

Media Influence on Human Papillomavirus Vaccine Decision-Making Behavior

BY

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THESIS

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LIST OF ABBREVIATIONS

AAP	American Academy of Pediatrics
ACIP	Advisory Committee on Immunization Practice
AIS	Adenocarcinoma In Situ
CDC	Centers for Disease Control and Prevention
CIN	Cervical Intraepithelial Neoplasia
FDA	Food and Drug Administration
GSK	GlaxoSmithKline
HBM	Health Belief Model
HHS	Department of Health and Human Services
HPV	Human Papillomavirus
IBM	Integrated Behavioral Model
MSM	Men who have Sex with Men
NCI	National Cancer Institute
NIS	National Immunization Survey
PI	Principle Investigator
SEER	Surveillance Epidemiology End Results
SES	Socioeconomic Status
STI	Sexually Transmitted Infection
TPB	Theory of Planned Behavior
TV	Television
UIC	University of Illinois, Chicago
VPD	Vaccine Preventable Disease

SUMMARY

With more than 14 million new infections each year, Human Papillomavirus (HPV) is the most common sexually transmitted infection (STI) in the United States (Satterwhite et al., 2013). Although most cases clear on their own, some strains of HPV can develop into a more serious infection. While there is no cure for HPV, two vaccines have been approved to prevent the strains of HPV that cause more than 70% of cervical cancer and 90% of genital warts. Both males and females ages 9–26 are eligible for the vaccine. Shortly after becoming available, both vaccines were marketed to the public through television, magazine, and Internet ads and framed as cervical cancer prevention, largely avoiding discussion of the virus itself in order to evade STI-related stigma and improve uptake of the vaccine. The purpose of this research is to examine the influence of the media on parental and adolescent decisions to get the HPV vaccine.

Many different, often competing factors play a role in an individual's decision to vaccinate oneself or one's child against a disease. In the United States most recommended routine immunizations are given to children. The HPV vaccine, however, is a bit different as it is targeted at an age range that extends across the spectrum of adolescence and into young adulthood. Therefore, unlike most childhood vaccines where the parent is the primary decision-maker and legally responsible for granting consent, most of the HPV vaccine eligible population (those ages 18–26) will make their own decisions about vaccine uptake. In addition, adolescents under 18 years old, especially those ages 15–17 also likely have input into vaccine decision-making along with their parents. When considering vaccine uptake, decision-makers, both parents of

SUMMARY (continued)

eligibles and vaccine-eligibles themselves, can be influenced by a number of factors: policy recommendations at the federal, state, or local level, healthcare providers, underlying personal beliefs, and various external factors. Of the external factors, media may be the most important among the HPV vaccine-eligible population because of the amount they consume on a daily basis.

Media coverage includes both media exposure and message framing. Media exposure is simply whether or not someone has viewed content and how much. Message framing refers to how content is presented in the media. While message framing has a distal effect on vaccine decision-making, it may serve to influence underlying adolescent or parental beliefs that have been shown to predict vaccine decision-making: (1) perceived susceptibility, (2) perceived barriers, (3) perceived severity, (4) perceived norms, and (5) self-efficacy. These beliefs have been shown to have a proximal effect on HPV vaccine decision-making (Bynum et al., 2011; Gerend and Sheperd, 2011; McRee et al., 2010); therefore, if media can influence one's underlying beliefs, then in turn, it may have an effect on behavioral intention, the behavior itself, or both. This study examines the relationship between message framing and these underlying beliefs.

Shortly after approval by the Food and Drug Administration (FDA), both vaccine makers, Merck and GlaxoSmithKline (GSK), launched advertising campaigns to market their products. In the last few years, advertising has become a considerable source of information about the HPV vaccine among vaccine-eligibles and

SUMMARY (continued)

their parents; therefore, exploring the content of the ads, as well as what information the audience derives from them, is decidedly important. The purpose of this research was to explore the relationship between message framing in the media and HPV vaccine decision-making behavior. This study examined how pharmaceutical ads influence parental and adolescent beliefs about HPV and the HPV vaccine through two research questions: (1) how have the direct-to-consumer ads framed the HPV vaccine? and (2) how does this framing influence vaccine decision-makers? These questions were answered through discourse analysis and focus groups. Discourse analysis was used to understand how the ads were framed and how this framing reflects and shapes social norms about HPV and the HPV vaccine. Focus groups were used to capture vaccine decision-maker reactions to eight direct-to-consumer HPV vaccine ads. Pre- and post-surveys were also used within the focus-group sessions to measure knowledge change as a result of watching the ads. Research findings are presented in a series of three manuscripts: the first paper focuses on the overarching themes generated through discourse analysis; the second examines vaccine decision-makers' knowledge change before and after watching the vaccine ads; and the third maps underlying belief constructs to the themes from the discourse analysis and focus groups.

I. INTRODUCTION

Several prominent health behavior theories suggest that media coverage is one of many external factors that has a distal influence on behavior. Colloquially, media coverage refers to whether or not an issue is featured on television, radio, film, or the Internet; or in newspapers, magazines, music, or other forms of communication. However, for the purposes of examining media's role in influencing health behavior, *how* the issue is framed, not *if* it is covered, is most important. For example, simply discussing the link between a heart attack and smoking in the media is not enough to influence behavior; media coverage would have to make the issue salient to a certain audience and recommend a solution. Portraying heart attacks as common among male smokers of a certain age may prime viewers who fit that description to think they are at higher risk and potentially undertake the proposed solution.

Personal underlying beliefs mediate the relationship between message framing and health behavior. While this may seem simple, the nature of the health behavior often complicates it. For example, while most people can agree that preventing serious illness is important, there is significant debate about how to do it. Vaccines have proven controversial since they were first introduced in the 1800s (Sturm et al., 2005). While they have a long track record of preventing and often eliminating disease from the population, vaccines are still met with skepticism and doubt in the United States. Therefore, if the health behavior in question is vaccine uptake, message framing may need to be carefully considered. When the media coverage focuses on a vaccine that

protects against a stigmatized condition like an STI, the issue gets even more complicated. Such is the case with the HPV vaccine.

Currently, HPV is the most common STI in the United States. Although most cases clear on their own persistent HPV can develop into a more serious infection. The virus is most commonly associated with cervical cancer though there is evidence that it can cause cancer at multiple sites or present as genital warts. There is no cure for HPV. However, two vaccines, Merck's Gardasil and GlaxoSmithKline's Cervarix, have been approved to help prevent several strains of the infection. After licensure, both companies developed advertising campaigns to market their products. These ads can be seen on television (TV), in magazines, and on the Internet. Some of the TV ads in particular have become controversial because of the way they frame the vaccine as preventing cervical cancer and largely avoid discussing the virus itself, or how it spreads. This approach seems to have been used to eschew the inherent stigma associated with STIs and improve uptake of the vaccine. The purpose of this research was to examine the influence of the media on parental and adolescent beliefs about getting the HPV vaccine. More specifically, this research was guided by the following overarching research questions and sub-questions:

- 1) How have the direct-to-consumer ads framed the HPV vaccine?
 - What information is highlighted and made salient?
 - What information is omitted and downplayed?
 - To what extent do the ads target certain underlying beliefs about getting the HPV vaccine?
- 2) How does this framing influence vaccine decision-makers?

- How does decision-maker knowledge change based on message framing?
- How does the message framing resonate with vaccine decision-makers?

These research questions were examined through two methods: discourse analysis and focus groups. This study helps to explain media's distal influence on HPV vaccine uptake by exploring whether the message framing influences some underlying beliefs more than others and if its influence varies depending on the decision-maker. Understanding media's influence is important for several reasons. First, it helps improve our understanding of how best to frame other STI vaccines in the pipeline to ensure maximum uptake. Second, it sheds light on what needs to be undone to improve male vaccine uptake. Third, it allows us to understand whether the HPV vaccine should be framed differently to improve all future uptake.

II. BACKGROUND AND SIGNIFICANCE

A. The Human Papillomavirus

1. Epidemiology

The human papillomavirus is a family of more than 150 small DNA viruses that infect epithelial cells leaving its own genetic material in the host cell's chromosomes. Of these, more than 40 strains are sexually transmissible and easily spread through direct skin-to-skin contact during vaginal, anal, or oral sex. In fact, HPV is the most common STI in the United States: an estimated 79.1 million Americans are currently infected with HPV, with another 14.1 million new cases each year. Of these new infections, almost half occurred among those aged 15–24 years old (Satterwhite et al., 2013). Because HPV is not a notifiable disease, prevalence and incidence data are primarily from clinic-based populations. A study conducted by Dunne et al. (2007) of pre-vaccine HPV rates found that 26.8% of females ages 14–59 (or 24.9 million people according to 2000 US Census numbers) tested positive for HPV DNA. Infection was highest among those ages 20–24 (44.8%) with an overall prevalence of 33.8% in 14–24 year olds. These data translate to 7.5 million females, higher than previous estimates of 4.6 million in this age group. This study also revealed that HPV prevalence increased with each year of age from 14–24. The main risk factors associated with HPV infection appear to be young age at sexual debut and high number of sexual partners (Kim et al., 2011; Rotelli-Martin et al., 2011; National Cancer Institute [NCI], 2012).

