers, this study also examined latent claims-makers, defined as claims-makers not actively making claims but still mentioned in an article. Because a substantial number of articles in the study population included latent claims-makers, future research might consider the subtle influence of such mentions in tandem with more explicitly expressed claims by active claims-makers. Of particular note is the high number of articles including pharmaceutical companies as a latent claims-maker, a category which was notably less common for active claims-makers. Future research might consider the influence of pharmaceutical companies as active and latent claims-makers in light of their vested financial interests in these issues.

6.6 Limitations

The current study has several limitations. First, the articles included in the study population were focused by specific search terms and were limited in number (n=74). As a result, findings of this study are limited to a specific subset of articles on HPV and the HPV vaccine, and are consequently limited in their generalizability to the broader population of news content on these topics. However, previous studies of this nature have used similarly small sample sizes. While the use of multiple search terms established an information threshold for articles in the study population, it also prevented some coverage from inclusion in the population and thereby consideration by the study. The use of these search terms allowed this study to analyze a population, which enhanced its descriptive abilities by removing the need to generalize from a smaller sample to a larger population, but future studies should examine content which may have been excluded by the narrowed scope of these search terms.

In addition to limiting the study's population in number, risk-related search terms also limited the population to articles that likely prioritized controversial content over informational content. Numerous studies have found that as media reports often focus on controversial aspects of issues, including risk, they likewise often neglect background information about those issues in efforts to focus on what might be deemed more "news-worthy" (Friedman & Dunwoody, 1999). Future research should investigate whether articles that do not include an explicit mention of risk-related terms reflect this same trend.

Third, despite the breadth of stories included in the study population, the stories in the study may not have been representative of media coverage as a whole. Stories from

other media channels, such as women's magazines, television, or online publications, may have presented different context, risks, frames, and claims-makers related HPV and the HPV vaccine. In addition, as this study analyzed text only, it neglected to analyze potentially informative content of figures, graphs, and tables that might be included in reports via other media channels, particularly those that depend more heavily on visual transmission of information.

Fourth, this analysis focused solely on news stories, but feature articles, editorials, newswires, and other newspaper stories may have contained different information. This decision was made to focus the analysis on facts over opinions, as many aspects of this issue are controversial in nature, and also to minimize redundancy. However, an expansion of this study's methodology to include non-news stories may strengthen these results, or may introduce additional variables worthy of consideration and analysis. Additionally, an inclusion of redundant articles might provide a more accurate depiction of overall or geographically-bounded public exposure to HPV and HPV vaccine information, and the broader influence of the issue's overall exposure, which could be fertile ground for future research.

Fifth, this study relied on an electronic database, Lexis-Nexis, to identify and access articles included in the study population. Numerous studies have identified discrepancies between print and electronic versions of publications, as well as versions housed in electronic databases (Pagell, 1987; Orenstein, 1989; Orenstein, 1993; Kaufman, Dykers, & Caldwell, 1993; Snider & Janda, 1998). Future research might explore whether the results of this study vary between print and electronic versions of articles included in the study population. In addition to the population's content, the

population itself would likely be altered by a non-electronic survey of articles during the study time frame. While a manual search of this type would surely take significantly more time than an electronic search, a comparison of articles returned by each search method might offer important insights.

Six, this study focused its analysis on stories within a specified time frame. Additional events after the time frame for this study could produce different results and are worthy of consideration in future research, especially considering the continued development of Gardasil since this study, as well as the introduction of a second vaccine, Cervarix.

Seventh, this study reviewed news stories for the presence or absence of certain information, frames, and claims-makers, but did not assess their accuracy or legitimacy. Future research could certainly investigate these elements, as they have the potential to weigh heavily on public perception, trust, and behavior.

Finally, the coding scheme used to identify and categorize information, frames, and claims-makers was purely descriptive and largely subjective. Content analysis as a research methodology is purely descriptive – it explores what exists, but does not attempt to explain the underlying causes or effects of what exists. In addition, information analyzed in this study was analyzed with coding scheme, in which many categories were developed over the course of the analysis rather than established prior to the analysis. While the current study met standards of intra-coder reliability, additional improvements can be made to this study's coding instrument to further increase reliability of this and future studies. Reliability of studies of this nature would be increased dramatically if

multiple coders and coding frameworks depicting rules for ensuring the exclusivity and exhaustivity of categories were used.