2. **Sequelae**

Although HPV is asymptomatic and typically clears on its own within two years of exposure, persistent infections can have more serious sequelae. Low-risk types of HPV can develop into genital warts while high-risk types can lead to cancer. The Centers for Disease Control and Prevention (CDC) (2012) estimates that 24,900 cases of HPV-associated cancers occur each year: 70% in women and 30% in men. The virus causes nearly all cases of cervical cancer and almost all anal cancer (90%). It has also been linked to 65% of vaginal, 50% of vulvar, and 35% of penile cancer (De Vuyst et al., 2009; Parkin and Bray, 2006). Recent studies also suggest that about 60% of oropharyngeal cancers are caused by HPV (Kreimer et al., 2005). Of these HPV-related cancers, cervical in women and oropharyngeal in men are the most common types with approximately 12,000 and 5,700 new cases diagnosed each year, respectively (CDC, 2012; NCI, 2012). At present, cervical cancer has the highest disease burden of the HPV-related cancers; however, estimates suggest that annual incidence of head and neck cancer will surpass cervical cancer rates by 2020 (Chaturvedi et al., 2011).

Of the 15 high-risk types of HPV, two strains— HPV 16 and HPV 18—are the most oncogenic, causing 15,000 cases of cancer in women and 7,000 cases in men each year in the United States. These two strains cause more than 70% of all cases of cervical cancer in the United States and close to half of all vaginal, vulvar, and penile cancers. HPV 16 is even more significant in anal cancer, causing nearly 85% of all cases. Beyond the anogenital cancers, HPV 16 alone is responsible for more than half of the cancers diagnosed in the oropharynx (NCI, 2012; Chow et al., 2010; Watson et

al., 2008). Of the low-risk strains, HPV 6 and HPV 11 are responsible for roughly 90% of genital warts (CDC, 2012).

Given HPV causes nearly all cervical cancer, it is important to briefly summarize patterns of incidence and mortality in the United States. As of 2007, 247,180 women were living with cervical cancer or had had a cervical cancer diagnosis but subsequently overcome the disease (SEER, 2010). Data from 2010, suggest that 12,200 women in the United States were diagnosed with cervical cancer (SEER, 2010). In the same year, 4,210 women died from the disease. Data collected by SEER from 2003–2007 suggest that Hispanic women had the highest incidence rate of cervical cancer (12 per 100,000), followed by Black women (10.1 per 100,000). These rates are higher than other groups and significantly higher than the rate for all women in the United States (8.1 per 100,000). Mortality rates for women with cervical cancer also vary by race/ethnicity but do not follow the pattern of incidence. Black women have the highest mortality rate at 4.4 per 100,000, almost double the rate of all women (2.4 per 100,000). This rate is also twice that of White women and Asian/Pacific Islander women (2.2 and 2.1 respectively). With mortality rates of 3.4 per 100,000 for American Indian/Alaska Natives and 3.1 per 100,000 for Hispanics, both groups have higher mortality rates than all women.

3. **Screening**

Screening for HPV is not typically conducted because the virus is highly prevalent, often clears on its own, and cannot be treated. Of the HPV-related diseases that can develop from a persistent infection, cervical cancer is the only one that is routinely screened for by clinicians in the United States. Pap tests help to detect

precancerous cells and cervical abnormalities that have developed as a result of a persistent HPV infection. The virus can be detected through a DNA test of the same type of cervical sample but can only tell a clinician whether or not HPV is present and is not a screening for cervical cancer itself. Because of the ubiquity of HPV, the HPV DNA test is not recommended for women under 30 and is typically used in conjunction with the Pap test in women over 30 years old. There is no routine screening recommended for other HPV-related cancers or genital warts. This means that while both men and women can get HPV, there is no way to screen men for the infection. Although there is no treatment for HPV, there are two vaccines currently available that prevent the most prevalent strains of the infection.

4. **Prevention: the vaccines**

Currently there are two highly efficacious vaccines available for prevention of HPV. Because HPV is an STI, ideal administration for both vaccines is before sexual debut. The first approved vaccine was Merck's Gardasil, a quadrivalent vaccine (HPV4) that protects against two high-risk strains, 16 and 18, and two low-risk strains, 6 and 11. As previously noted these strains account for most cases of HPV-related cancer and nearly all genital warts. The HPV4 vaccine does not contain viral DNA and is not infectious. Clinical trials reveal that the vaccine is highly immunogenic, safe, and effective in both females and males ages 9 through 26. Data suggest that antibody responses are highest among those 9 to 15 years old. While studies examining the duration of the vaccine are still ongoing, it is thought to last for at least 5 years (Brady et

al., 2012; CDC, 2007). The vaccine is administered by intramuscular injection as a three-dose series given within a 6 month period at 0, 2, and 6 months.

In 2006, Gardasil was licensed for use in females ages 9–26 for the prevention of cervical cancer, genital warts, and certain precancerous and dysplastic lesions including cervical adenocarcinoma in situ (AIS), intraepithelial neoplasia grade 2 and 3 in the cervix (CIN), vulva (VIN), and vagina (VaIN), and CIN grade 1 (FDA, 2006). In September 2008, the license was extended for prevention of vaginal and vulvar cancer (FDA, 2009). The following year, in October 2009, Gardasil was approved for use in boys and men ages 9 through 26 for the prevention of genital warts. Most recently it was approved for prevention of anal cancer in December 2010 (FDA, 2010). It is not currently licensed to prevent non-anogenital cancers such as those that affect the head and neck. Gardasil is highly efficacious and protects against 98% of CIN grade 2 or 3 and AIS and 100% of vaginal and vulvar cancer. It is also 99% effective against genital warts caused by HPV 6 and HPV 11 (CDC, 2007).

In October 2009, a second HPV vaccine was approved by the FDA. GlaxoSmithKline's (GSK) Cervarix is a bivalent vaccine (HPV2) that protects against high-risk strains HPV 16 and HPV 18. It does not include the two low-risk strains 6 and 11 that cause 90% of genital warts. Like the quadrivalent vaccine, Cervarix is also highly immunogenic, safe, and well tolerated in females ages 9 through 26 with antibody responses highest in girls 9–15 years old. Initially, this vaccine was only approved for females ages 10–25 for the prevention of cervical cancer, CIN grade 1 and 2, and AIS (FDA, 2009). In July 2011, Cervarix was approved for use in females as young as 9 years old (FDA Approval letter, 2011). Efficacy of Cervarix against CIN grade 2 and 3

and AIS was 93% in females ages 15 through 25 years. Protection against HPV strains not included in the vaccine (but closely related to HPV 16 and HPV 18) was also elevated and found to be 37% (CDC, 2010).

Both vaccines have been recommended by the CDC's Advisory Committee on Immunization Practice (ACIP) for routine use in specific populations. Figure 1 shows the evolution of ACIP recommendations in the United States. Gardasil is recommended for both females and males ages 11 to 12, in order to vaccinate before sexual debut, as part of the adolescent immunization platform, but can be started as early as 9 years old per physician discretion. In addition, ACIP recommends that females 13 to 26 and males ages 13 to 21 who have not been immunized previously, or who have not received all 3 doses, complete the vaccine series. Men ages 22 to 26 may receive the vaccine but ACIP did not find a recommendation for this group to be cost effective (CDC, 2011). Routine use of Cervarix in girls ages 11–12 and as a catch-up vaccination for females ages 13–26 is also recommended by ACIP (CDC, 2010). Receiving an ACIP recommendation is important in terms of vaccine financing. The vaccines are expensive compared to other vaccines (\$130/dose or \$390 for the complete series) and are available through private physicians as well as public clinics.