6.7 Future research

While this study answered some questions about the media's treatment of HPV and the HPV vaccine, it raised many others. Future research can build off many key findings of the current study. Additionally, future research can focus on aspects of this issue that fell outside the scope of this study. One area where future research is needed is the alignment of background information in media reports with expressed informational needs of the public. Numerous studies have been conducted to evaluate what women know about HPV and the HPV vaccine, as well as what women want and need to know. One qualitative study in particular, a review of frequently asked questions about HPV at the National HPV and Cervical Cancer Prevention Resource Center (Gilbert, Alexander, Grosshans, & Jolley, 2003), investigated women's desired information about HPV. Gilbert, et al. (2003) developed a list of several commonly asked questions about HPV, including:

- How, when, and from whom can I get HPV?
- Will HPV affect a pregnancy or a baby?
- Can a person get or give HPV through oral sex or from hands?
- How can I get tested for HPV?
- Will I always have HPV?
- How can I prevent giving or getting HPV?
- Can partners reinfect each other?
- Does HPV cause cervical cancer?
- What should I tell my partner about HPV?
- What are the best treatment options for HPV?

The study also included a compilation of answers to these questions from medical professionals. Anhang, Wright, Smock, and Goldie (2004) conducted a similar study using focus groups of diverse, low-income women. Researchers found five major themes in participant's informational needs, including an accurate estimation of cancer risk, reassurance from cancer anxiety, explanation of screening test results, description of a more personalized risk profile, and discussion of HPV as an STD. Similar to the findings at the National HPV and Cervical Cancer Prevention Resource Center (Gilbert et al, 2003), Anhang and colleagues found that women most frequently asked questions about HPV transmission, prevention, treatment and progression, and overall risk (Anhang, Wright, et al., 2004). Anhang, Goodman, and Goldie (2004, p. 252) summarized specific topics about HPV about which women most frequently asked questions:

Specifically, with regard to transmission and prevention, women in both studies were interested in knowing that HPV is sexually transmitted, that transmission can occur through genital contact regardless of whether intercourse has taken place, and that condoms are not wholly protective against transmission. With regard to progression, treatment, and risk of cancer, women wanted to know the typical duration of HPV infection, the nature of spontaneous resolution of the infection, the likelihood of developing cancer, and the screening and follow-up treatment that prevent most women from developing cancer.

Future research could evaluate information included in news coverage of HPV and the HPV vaccine based on whether that information addresses these informational needs, as well as those raised in other similar studies.

Future research should also build on the descriptive information gathered by this and other content analysis studies, and explore the impact of media coverage of HPV and the HPV vaccine on perception and behavior. This study was descriptive in nature and was designed to explore and comment upon what kinds of information, frames, and claims-

makers were present or absent in newspaper coverage of HPV and the HPV vaccine. It did not attempt to draw conclusions about the influence of such information on behavior. While much work has been done regarding the influence of media coverage on other types of behaviors, future research is needed to explore the links between HPV and HPV vaccine coverage, perception, and behavior.

Future research could also build on the descriptive information gathered by this study to investigate the relationships between framing and claims-making in coverage of HPV and the HPV vaccine. This study identified the presence of different frames and different claims-makers, but did not attempt to identify correlations between them. While this study recognized the potential for such a relationship, such an investigation was outside the scope of this study. Future research could investigate whether certain frames used by journalists prompt the recognition of certain types of claims-makers, or whether the presence of certain types of claims-makers might influence the construction of a frame within a story.