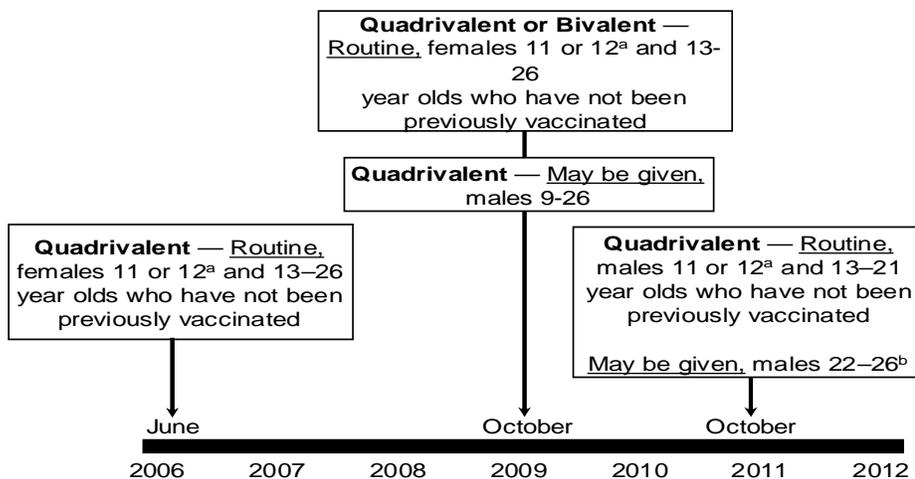


Figure 1. Evolution of Advisory Committee on Immunization Practice (ACIP) recommendations.

Quadrivalent (HPV 6, 11, 16, 18) includes Gardasil.

Bivalent (HPV 16 and 18) includes Cervarix.

^a Can be given starting at 9 years old per physician discretion.

^b For MSM and immunocompromised males, recommended through age 26.

Adapted from Cullen (2012).

Vaccines are considered one of the single greatest achievements in public health. They have the potential to protect both vaccinated and unvaccinated persons alike. However, in order for a vaccine to protect an entire population, enough people within that population must have immunity to the vaccine preventable disease (VPD). When a critical proportion of a population is vaccinated against a certain infectious disease it lowers the risk of infection for the population as whole, including those who have not been vaccinated. This is known as herd immunity. For the HPV vaccine, the rate of vaccination needs to be about 80%–85% for herd immunity to work. Therefore, increasing the uptake of any vaccine is important in protecting populations against VPDs. While Gardasil and Cervarix are a huge step forward in HPV prevention (and by extension site-specific cancer and genital wart prevention), the uptake for the HPV vaccine has not “demonstrated the same strong and steady increases over time like the increases . . . seen following the introduction of other vaccines” (CDC, 2010). In 2011, for the third year in a row, the increase in HPV vaccine coverage is half of that shown for other vaccines among 13–17 year olds, including tetanus-diphtheria-pertussis and meningococcal conjugate vaccine (CDC, 2012). Interestingly, missed-opportunity data from the same survey show that if the HPV vaccine was given every time the dTap and MCV4 shots were given that coverage would be about 80%, right around the herd immunity level.

According to the 2011 National Immunization Survey (NIS) data, rates were lower among younger girls, indicating that females are not getting vaccinated at the recommended age of 11 or 12 years old. Among 11–12 year olds, only 15% had received at least one dose in 2010, 10% had received two doses, and a mere 6% had

received all three doses. Data from 2011 show that 53% of 13–17-year-old females had received one dose and 35% had completed the series and gotten all three doses (CDC, 2012). These data also show some interesting demographic trends in regards to series completion. While a higher percentage of Hispanic and Black females received the first dose of the vaccine, far fewer received all three doses. As the efficacy of the vaccine is highest after all three doses, getting the full series is important, especially among groups who already have the highest incidence and mortality rates of cervical cancer. Whites were more likely than Hispanics or Blacks to receive all 3 doses of the vaccine.

Data from 2011 show that for females, 43% of 19–21 year olds and 21.5% of 22–26 years old had received at least 1 dose of the HPV vaccine. Rates of vaccination among 19–26 year old females increased steadily from 2009–2011 but are still low. The largest increase was reported among women aged 19–21 years (14.9%) which may reflect healthcare-provider influence and social norms about HPV vaccination (CDC, 2013).

Male uptake is considerably lower than female uptake, with only 8% of eligibles having received one dose. Only 1% of males had received all 3 doses. While these rates are still very low, it is an increase from 2010 when rates of uptake of 1 dose hovered around 1% (CDC, 2012). Males 19–26 also had low rates of uptake in 2011: only 2.8% of males 19–21 and 1.7% of males 22–26 had received at least 1 dose of the HPV vaccine (CDC, 2013). Male rates are expected to be lower than female rates because this group was more recently approved to receive the vaccine. Understanding HPV vaccine decision-making may help to improve interventions and approaches to increasing vaccine uptake.

B. A Conceptual Model of Vaccine Decision-Making

Improving HPV vaccine uptake rates requires an understanding of vaccine decision-making. Many different, often competing factors play a role in an individual's decision to vaccinate against a disease. While this study focuses on the influence of media on adolescent and parental decisions to get the HPV vaccine, it is important to examine the broader landscape in which the decision is made. In the United States most recommended routine immunizations are given to infants and young children. The HPV vaccine, however, is a bit different as it is recommended for an age range that extends across the spectrum of adolescence and into young adulthood. Therefore, unlike most childhood vaccines where the parent is the sole decision-maker, most of the HPV vaccine-eligible population (those ages 18–26) will make their own decisions about vaccine uptake. This is important because conceptualizing the inputs into vaccine decision-making behavior must account for both parental and personal underlying beliefs. When considering vaccine uptake, decision-makers, both parents of eligibles and vaccine-eligibles themselves, can be influenced by a number of factors: policy recommendations at the federal, state, or local level; healthcare providers; underlying beliefs; and a number of external factors. Adapted from Sturm, et al. (2005), Figure 2 frames this discussion by illustrating how these various components relate to each other and ultimately influence HPV vaccine decision-making.

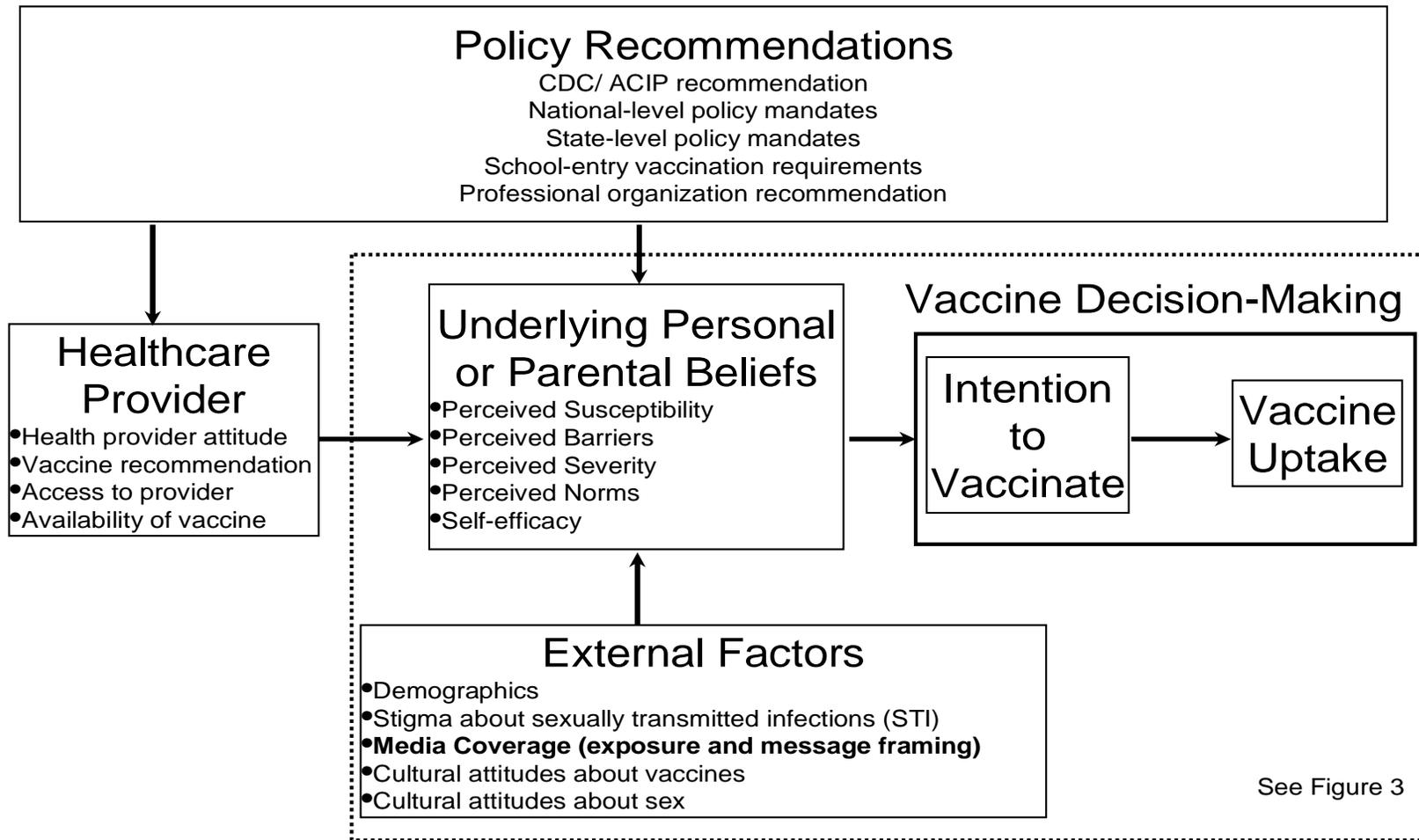


Figure 2: Conceptual Model of HPV Vaccine Decision-Making.
Adapted from Sturm et al., 2005.

1. **Policy recommendations**

Policy recommendations work in a truly top-down fashion, as illustrated by their placement in Figure 2. They influence both healthcare providers and decision-makers' underlying beliefs. The policy recommendation process starts immediately after FDA approval when it is reviewed by the ACIP. Appointed by the US Secretary of the Department of Health and Human Services (HHS), ACIP is comprised of 14 experts on vaccinology, immunology, pediatrics, internal medicine, nursing, family practice medicine, virology, public health, infectious disease, and preventive medicine, as well as one consumer representative. Eight ex-officio members and 30 non-voting members also attend the thrice-annual meeting of the committee at CDC. Members of ACIP cannot have links to vaccine makers while serving on the committee. Charged with providing advice on vaccine practice to the CDC, ACIP develops written recommendations for routine administration of vaccines to children and adults in the civilian population. Each recommendation includes: age of vaccine receipt, number of doses, time between doses, precautions, and contraindications. While the recommendations come from ACIP, CDC ultimately sets the schedule of vaccination and has the final say; ACIP votes and passes "provisional" recommendations but they do not become official until they are approved by the director of the CDC and published in the Morbidity and Mortality Weekly Report (MMWR). The CDC/ACIP recommendation then trickles down to other parts of government and influential professional organizations.

An ACIP recommendation is important in terms of vaccine financing and access. All vaccines that have received an ACIP recommendation for routine use are covered

under the federal Vaccines for Children (VCF) program which is funded by the Centers for Medicare and Medicaid Services (CMS) and administered through the CDC. The program provides free vaccines to anyone under the age of 18 who is Medicaid eligible, uninsured, underinsured, or an American Indian/Native Alaskan (CDC, 2011). Vaccines are bought by the CDC at discounted rates and supplied to state and local health departments who provide them to private doctors and public clinics registered as VCF providers. Although not currently mandated to do so, health insurance plans are more likely to cover vaccines that are recommended by ACIP as well (Shen et al., 2009). The Affordable Care Act requires new group and individual plans to cover all ACIP recommended vaccines one year after the recommendation without cost-sharing requirements (HHS, 2012).

Vaccines that receive a recommendation by ACIP may also be more likely to have state-level legislation behind it. For example, after Gardasil received ACIP recommendation in 2006, 41 states and the District of Columbia introduced legislation to require the vaccine, fund its use, or educate the public about it. While only half were actually enacted, greater attention was focused on the vaccine after its ACIP recommendation. In 2007, the governor of Texas tried and failed to enact an executive order to require all sixth-grade girls entering school to receive the vaccine. The increased attention by state legislatures could affect an individual's underlying beliefs about the importance of the vaccine (National Conference of State Legislators [NCSL], 2012). Beyond raising awareness of the vaccine, two legislatures actually passed school vaccine mandates. Virginia and the District of Columbia both have laws requiring the HPV vaccine for school entry.

Finally, national professional organizations like the American Academy of Pediatrics (AAP), American Academy of Family Physicians, American College of Obstetrics and Gynecology, and American Medical Association work with ACIP as non-voting liaison representatives who bring additional expertise to committee meetings. These organizations typically endorse ACIP recommendations once they are published. This is important on two levels. Patients and healthcare consumers often do their own research on vaccines and other health issues and look to these organizations to guide their health decisions. Second, healthcare providers are members of these professional organizations. If, for example, AAP recommends all males and females 11–26 get the HPV vaccine, pediatricians will be more likely to stock it and discuss it with their patients, which is a significant factor in vaccine decision-making.

2. **Healthcare providers**

Within the main conceptual model, healthcare providers are guided by policy recommendations but they also directly influence the underlying beliefs of the decision-maker. In the case of the HPV vaccine, who the decision-maker is depends on age: for those under 18 it will be a parent or guardian and for those 18–26 it will be the vaccine-eligibles themselves. Both types of decision-makers seem to be strongly influenced by their healthcare providers, particularly regarding newly developed vaccines. In their review of the vaccine literature, Sturm et al. (2005) found that the best predictor of parental acceptance was healthcare-provider attitude about and recommendation for a particular vaccine. More recent studies examining the HPV vaccine suggest the same thing: physician recommendation is a strong predictor of

vaccine uptake. Gerend et al. (2009) found that parents with vaccinated daughters were more likely to have received a recommendation about the vaccine from their healthcare providers, underscoring the importance of physician advice. Similarly, Reiter et al. (2009) found that parents who received a recommendation by their physician had stronger intentions to vaccinate.

When examining young adults as the decision-makers, Rosenthal et al. (2011) found that women 19–26 were “overwhelmingly” more likely to get the HPV vaccine if they discussed it with a physician. Further, the authors found that women who received a “strong” recommendation by their healthcare provider were four times more likely to get the HPV vaccine than those who received a recommendation that was not perceived as “strong.” Gerend and Shepherd (2011) found that physician recommendation had a significant effect on several underlying beliefs of vaccine-eligible young women associated with uptake (self-efficacy and subjective norms) and intention (cost, benefits, and susceptibility). In addition, a national survey looking at early adoption and knowledge of the HPV vaccine found that discussion with a doctor or nurse was a strong predictor of vaccine uptake and that 77% of respondents identified healthcare providers as their most trusted source for medical information (Caskey et al., 2009).

3. **Underlying personal and parental beliefs**

In their original conceptual model of factors influencing parental decision-making, Sturm et al. (2005) rely heavily on the Health Belief Model (HBM) to explain the parental and personal beliefs that affect vaccination decisions. In Figure 2, some HBM

constructs remain (perceived susceptibility, perceived barriers, perceived severity) but have been combined with one from the Theory of Planned Behavior (TPB) (self-efficacy) and one from the Integrated Behavioral Model (IBM) (perceived norms). Constructs from HBM, TPB, and IBM work well together in a conceptual model because they have several commonalities: they all theorize health behavior at the individual level, are guided by value and expectancy beliefs, and assume that behavior is rational and deliberate (Gerend and Shepherd, 2011; Glanz et al., 2008). These key similarities make intuitive sense when applied to HPV vaccine behavior as illustrated in Figure 2. A main difference between HBM, TPB, and IBM is that the latter two health theories posit that behavioral intention, not the underlying beliefs themselves, are the best predictor of behavior. Figure 2 shows intention to vaccinate as an immediate antecedent of vaccine uptake.

Most studies examining HPV vaccine behavior have focused on vaccine acceptability—willingness to vaccinate oneself or one’s child. A review of these studies found a significant relationship between acceptability and most HBM constructs including perceived susceptibility, perceived benefits, perceived barriers, and physician recommendation as a cue to action (Brewer and Fazekas, 2007). A few studies have examined predictors of HPV vaccine uptake and found that subjective norms, perceived barriers, perceived susceptibility, and a physician’s cue to action are associated with HPV vaccine uptake (Brewer et al., 2011; Rosenthal et al., 2011; Reiter et al., 2009; Allen et al., 2009). A recent study by Gerend and Shepherd (2011) tested and compared both HBM and TPB to see which was a better fit in accurately predicting behavior. They also tested a combined model. Results from this study suggest TPB

outperformed HBM in overall goodness of fit. However, the combined model suggested that five constructs, three from HBM (perceived susceptibility, safety concerns, and perceived severity) and two from TPB (subjective norms and self-efficacy) predict HPV vaccine intention. This study also found that intention to vaccinate was the strongest predictor of HPV vaccine uptake. Some of the findings from the Gerend and Shepherd (2011) study are reflected in the Figure 2 model.

As discussed in the previous two sections, underlying personal and parental beliefs are influenced by healthcare provider recommendation and attitudes about the HPV vaccine and the larger policy recommendations both directly and indirectly. These underlying beliefs are also influenced by external factors as described in the next section. As shown in Figure 2, underlying personal and parental beliefs are the central components in the model: they filter most of the other influences and are the only constructs that have a proximal effect on vaccine decision-making as a whole and intention to vaccinate in particular. A more detailed illustration of the HBM, TPB, and IBM constructs included in this model, their relationship to other constructs, and predictability of HPV vaccine decision-making can be found in Figure 3 and are discussed elsewhere in this paper.