Additionally, future research should also explore the impact of two important events that occurred outside the time frame for this study. On October 16, 2009 the FDA made two important decisions regarding HPV vaccination that could significantly influence media coverage of HPV. First, the FDA approved a second HPV vaccine, Cervarix, manufactured by GlaxoSmithKline (FDA, 2009c). The CDC joined the FDA in recommending the routine use of Cervarix to prevent HPV-related cervical cancer (CDC, 2009a). The competition between Merck, manufacturer of Gardasil, and GlaxoSmithKline, manufacturer of Cervarix, could have significant implications for media coverage of this issue, as could the ability for consumers to choose between two

products on the market. Second, the FDA approved Gardasil for men and boys (FDA, 2009b). The CDC, however, did not recommend its routine use in men and boys, and instead recommended its optional implementation (CDC, 2009a). Since availability for boys was raised as a social concern in coverage analyzed by this study, examination of more recent news coverage following this FDA recommendation could yield provocative results.

A similar avenue for future research is to compare coverage by American media to coverage in other countries where vaccines may have become available at different times, been advertised by different means, or subjected to different legislation.

An additional area where future research is needed is in comparing media coverage of the HPV vaccine to media coverage of other childhood vaccinations, such as Tetanus, Diphtheria, Pertussis (Tdap), Measles, Mumps, Rubella (MMR), and Hepatitis B (HepB).

6.8 Implications

This study makes a contribution to the literature on health risk communication by revisiting some past relevant research in the field as well as by raising and answering new questions through identification and exploration of the context, frames, and claims-makers present in media coverage of HPV and the HPV vaccine. Media coverage of HPV and the HPV vaccine plays a significant role in shaping public understanding and perception of related health, financial, and social risks as explored by this study. Conceptually, this research examined media coverage of HPV and the HPV vaccine

based on what background information was included, what risk information was included, what frames were used, what claims-makers were present.

There are many valuable lessons to be learned from news coverage of the HPV vaccine. Although the news media serve as a major source of information about HPV, the HPV vaccine, and cervical cancer, newsroom pressures to produce newsworthy content, such as deadlines and length limitations, often limit journalists' ability to fully inform their readers with accurate, comprehensive information (Anhang, Stryker, et al., 2004). Although it is not the explicit job of the media to educate people on all the facts and perspectives concerning HPV and HPV vaccination, it is important to recognize the substantial influence of the media on what health information people receive. If only relying on newspaper coverage included in this study, readers could get an incomplete picture of the risks and concerns surrounding HPV and the HPV vaccine. It is essential that reporters and journalists continue to educate themselves on these issues so that their work can better educate others.

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APPENDIX A: STUDY POPULATION

Date	Paper	Headline
10/07/2005	The Washington Times	Vaccine blocks cancer cause; Merck's drug '100 percent' against HPV
10/07/2005	The San Francisco Chronicle	Cervical cancer prevented in 2 year study; Experimental vaccine shows promise in halting early stages of disease
10/28/2005	The New York Times	Doctors support a childhood vaccine for a sex-related virus
11/20/2005	Sentinel & Enterprise	Drug shows promise against cervical cancer
12/19/2005	The Dallas Morning News	Cervical cancer vaccine shows promise in preventing genital warts
06/11/2006	Lowell Sun	Drug guards against STDs, but raises uncomfortable issues
07/16/2006	Vallejo Times Herald	New vaccine can save lives
07/17/2006	Dayton Daily News	Cervical cancer vaccine concerns some; Some area parents say giving shots for the cancer-causing human papilloma virus encourages sexual activity
07/18/2006	The Washington Post	A Shot, Or Not; Sorting Out the Facts on New HPV vaccine
07/20/2006	Indiana Daily Student	New STD vaccine comes to Indiana U.
07/31/2006	The Daily News of Los Angeles	Medicine morality; New vaccine prevents cervical cancer but raises issue of teen sex
08/05/2006	The San Diego Union-Tribune	A shot at ending cervical cancer? The vaccine Gardasil promises help for millions of American females at risk of developing the disease
08/21/2006	Investor's Business Daily	Merck HPV vaccine Gets the FDA nod; Hard Part to Come; The Goal: Raising Awareness; The drug maker faces a tough battle to make its product more accessible
08/22/2006	Daily Nebraskan	U. Nebraska health officials, students optimistic about new HPV vaccine
08/30/2006	The Chronicle	Duke students can receive HPV vaccine
09/11/2006	The Philadelphia Inquirer	Moral opinion at odds with science; Foes of premarital sex redirect focus from HPV
10/17/2006	The California Aggie	HPV vaccine available at UC Davis; cost too high for many students
10/23/2006	The Pantagraph	Cervical cancer has a new enemy
12/18/2006	The Salt Lake Tribune	New vaccine a breakthrough in cancer prevention
12/18/2006	The Salt Lake Tribune	Researchers making progress to create men's HPV vaccine
01/15/2007	The Lebanon Daily News	Vaccine prevents most cervical cancer
01/18/2007	The Philadelphia Inquirer	Area drug firms go to war over vaccine; GlaxoSmithKline says it will test its Cervarix head-to-head against rival Merck's Gardasil
01/20/2007	The Washington Times	Groups back HPV vaccine for girls; But only if parents can opt out
01/28/2007	The Washington Post	Cost issues limit access to HPV vaccine
01/31/2007	The Washington Post	Sponsor to Pull Vaccine Measure; HPV bill has 'timing problem'
02/01/2007	The Denver Post	Senate panel passes HPV bill; If it becomes law, the bill would require all 12 year old girls to have the new vaccine for human