4. **External factors**

Finally, there are a host of external factors that likely have a proximal effect on underlying beliefs and thus a distal effect on health behavior. While the list of external factors invariably changes depending upon the health behavior in question, in the case of HPV vaccine uptake, it likely includes, at a minimum, demographics, stigma

about STIs, media coverage of the vaccine, cultural attitudes about vaccines, and attitudes about sex. Demographics have an effect on many different types of health behavior, and vaccination is no exception. For example, low socioeconomic status (SES) is often associated with limited access to healthcare. An individual may face any number of issues when seeking healthcare: they may not have a primary care provider; they may lack health insurance and/or be otherwise unable to pay; they could have limited means of transportation. These SES-related difficulties could influence underlying beliefs around perceived barriers which in turn could have an effect on vaccine decision-making.

Specific to the HPV vaccine, an individual's views on STIs are likely to affect decision-making as well. If a decision-maker attaches a high level of stigma to STIs, this could affect their underlying beliefs about getting the HPV vaccine. In particular, this is likely to affect an individual's perceived susceptibility. If they think that only certain types of people get STIs and they do not see themselves as that type of person then they may believe they are at low risk despite what level of susceptibility their actual behavior may imply. This belief may in turn lead them to go unvaccinated. Theoretically, stigma can also work to encourage vaccine uptake. If an individual believes that getting an STI carries a high level of stigma, then *not* getting the HPV vaccine could result in a social sanction. In this example, stigma has an effect on one's perceived norms (or their belief about what ought to be done and what others like them are doing) and thus may lead to vaccine uptake. Stigma's relationship to underlying personal and parental beliefs is very complex and likely both positive and negative.

Media coverage of vaccines may also influence underlying personal and parental beliefs. The direction of association is likely based on how messages are framed in the media. The proximal relationship between media coverage and underlying beliefs as well as the distal relationship between media and vaccine decision-making are the focus of this paper and discussed in-depth in the next section.

Attitudes, both about vaccines and sexual activity, may have an influence on underlying beliefs and thus vaccine decision-making. Some individuals—and even larger segments of society—are dubious of vaccines for any number of reasons, from religious beliefs about medical intervention to the theories about the number of vaccines given in childhood to ideas about vaccines causing other conditions as a side effect. Regardless of the specific concern, these anti-vaccine attitudes have strong influence on personal and parental beliefs. While this holds for all immunizations, attitudes about sex are more specific to the HPV vaccine. Because the HPV vaccine prevents an STI, cultural attitudes about sex will likely influence a parent's belief about their child's susceptibility. For example, parents who do not want to think about their child becoming sexually active in the future may not deem the vaccine necessary based on perceived risk. Similarly, cultural attitudes about sex can also influence adolescent beliefs about their own susceptibility: those guided by religious or personal values about only having one lifetime partner or waiting until marriage to have sex may not consider themselves at risk for an STI.

C. **Media Coverage as a Key External Factor**

This paper argues that media coverage is a key external factor that influences underlying personal and parental beliefs about the HPV vaccine. Media coverage, or more precisely, message framing can be viewed (much like a physician recommendation) as a cue to action. Figure 3 illustrates the distal relationship between media coverage and vaccine uptake. Briefly, media coverage, which includes both media exposure and message framing, influences five specific underlying beliefs (perceived susceptibility, perceived barriers, perceived severity, perceived norms, and self-efficacy) that have a proximal impact on vaccine decision-making. Media coverage is the key external factor in this model because the vaccine-eligible population consumes it at incredible rates. On average, adolescents (ages 8–18) spend more than 7.5 hours per day with media, whether it's TV, the Internet, music, print, or video games. Since youth often use more than one form of media at a time (called “media multitasking”) they actually view nearly 11 hours of media content in that 7.5 hour time frame (Kaiser Family Foundation, 2010). Television is by far the most-used media with adolescents watching an average of 4.5 hours per day. The total amount of media exposure per day has increased over a 10-year period: 7.5 hours in 1999, 8.5 hours in 2005, and 10 hours and 45 minutes in 2009. Of those ages 8–18, 11–14 years old, closely followed by 15–18 year olds consumed the most media per day, 11 hours and 53 minutes and 11 hours and 23 minutes respectively. Another 2010 report suggests that in a typical day, youth spend 2–3 hours watching TV: 2.8 hours for those 13–17 and 2.3 hours for those 18–24 (Harris Interactive, 2010). This study also suggests that youth spend a considerable amount of time online with daily consumption of the Internet

increasing with age. Youth ages 13–17 and young adults ages 18–24 spend 3.5 and 4.5 hours of their day online respectively. Roughly two-thirds of all those ages 13–24 reported having used the internet to watch videos.

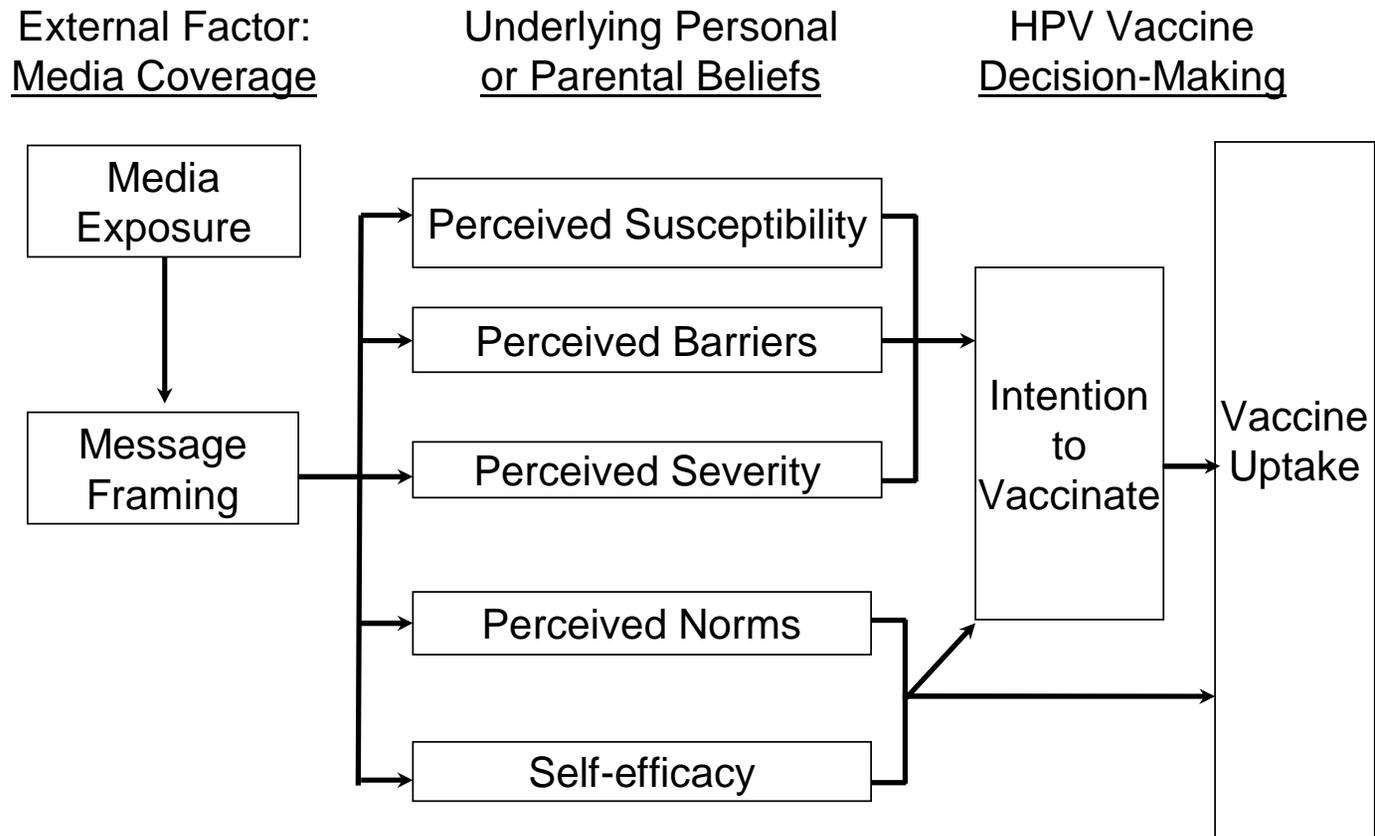


Figure 3. Conceptual model of relationship between media coverage and HPV vaccine uptake. Based on data and concepts from de Visser et al., 2011, Gerend and Sheperd, 2011, and Bleakley et al., 2009.

Media coverage can be thought of as two distinct constructs: media exposure and message framing. Media exposure is simply whether or not someone has viewed content and how much. The data about adolescent media use pertain to media exposure. If an adolescent watches television or listens to the radio they are exposed to media. Message framing refers to how content is presented in the media. As Figure 3 illustrates, media exposure only has a relationship with message framing: one must be exposed to media in order to view a message frame. However, message framing serves to influence the main underlying adolescent or parental beliefs that often predict vaccine decision-making: perceived susceptibility (the extent to which someone believes they are/their child is at risk for HPV); perceived barriers (potential roadblocks that could prevent someone from getting the HPV vaccine including access, cost, or beliefs about safety); perceived severity (how serious the consequences of not getting vaccinated could be); perceived norms (beliefs about what others think they should and what others like them are doing capturing injunctive and descriptive norms); and self-efficacy (the perceived ability to control the behavior and the outcome).

Framing theory suggests that the way in which information is presented can influence how a person thinks about a particular issue. Message frames provide a way for people to understand complicated issues by defining the problem, suggesting a cause, and recommending a solution. Framing involves two main components: selection (highlighting what is important and what the audience should pay attention to) and salience (making pieces of information noticeable, meaningful, or memorable to the audience). By selecting the right information and elevating an issue's salience, framing increases the probability that audiences will receive the information, discern its

meaning, and then process and store it in their memory (Entman, 1993). In addition, media frames often reflect the wider public discourse on certain issues and, if the frame is dominant enough, influence public opinion. Through selection and salience, framing can also prime audiences to be more accepting of certain ideas and perspectives (Kahneman and Tversky, 1984).

The term “framing” is used fairly inconsistently in the literature. However, two types of framing appear to be most relevant to health behavior: attribute framing and goal framing (Levin et al., 1998). Attribute framing measures the basic process of evaluation between two choices by presenting a single attribute of an object, event, or behavior in a positive or negative way. In general, attributes are judged more favorably when framed in a positive way. However, if people have a strong personal involvement in the issue being framed (they know someone who had the vaccine and got HPV anyway) or if they have a moral belief attached to the issue (e.g., people should only have one lifetime partner therefore there is no need to get a vaccine to prevent an STI) they may be less susceptible to attribute framing effects.

Goal framing is slightly different. It suggests that the impact of the message depends on whether it stresses the positive consequences of performing an action or the negative consequences of not performing that same action. In general, framing studies have found that a negatively framed message, emphasizing losses, tends to have a greater impact on a given behavior than a comparable positively framed message emphasizing the gains. The negative framing may be especially persuasive when actions are seen as being “socially undesirable” because the greatest perceived regret should be associated with suffering a loss as a result of doing something that

goes against social norms. However, studies examining health behavior specifically suggest that gain-framed messages are more effective for prevention behavior, like vaccinations, while loss-framed messages are better for disease detection behavior, like screenings (Rothman et al., 2006). This contradiction is interesting in the present case as it suggests that both loss and gain framing of the HPV vaccine may work depending on the target audience.

Although there has been quite a bit of research examining what types of frames are most effective for different types of health behavior, few studies have examined what information should be included in these messages and what underlying beliefs mediate the effects of message framing. Of the existing literature, data suggest that loss-framed messages increase perceived susceptibility of a disease (Gerend et al., 2008) as well as self-efficacy with regards to performing a health behavior (Meyerowitz and Chaiken, 1987). Additional research is needed to further clarify the effects of message framing, specifically, the influence of gain- and loss-framed messages on health behavior, not just attitudes and intentions (Gallagher and Updegraff, 2012).

Figure 3 hypothesizes that message framing influences underlying adolescent and parental beliefs but does not specify what type of framing (loss versus gain) is most effective or what information should be included in these messages, both of which are beyond the scope of this research. The present study aims to explore the relationship between message framing and underlying beliefs about the HPV vaccine. Additionally, Figure 3 suggests that if message framing does influence beliefs, tapping into some may be more important than others. For example, of the beliefs shown to predict intention to vaccinate, which is often an immediate antecedent to vaccine behavior, only

perceived norms and self-efficacy are directly associated with vaccine uptake.

Therefore, identifying message frames that have the potential to increase self-efficacy or influence perceived norms may be most helpful in promoting vaccine uptake.

D. **Advertising the Vaccine**

Shortly after FDA approval, both Merck and GSK launched advertising campaigns to market their vaccines. In the last few years, advertising has become a considerable source of information for the HPV vaccine. Various studies have found that youth as well as parent decision-makers have gotten a lot of information about the HPV vaccine from pharmaceutical ads. Exploring how parents learned about the HPV vaccine, Cates et al. (2010) found that pharmaceutical ads were the most-often cited information source (64% of respondents). Similarly, another study by Hughes et al. (2009) found 83% of parents/guardians had heard of the vaccine through drug company ads. Youth and young adults eligible for the vaccine have also reported hearing about it through direct-to-consumer ads. Caskey et al. (2009) found that 66% of female respondents ages 13–26 reported that Gardasil commercials were their primary source of information regarding the HPV vaccine. More recently, Katz et al. (2011) reported that 59% of college males surveyed also cited commercials as their primary source of information. Finally, another recent study found young women ages 16–20 reported TV ads as one of the best ways to encourage uptake of the vaccine (de Visser et al., 2011). As advertising seems to be one of the main sources that vaccine decision-makers use to get information about the HPV vaccine, exploring the content of the ads, as well as what information the audience derives from them, is decidedly important.

1. **Vaccine framing studies**

Several pre-vaccine studies looking at vaccine acceptance examined how best to frame the forthcoming HPV vaccine. First, using goal-framing theory, Gerend and Shepard (2007) looked at the relative effectiveness of gain-versus loss-framed messages in promoting acceptance of the HPV vaccine. Consistent with goal-framing hypotheses, this study found that a loss-framed message, one describing the costs of not getting vaccinated, was more effective in terms of HPV vaccine acceptance than a gain-framed message, or one explaining the benefits of vaccination. However, this difference was only significant among women who reported having engaged in risky sexual behavior and felt they were at higher risk of contracting HPV. These findings suggest that risky behavior is “socially undesirable” and that not getting vaccinated could lead to an outcome (like getting an STI) that goes against social norms.

Two other studies focused on how framing affects intention to vaccinate. Leader et al. (2009) compared message recall and vaccination intention of individuals based on how the HPV vaccine was described. In this study, the authors found that women were most likely to report an intention to vaccinate when the vaccine was described as preventing cervical cancer only and available at little or no cost. In addition, they found that well over 60% of respondents in each randomly assigned group were able to recall that the vaccine prevented cancer, while the majority of respondents failed to accurately remember whether they read information about STI prevention or the potential risk of sexual promiscuity. These findings suggest that how the vaccine was framed as well as monetary cost may have an effect on vaccine intentions.

Similarly, Sperber et al. (2008) found that women from the rural South were more likely to vaccinate their daughters if the vaccine was framed as preventing cervical cancer. In this study, interest in the vaccine was high regardless of the frame as 80% of mothers suggested they would vaccinate their daughters against cervical cancer, 76% against genital warts, and 70% against HPV. However, the difference in intention to vaccinate against cervical cancer and HPV was statistically significant ($p < .001$) as was the difference between HPV and genital warts ($p < .001$) suggesting that framing the vaccine as preventing HPV may be least effective in terms of increasing uptake. The authors suggest that differences in the message-framing effect may be linked to perceived susceptibility of risk for each condition. Although not stated by the authors, it seems possible that perceived severity may also be at play here as cervical cancer and genital warts are sequelae of HPV. In addition because HPV is largely transient and always asymptomatic, it is likely seen as less serious than cervical cancer and genital warts.

The notion that the HPV vaccine should be framed as preventing cancer was also bolstered by a 2007 CDC report. In this qualitative study, Friedman and Sheppard looked at the best way to communicate about the HPV vaccine and found that the public commonly associates “promiscuity,” “infidelity,” “shame,” “guilt,” and “embarrassment” with STIs. These findings suggest that because of STI-related stigma, framing should highlight the vaccine’s potential to prevent cancer, not HPV, in order to maximize uptake.

While most of these studies have focused on message framing and vaccine acceptance or intention among women, there have recently been some studies focusing

on men. A 2010 study by McRee et al. suggested that men were more likely to report willingness to vaccinate if the vaccine was framed as preventing cancer. The authors cited perceived severity of disease as the main mediator between framing and willingness. A 2010 review of the literature found that when framed as protecting against cervical cancer and genital warts, HPV vaccine acceptability was high in studies of male college students (74%–78%) but much lower in community samples (33%). Further, messages about cervical cancer prevention in female partners did not resonate with males or parents of sons (Liddon et al., 2010). These are interesting findings given the fairly recent recommendation of the HPV vaccine for males and the ubiquitous framing of the vaccine as an antidote to cervical cancer.