02/03/2007	The Houston Chronicle	papillomavirus, which is passed by sexual contact. But parents could opt out. Perry orders cancer virus vaccine for young girls; Texas is 1st state requiring ages 11 and 12 to guard against sexually transmitted infection
02/03/2007	Austin-American Statesman	Perry requires HPV vaccine for girls
02/06/2007	The Daily Free Press	HPV threat real for students, experts say
02/06/2007	Austin-American Statesman	Perry's HPV vaccine order draws backlash from GOP
02/07/2007	Daily Toreador	Texas Tech area religious community split on HPV mandate
02/07/2007	The Houston Chronicle	Doctors say Perry's inoculation mandate is premature; They hail vaccine for cancer causing virus but cite liability, cost concerns
02/08/2007	USA Today	Vaccines: mandate or choice? That's the question after Texas governor issues order requiring HPV immunization
02/08/2007	The Daily Athenaeum	HPV vaccine in low use, despite health benefits
02/08/2007	The Capital Times	A Shot for All Girls? Doctors question rush to mandate cervical cancer vaccine; vaccine's costs cause concern
02/14/2007	Daily Bruin	HPV vaccine may become mandatory for California girls
02/15/2007	San Antonio Express News	HPV vaccine flap might drown out real issue
02/15/2007	The Houston Chronicle	HPV vaccine cost turning into key issue; state medical association cites potential toll on doctors' finances in opposing order
02/15/2007	Austin-American Statesman	Governor defends HPV decision
02/15/2007	The Augusta Chronicle	HPV vaccine sparks debate; should shot be mandatory for sixth grade girls?
02/19/2007	The State Journal Register	Debate over HPV shot gets personal; opponent of bill calls out sponsor to reveal details of private life
02/21/2007	The Washington Times	Cancer-causing vaccine targets wrong age group; Gardasil will lose effectiveness as women reach greater risk
02/22/2007	Deseret Morning News	Some side effects cited with cancer vaccine
02/23/2007	The Poly Post	California's HPV vaccine bill concerns residents
02/27/2007	The Pitt News	HPV vaccine bill proposed in Pennsylvania
02/28/2007	The Atlanta Journal Constitution	Cancer vaccine for girls gains panel's OK
03/01/2007	Plain Dealer	Ohio bill requires HPV shots for girls; Controversy is spreading over vaccinations against sexually transmitted virus
03/04/2007	The Washington Post	Parents question HPV vaccine; Push to mandate shots rapidly creates backlash
03/07/2007	Harvard Crimson	Harvard debate society comes out against mandatory HPV vaccine
03/10/2007	Chicago Daily Herald	A vaccine to protect girls, but... Health departments worry about funding for it
03/14/2007	The San Francisco Chronicle	Cervical cancer vaccine bill stalls; Measure pulled for revision after both sides voice concern over mandatory shots for girls
03/20/2007	The Sarasota Herald Tribune	Florida considers requiring vaccine; Parents of preteen girls could opt out of shots to stop cancer-causing STD
03/31/2007	Chicago Daily Herald	Senate OKs education, not vaccination
04/05/2007	Sarasota Herald Tribune	Lawmakers back off HPV shot for girls
04/11/2007	The Houston Chronicle	House HPV bill advances to Senate; Measure bars mandatory shots for 6th grade girls, but would revisit the issue in 4 years

04/12/2007	The Diamondback	HPV vaccine may be expanded to men
04/15/2007	The Columbian	Heart-to-heart over HPV vaccine
04/17/2007	Contra Costa Times	Bill would delay required HPV vaccine until 2011
04/25/2007	The Washington Times	HPV vaccine concerns give legislatures pause
04/29/2007	The Evening Sun	Women question, praise vaccine
04/30/2007	The Capital	Is the HPV vaccine right for you?
05/10/2007	USA Today	Study: Cervical cancer vaccine less effective in sexually active; women who have had HPV won't get full benefit
05/10/2007	The Atlanta Journal Constitution	Cervical cancer vaccine nearly 100% effective; scientists report results in New England Journal of Medicine, call findings a 'breakthrough' amid safety concerns
06/20/2007	The Village Voice	Shots in the dark: New worries about HPV vaccine for kids - other than foes' warnings of promiscuity
06/26/2007	Austin-American Statesman	Doctors say HPV vaccine is too costly
08/01/2007	The Seattle Post-Intelligencer	New risks discovered for HPV virus found under men's fingernails, pointing to more ways of it spreading
10/05/2007	The Virginian-Pilot	Panelists discuss HPV vaccine concerns
01/17/2008	The Pitt News	U Pittsburgh experts: HPV vaccine showing good results in first year
02/04/2008	The Dartmouth	Women time HPV shots around D-Plan
03/04/2008	The Daily Vidette	Gardasil vaccine now offered for boys, young men
03/25/2008	The Patriot News	Guarded about Gardasil? Don't be
04/28/2008	Muskegon Chronicle	More West Michigan teens getting HPV vaccine
08/05/2008	The Dartmouth	Dartmouth professor: HPV vaccine safe to use
09/04/2008	Chattanooga Times Free Press	New research raises questions on HPV vaccine

APPENDIX B: CODING INSTRUMENT

A. General Information

1. **Article ID** [ID] _____
2. **Publication** [PUBID] _____
3. **Publication type** [PUBTP] _____ (1) Mainstream newspaper _____ (2) College newspaper
4. **Date** [DATE] ____ / ____ / 200__
5. **Day of week** [DAY]
____ (1) Monday ____ (2) Tuesday ____ (3) Wednesday ____ (4) Thursday
____ (5) Friday ____ (6) Saturday ____ (7) Sunday
6. **Timeline by month** [TIMELINE] _____

1 = January 05	13 = January 06	25 = January 07	37 = January 08
2 = February 05	14 = February 06	26 = February 07	38 = February 08
3 = March 05	15 = March 06	27 = March 07	39 = March 08
4 = April 05	16 = April 06	28 = April 07	40 = April 08
5 = May 05	17 = May 06	29 = May 07	41 = May 08
6 = June 05	18 = June 06	30 = June 07	42 = June 08
7 = July 05	19 = July 06	31 = July 07	43 = July 08
8 = August 05	20 = August 06	32 = August 07	44 = August 08
9 = September 05	21 = September 06	33 = September 07	45 = September 08
10 = October 05	22 = October 06	34 = October 07	46 = October 08
11 = November 05	23 = November 06	35 = November 07	47 = November 08
12 = December 05	24 = December 06	36 = December 07	48 = December 08
7. **Title of article** [TITLE]

8. **Main subject/theme of article** [SUBJ]

9. **Name of reporter** [REPID] _____
____ (999) N/A
10. **Type of reporter** [REPTYP]
____ (1) General news
____ (2) Science/health
____ (3) Staff
____ (4) Other _____
____ (5) Not specified
____ (999) N/A

11. Length [LENGTH]

- _____ (1) Short (fewer than 400 words)
- _____ (2) Medium (401-800 words)
- _____ (3) Long (801-1,200 words)
- _____ (4) Very long (1,201+ words)