2. **Stigma and the human papillomavirus**

Findings from the Friedman and Sheppard study are consistent with other research on HPV-related stigma. McCaffery et al. (2006) examined the psychological and social impact of testing for oncogenic HPV. Several themes emerged from interviews with women who tested positively for HPV, two of which are directly relevant to the notion of stigma. First, women used words like “dirty,” “cheap,” and “nasty” to describe how their positive test results made them feel (p. 171). These reactions suggest connotations of promiscuity as related to HPV’s mode of transmission. Importantly, feelings of stigma and shame were not seen among women who were unaware that HPV is an STI. Second, because of the guilt and shame many women felt about their diagnosis, most reported that they felt significant anxiety about disclosing it to their partners and family and planned to discuss the possibility of cancer with their

loved ones and downplay or omit information about HPV or how they got it. This second theme suggests that discussing cancer is less stigmatizing than talking about (or having) an STI.

A study by Perrin et al. (2006) also looked at women's emotional reactions to an HPV diagnosis. This study found that there was a considerable amount of confusion around HPV in women who had positive test results. After clinicians gave them information about HPV's sexual transmission, emotional responses were found to be associated with stigma, fear, self-blame, powerlessness, and anger. Finally, Waller et al. (2007) examined the differences in women's expected responses to a positive HPV test using a quasi-experimental design study. These authors found that knowledge of how HPV is transmitted was significantly associated with stigma and shame, and that women respond similarly to HPV as they do to other STIs. This study also found that knowledge of HPV's high prevalence in the population was associated with less intense feelings of stigma and shame, thus indicating that information about HPV's prevalence may have a "normalizing effect" that could lead to decreased stigma around the virus. Collectively, these studies support the notion that STIs, including HPV, are indeed stigma-laden and that marketing the HPV vaccine in a way that downplays HPV's sexually transmissible nature and highlights its cancer-prevention potential may maximize uptake.

Despite what the controversy may suggest, the HPV vaccine is not the first immunization to prevent an STI. The first dose of vaccine to prevent Hepatitis B is routinely administered to newborns before they even leave the hospital or within a few days of birth, with the second dose given at 1–2 months old and the third between 6 and

18 months of age. Hepatitis B is spread through blood and other body fluids and is considered an STI. Nevertheless, uptake of the Hepatitis B vaccine is considerably higher than that of the HPV vaccine. In 2010, full coverage was almost 92% among the recommended age group (children ages 19–35 months), considerably higher than that of the HPV vaccine (CDC, 2011). The difference in uptake could be due to the relative length of time each has been available or the fact that the Hepatitis B vaccine is given at the same time as many other childhood vaccines during well-baby check ups. However, it must be noted that this vaccine may have seen higher uptake rates because Hepatitis B is not popularly thought of as an STI and most people do not know how it is contracted.

3. **Summary**

Research has shown that key decision-makers (eligible youth and their parents) have gotten a lot of information about the HPV vaccine from TV ads, regardless of whether media is their preferred source of information. Therefore, studying what information is being presented and how it is being framed is important in understanding what parents and young adults know about the HPV vaccine and the role message framing plays in vaccine decision-making. Pre-vaccine framing studies suggest several things about framing the vaccine as preventing cervical cancer. First, this framing may increase vaccine intention by targeting certain underlying beliefs such as perceived susceptibility, perceived costs, and subjective norms. Second, minimizing STI-related stigma is important for increased uptake, perhaps especially for parents considering the vaccine for their 11 and 12 year olds. And finally, cervical cancer

prevention does not resonate with male vaccine-eligibles, even as a way to protect their female partners. Collectively, these studies suggest that message framing is important and that it may have an effect on parental and adolescent underlying beliefs in regards to uptake. Studying the HPV vaccine commercials themselves will help partially explain media's distal influence on vaccine uptake.

E. **Exploring the Influence**

Most studies exploring message framing and the HPV vaccine have examined the effect of message framing on acceptability (Gerend et al., 2008; Gerend and Shepherd, 2007; Sperber et al., 2007) and intention to vaccinate (Lechuga et al., 2011; Bigman et al., 2010; Leader et. al., 2009). More recently, a couple of studies have also looked at the effects of message framing on vaccine uptake (Gerend and Sheperd, 2011; Jurskova et al., 2011). A significant gap in the literature still exists, however. Future studies need to examine the effect of framing on underlying beliefs that are shown to be significant predictors of uptake. The present study aims to help fill this gap by exploring the relationship between message framing and underlying beliefs.

Examining what the HPV vaccine ads communicate and how the target audience interprets them improves our understanding of how media influences underlying beliefs about the HPV vaccine and provides a guide for how future communications can be framed to improve vaccine uptake and increase knowledge about HPV. Improving vaccine uptake and knowledge about HPV is important because of the virus's causal relationship with cervical, anal, vaginal, vulvar, penile, and oropharyngeal cancers, as well as genital warts. In addition, because HPV is an STI, a better understanding of how

to effectively communicate about a stigmatized condition in the media may serve as a model for how to frame future STI vaccines as well as STI prevention more broadly.

III. METHODS

The purpose of this research was to explore the relationship between message framing in the media and HPV vaccine decision-making behavior. This study examined how pharmaceutical ads influence parental and adolescent beliefs about HPV and the HPV vaccine through two important research questions: (1) how have direct-to-consumer ads framed the HPV vaccine? and (2) how does this framing influence vaccine decision-makers? These questions were broken down into several sub-questions and answered by two different methods: discourse analysis and focus groups. Table I illustrates the relationship between the research questions, methods, and constructs as conceptualized in Figure 3. Table II defines these constructs more specifically.

Adapted from Creswell's (2003) typology, this study uses a sequential transformative strategy: a two-phased approach in which data are collected in two distinct phases and integrated at the interpretation stage. Using two different qualitative methods, this study examines eight direct-to-consumer HPV vaccine ads. First, discourse analysis was used to examine how the ads frame the HPV vaccine and to what extent this framing both reflects and influences prevailing attitudes about sexual health. Using the conceptual model as the lens through which to view the commercials, the discourse analysis also explored which underlying beliefs are targeted in the ads. Next, the same eight ads were shown to focus groups of vaccine decision-makers (males and females ages 15–26 and parents of youth ages 11–17) to explore their reactions to the content as well as how their knowledge of HPV and the HPV vaccine

changed as a result of watching the ads. The focus-group activities included a pre-survey and a post-survey as well as a group discussion. Table II crosswalks the constructs from Figure 3 with the individual data collection methods used in this research. The following section explains the discourse analysis and focus-group activities in more detail.

TABLE I
METHODS CROSSWALK

Main Research Question	Sub-Research Question	Data Collection Method		Constructs
		Discourse Analysis	Focus Group	
How have the direct-to-consumer ads framed the HPV vaccine?	What information is highlighted and made salient?	X	X	Message framing Perceived susceptibility Perceived barriers Perceived severity Perceived norms Self-efficacy
	What information is omitted or downplayed?	X	X	Message framing
	To what extent do the ads target underlying beliefs?	X	X	Perceived susceptibility Perceived barriers Perceived severity Perceived norms Self-efficacy
How does this framing influence vaccine decision-makers?	How does decision-maker knowledge change based on framing?		X	Message framing
	How does the message framing resonate with vaccine decision-makers?		X	Message Framing Perceived susceptibility Perceived barriers Perceived severity Subjective norms Self-efficacy

TABLE II

CONSTRUCT-MEASUREMENT CROSSWALK

Construct	Definition	Discourse Analysis	Pre-FG Survey	Focus Group	Post-FG Survey
Media exposure	Whether or not a person has seen the HPV vaccine ads before			X	X
Message framing	Information presented about HPV, the HPV vaccine, and HPV-related diseases (could be reported as “knowledge”)	X	X	X	X
Perceived susceptibility	Extent to which a person believes he or she is at risk for HPV or HPV-related disease	X		X	X
Perceived barriers	Potential roadblocks that could prevent someone from getting the HPV vaccine	X		X	X
Perceived severity	How serious the consequences of not getting vaccinated could be	X		X	X
Perceived norms	Beliefs about what a person ought to and what others like them are doing (combines injunctive and descriptive norms)	X		X	X
Self-efficacy	Perceived ability to control getting the vaccine and not getting HPV	X		X	X
Intention to vaccinate	Plan to get HPV vaccine in the future		X		X
Vaccine uptake	Past receipt of HPV vaccine		X		X

A. **Discourse Analysis**

Discourse is a form of social practice. It includes “spoken or written language use” as well as “other types of semiotic activity (i.e., activity that produces meanings), such as visual images (photography, video, diagrams) and non-verbal communication (e.g., gestures)” (Fairclough, 2000, 309). Discourse is always comprised of social identities, social relations, and systems of knowledge and beliefs and thus “makes its own small contribution to shaping these aspects of society and culture” (Fairclough, 2000, 309). If language use captures societal norms of the time, then media texts such as books, television, and movies from a specified period are akin to cultural artifacts and provide a record of “the ‘big’ ideas operating and evolving in a culture” (Thomas, 1994, 686). We can use discourse analysis to examine media texts as cultural artifacts.