12. Number of words [WDCOUNT] _____

13. Number of paragraphs [PGCOUNT] _____

14. Location in newspaper [LOCATION]

- _____ (1) Front page of Section A
- _____ (2) Elsewhere in Section A
- _____ (3) Front page of another section _____
- _____ (4) Other pages in a section other than A _____
- _____ (5) Not specified

B. Background information

1. What background information about HPV is included in the article? List all that apply. When entering data, key each item as dichotomous (1= Yes/0 = No). [HPVBKGDx]

1a. HPV background score [HPVBKGD] _____

2. What background information about the HPV vaccine is included in the article? List all that apply. When entering data, key each item as dichotomous (1= Yes/0 = No). [VACBKGDx]

2a. Vaccine background score [VACBKGD] _____

3. What depth did you find the story’s discussion of HPV? Categorize its depth by using the following definitions. [HPVDPTH]

- _____ (1) “In depth” (5+ paragraphs of background, explanation, other descriptive info)
- _____ (2) “Some depth” (3-4 paragraphs of background, explanation, other descriptive info)
- _____ (3) “Superficial” (1-2 paragraphs of background, explanatory other descriptive info)

4. What depth did you find the story’s discussion of the HPV vaccine? Categorize its depth by using the following definitions. [VACDPTH]

- _____ (1) “In depth” (5+ paragraphs of background, explanation, other descriptive info)
- _____ (2) “Some depth” (3-4 paragraphs of background, explanation, other descriptive info)
- _____ (3) “Superficial” (1-2 paragraphs of background, explanatory other descriptive info)

5. How many positive, negative, mixed, or neutral paragraphs about HPV? [PHPVVALx]

- _____ (a) number of positive paragraphs _____
- _____ (b) number of negative paragraphs _____
- _____ (c) number of mixed paragraphs _____
- _____ (d) number of neutral paragraphs _____

6. How many positive, negative, mixed, or neutral paragraphs about the HPV vaccine? [PVACVALx]

- _____ (a) number of positive paragraphs _____
- _____ (b) number of negative paragraphs _____
- _____ (c) number of mixed paragraphs _____
- _____ (d) number of neutral paragraphs _____

7. **Based on the number of paragraphs, what was the valence of the article's discussion of HPV?** [HPVVALP]
 _____ (1) Positive
 _____ (2) Negative
 _____ (3) Mixed
 _____ (4) Neutral
8. **Based on the number of paragraphs, what was the valence of the article's discussion of the HPV vaccine?** [VACVALP]
 _____ (1) Positive
 _____ (2) Negative
 _____ (3) Mixed
 _____ (4) Neutral
9. **Were the headline and lead predominantly positive or negative about HPV?** [HPVVALL]
 _____ (1) Positive
 _____ (2) Negative
 _____ (3) Mixed
 _____ (4) Neutral
10. **Were the headline and lead predominantly positive or negative about the HPV vaccine?** [VACVALL]
 _____ (1) Positive
 _____ (2) Negative
 _____ (3) Mixed
 _____ (4) Neutral
11. **Based on the number of paragraphs and the headline, overall, what was the valence of the article's discussion of HPV?** [HPVVALO]
 _____ (1) Positive
 _____ (2) Negative
 _____ (3) Mixed
 _____ (4) Neutral
12. **Based on the number of paragraphs and the headline, overall, what was the valence of the article's discussion of the HPV vaccine?** [VACVALO]
 _____ (1) Positive
 _____ (2) Negative
 _____ (3) Mixed
 _____ (4) Neutral

C. Risk information

1. **What types of risks related to HPV were discussed?** (Check all that apply.) (1=Yes/0=No) [RSKHPV]
 _____ (1) Health
 _____ (2) Financial
 _____ (3) Social
 _____ (4) Other _____
 _____ (5) Not specified
 _____ (999) None
2. **What types of risks related to HPV vaccine were discussed?** (Check all that apply.) (1=Yes/0=No) [RSKVAC]
 _____ (1) Health
 _____ (2) Financial
 _____ (3) Social
 _____ (4) Other _____
 _____ (5) Not specified
 _____ (999) None

3. Which risks received the most coverage? [RSKCOV]

- (1) HPV
- (2) HPV vaccine
- (3) Received equal coverage
- (4) No discussion of risks of either HPV or HPV vaccine

4. What types of health risks related to HPV were discussed in the article? List all that apply. When entering data, key each item as dichotomous (1= Yes/0 = No). [HPVHLTHx]

4a. HPV health risk score [HLVHLTH] _____

5. What types of health risks related to the HPV vaccine were discussed in the article? List all that apply. When entering data, key each item as dichotomous (1= Yes/0 = No). [VACHLTHx]

5a. Vaccine health risk score [VACHLTH] _____

6. Which health risks received the most coverage? [RSKCOVH]

- (1) HPV
- (2) HPV vaccine
- (3) Received equal coverage
- (4) No discussion of health risks of either HPV or HPV vaccine

7. What types of financial risks related to HPV were discussed in the article? List all that apply. When entering data, key each item as dichotomous (1= Yes/0 = No). [HPVFINx]

7a. HPV financial risk score [HPVFIN] _____

8. What types of financial risks related to the HPV vaccine were discussed in the article? (List all that apply. When entering data, key each item as dichotomous (1= Yes/0 = No). [VACFINx]

8a. Vaccine financial risk score [VACFIN] _____

9. Which financial risks received the most coverage? [RSKCOVF]

- (1) HPV
- (2) HPV vaccine
- (3) Received equal coverage
- (4) No discussion of financial risks of either HPV or HPV vaccine

10. What types of social risks related to HPV were discussed in the article? List all that apply. When entering data, key each item as dichotomous (1= Yes/0 = No). [HPVSOCx]

10a. HPV social risk score [HPVSOC] _____

11. What types of social risks related to the HPV vaccine were discussed in the article? List all that apply. When entering data, key each item as dichotomous (1= Yes/0 = No). [VACSOCx]

11a. Vaccine social risk score [VACSOC] _____

12. Which social risks received the most coverage? [RSKCOVS]

- _____ (1) HPV
_____ (2) HPV vaccine
_____ (3) Received equal coverage
_____ (4) No discussion of social risks of either HPV or HPV vaccine

D. Framing information

1. Which of the four functions of framing is dominant in the headline and lead paragraphs? Select only one. [FRFUNC]

- _____ (1) Define problems
_____ (2) Diagnose causes
_____ (3) Make moral judgments
_____ (4) Suggest remedies
_____ (0) None

2. Which consequence frame is dominant in the headline and lead paragraphs? Select only one. [FRCONS]

- _____ (1) Gain-framed
_____ (2) Loss-framed
_____ (0) None

3. Which behavior frame is dominant in the headline and lead paragraphs? Select only one. [FRBEH]

- _____ (1) Prevention
_____ (2) Detection
_____ (0) None

4. Which context frame is dominant in the headline and lead paragraphs? Select only one. [FRCTXT]

- _____ (1) Episodic
_____ (2) Thematic
_____ (0) None

5. Which responsibility frame is dominant in the headline and lead paragraphs? Select only one. [FRRESP]

- _____ (1) Institutional
_____ (2) Individual
_____ (0) None

6. Which value frame is dominant in the headline and lead paragraph? Select only one. [FRVAL]

- _____ (1) Ethical
_____ (2) Material
_____ (0) None

E. Claims-making information

1. Total number of claims-makers appearing in article [TOTCM] _____

2a. Total number of claims-makers discussing only HPV [HPVCM] _____

2b. Total number of claims-makers discussing only HPV vaccine [VACCM] _____

2c. Total number of claims-makers discussing both HPV and HPV vaccine [BTHCM] _____

2d. Total number of latent claims-makers [LATCM] _____

3. How many claims-makers that discussed HPV fit into each of the following categories? [HPVCMCAT]

Source category (#)	# (a)	+/- (b)	Name and Affiliation (c)
Government agency/official (1)	_____	_____	_____
Congressperson (2)	_____	_____	_____
Presidential administration (3)	_____	_____	_____
University official (4)	_____	_____	_____
Foreign official (5)	_____	_____	_____
Non-governmental org/rep. (6)	_____	_____	_____
Pharma company/representative (7)	_____	_____	_____
Insurance company/representative (8)	_____	_____	_____
Medical org/professional (9)	_____	_____	_____
Cancer center or research institution/ Representative (10)	_____	_____	_____
Private individual (11)	_____	_____	_____
Celebrity (12)	_____	_____	_____
Study or report (13)	_____	_____	_____
Other (14)	_____	_____	_____
None (999)	_____	_____	_____

4. How many claims-makers that discussed the HPV vaccine fit into each of the following categories? [VACCMCAT]

Source category (#)	# (a)	+/- (b)	Name and Affiliation (c)
Government agency/official (1)	_____	_____	_____
Congressperson (2)	_____	_____	_____
Presidential administration (3)	_____	_____	_____
University official (4)	_____	_____	_____
Foreign official (5)	_____	_____	_____
Non-governmental org/rep. (6)	_____	_____	_____
Pharma company/representative (7)	_____	_____	_____
Insurance company/representative (8)	_____	_____	_____
Medical org/professional (9)	_____	_____	_____
Cancer center or research institution/ Representative (10)	_____	_____	_____
Private individual (11)	_____	_____	_____
Celebrity (12)	_____	_____	_____
Study or report (13)	_____	_____	_____
Other (14)	_____	_____	_____
None (999)	_____	_____	_____

5. What people or organizations were mentioned but were not acting as claims-makers? [LATCMCAT]

CLEARLY WRITE COMPLETE IDENTIFICATION INCLUDING NAME, ORGANIZATION AND TITLE OF PEOPLE OR FULL NAME OF ORGANIZATION FOR EACH CHECKED CATEGORY ON THE LINES BELOW.

APPENDIX C: RELIABILITY COEFFICIENTS

Variable Name	Percent Agreement	Scott's Pi	N Agreements	N Disagreements	N Cases
Timeline by Month (TIMELINE)	100	1	15	0	15
Publication ID (PUBID)	100	1	15	0	15
Reporter ID (REPID)	100	1	15	0	15
Main theme/subject (SUBJ)	86.7	0.846	13	2	15
Generating news event (EVENT)	86.7	0.817	13	2	15
Number of words (WDCOUNT)	100	1	15	0	15
Number of paragraphs (PGCOUNT)	86.7	0.858	13	2	15
HPV background score (HPVBKGD)	86.7	0.852	13	2	15
Vaccine background score (VACBKGD)	86.7	0.842	13	2	15
Discussion of health risk – HPV (HPVRSKH)	100	undefined*	15	0	15
Discussion of health risk – vaccine (VACRSKH)	100	1	15	0	15
Discussion of financial risk – HPV (HPVRSKF)	100	1	15	0	15
Discussion of financial risk – vaccine (VACRSKF)	100	1	15	0	15
Discussion of social risk – HPV (HPVRSKS)	100	1	15	0	15
Discussion of social risk – vaccine (VACRSKS)	100	1	15	0	15
HPV health risk score (HPVHLTH)	86.7	0.781	13	2	15
Vaccine health risk score (VACHLTH)	93.3	0.898	14	1	15
HPV financial risk score (HPVFIN)	100	1	15	0	15

Vaccine financial risk score (VACFIN)	86.7	0.826	13	2	15
HPV social risk score (HPVSOC)	86.7	0.798	13	2	15
Vaccine social risk score (VACSOC)	80.0	0.735	12	3	15
Dominant function of framing (FRFUNC)	100	1	15	0	15
Dominant consequence frame (FRCONS)	93.3	0.883	14	1	15
Dominant behavior frame (FRBEH)	100	1	15	0	15
Dominant context frame (FRMCTXT)	93.3	0.856	14	1	15
Dominant responsibility frame (FRRESP)	93.3	0.883	14	1	15
Dominant value frame (FRVAL)	93.3	0.825	14	1	15
Total HPV claims-makers (HPVCM)	93.3	0.915	14	1	15
Total vaccine claims-makers (VACCM)	93.3	0.922	14	1	15
Total latent claims-makers (LATCM)	93.3	0.921	14	1	15

* Scott's pi is undefined for this variable due to invariant values, which occur when both instances of data collection return 100% agreement on a variable and only one variable value for each unit of analysis.