Discourse analysis is a qualitative technique used to examine media content in a variety of different texts. It examines language use as defined above, but more importantly, it explores the “dialectical relationship” between language and society. According to Fairclough (2000), “language is a socially and historically situated mode of action, in a dialectical relationship with other facets of the social . . . it is socially shaped, but is also socially shaping—or socially constitutive. Critical discourse analysis explores the tension between two sides of language use, the socially shaped and the socially constitutive” (309). The purpose of discourse analysis is to examine a text “not only as form, meaning, and mental process, but as complex structures and hierarchies of interaction and social practice and their functions in context, society, and culture” (van Dijk, 1997, 6). For the purposes of the present study, discourse analysis was used to examine how the HPV vaccine has been framed in television vaccine ads and how this

framing reflects and at the same time influences the target audiences' understanding of and attitude towards the vaccine specifically and sexual health more broadly.

Theory behind discourse analysis contends that “language both mediates and constructs our understanding of reality . . . [and] can shed light on the creation and maintenance of social norms, the construction of personal and group identities, and the negotiation of social and political interaction” (Starks and Brown, 2007, 1374). By framing the HPV vaccine in a very specific way, the ads construct a “reality” for the audience that may or may not be real. This suggests that the HPV vaccine ads have the potential to shape the audience’s understanding of who should get the vaccine and who is at risk for cervical cancer, for example. Examining the dimensions of this framing can help us to understand why the public knows the HPV vaccine can prevent cervical cancer but has less knowledge about the virus itself. Discourse analysis will also help to clarify why certain groups of people may feel more or less susceptible to HPV and cervical cancer, thus partially explaining why some demographics of people are more or less likely to get the vaccine.

According to Fairclough (1995), analyzing the discourse of any text “involves an alteration between twin, complementary focuses, both of which are essential: communicative events and the orders of discourse” (56). A communicative event is the unit of analysis. Discourse analysis examines the relationship between the three dimensions of a communicative event: the text, the discursive practices of a community, and the sociocultural context of the event. The text can be virtually anything that uses language (spoken, written, or non-verbal cues) to produce meaning (Fairclough, 2000). The discourse practice includes how the text is produced and how it is consumed within

the community. The sociocultural practice can be defined as the immediate situational context of the communicative event or its wider context like the economical, political, or cultural landscape in which it exists. We can examine a communicative event within the context of its orders of discourse, or how language is organized and used within society (referred to as *genre*) and what social practice or point of view it represents (known as *discourse*). By examining a communicative event through the lens of its orders of discourse, we can understand the ways in which it is “normative, drawing upon familiar types and formats . . . and creative, using old resources in new ways” (Fairclough, 1995, 56).

1. **Sample selection**

For the purposes of this study, the communicative event is the HPV vaccine commercial where the media text is defined as both the spoken and written language (the actual words used) and the visual language (images of people, activities, places) used in the commercials. A total of nine direct-to-consumer TV commercials for the HPV vaccine have been identified by the principal investigator (PI) but only eight were available for viewing in the public domain at the time of this study. Therefore the sample consisted of the eight advertisements that were available on YouTube at the time of analysis (Table III). The ad that is no longer publicly available for viewing was created by GSK and showed a woman sitting in a cafe waiting for her friends to arrive only to find out via text that they aren't coming because one of them found out she has cervical cancer.

TABLE III

DESCRIPTION OF EIGHT HPV VACCINE ADS BY MANUFACTURER

Company (Product)	Title^a	Description^b
Merck (Gardasil)	I chose (mothers and daughters)	Mothers tell audience all the reasons why they chose to vaccinate their daughters while doing mother-daughter bonding activities
	I choose (young women)	Young women tell audience why they chose to vaccinate themselves
	One less (mothers and daughters)	Mothers and daughters tell audience why getting vaccinated is a good idea and how it could make them become “one less woman affected by cervical cancer” while participating in mother-daughter bonding
	One less (young women)	Young women and teenagers talking about how they could be “one less statistic” while participating in a variety of physical activities
	What if?	Inner monologue about life’s possibilities and how a young woman’s dreams could be disrupted if she gets cervical cancer
GlaxoSmithKline (Cervarix)	Perfume	Young woman follows glimmers of light that lead her to a perfume bottle that says “cervical cancer” on it
	Front Porch	Young woman standing on a front porch talks to her friend on the phone about a third friend who “just found out she has cervical cancer”
	Music Video	Young women dance in an urban loft space to the lyrics “you can’t stop me I’m a woman on my way”

^a Titles were given by author and may not reflect actual name of the ad.

^b Descriptions provided by the author through discourse analysis.

2. **Data collection**

In this study, discourse analysis was used to examine HPV vaccine commercials, analyzing the actual words used in each advertisement along with the nonverbal cues (lighting, music, colors, people, and tone of voice) amid the sociocultural and discursive practices of the audience, or how people think and talk about HPV. It also considered the orders of discourse and analyzed the ads within the context of pharmaceutical advertising logic whether the commercials drew upon a normative or creative view of cancer and STI prevention, and if this view helped reinforce or restructure prevailing feelings about both conditions. Media discourse analysis was conducted by repeatedly watching the communicative texts and observing the language and production elements used to better understand what is being conveyed. Coding involved identifying themes in the text, not labeling parts of the text to be quantified later as with a content analysis.

Discourse analysis is an iterative and inductive process of decontextualization and recontextualization (Ayers et al., 2003) and is used to “distill textual data to a set of categories or concepts from which the final product can be drawn” (Starks et al., 2007, 1375). In order to do this rigorously, media texts must be examined through a theoretical framework. Framing theory guided the discourse analysis of the HPV vaccine ads. Frames help audiences comprehend complex topics, like the HPV vaccine, by highlighting certain details to make them more salient and downplaying other information. When using framing theory to explore these ads, two points are important to consider. First, the way an issue is framed in a media text is often reflective of how society at large views the topic, thus harkening back to Fairclough’s notion that

language is socially shaped and socially constitutive. Therefore understanding how the HPV vaccine is framed in the ads may shed light on societal attitudes towards it.

Moreover, understanding how this topic is situated in society will allow for discussion of how sexual health more broadly is viewed: as a predominantly female responsibility that should not be candidly discussed as a complex medical reality but rather repackaged as something more politically palatable and otherwise tidy.

Second, when examining the framing, it is also important to recognize who produced the text in order to better understand why certain dimensions of the issue are highlighted and others are not. In the case of the HPV vaccine commercials, the media texts were created by advertising companies, people who are in the business of selling ideas and products. Therefore, when examining the framing of the ads, one must also incorporate advertising logic to guide the analysis. This discourse analysis used framing theory to distill the vaccine ads into thematic frames that collectively show how the information highlighted and downplayed in the ads served to sell vaccines and bolster the pharmaceutical companies' bottomlines while also reinforcing the prevailing attitudes about sexual health.

This analysis was also guided by a combination of constructs from health behavior theories, including the HBM, TPB, and the IBM, thought to influence HPV vaccine intention or uptake (de Visser et al., 2011; Gerend and Sheperd, 2011; Bleakley et al., 2009): perceived susceptibility; perceived barriers; perceived severity; perceived norms; and self-efficacy. To run this discourse analysis, I watched all of the ads repeatedly each time noting observations about how the ads targeted these five underlying beliefs. These constructs were operationalized along four dimensions: (1)

tone, in terms of language, overall orientation as well as audio/visual cues; (2) *audience*, defined as who the ad is speaking to and who is being portrayed in it; (3) *agency*, or who the ad suggests has the power to prevent the infection; (4) *frame*, or what information was highlighted about HPV and HPV-related diseases and what was downplayed. I also examined each ad within the context of its orders of discourse, noting how the language used reflected the organizational properties of advertising (genre) and the specific point of view it represents (discourse). This analysis also included observations about ways in which the ads were *normative*, adhering to the traditional advertising format and thus reinforcing established hierarchies and power dynamics, and *creative*, restructuring these relationships.

3. Analysis

Each commercial was reviewed individually and observations about these four dimensions and the orders of discourse were noted. Ads were viewed repeatedly until no new observations were noted and data reached saturation to better understand what each communicates regarding tone, audience, agency, frame, and genre and by extension, the underlying beliefs they represent. After observing each ad individually, all ads for the same product were compared. Themes found in Merck ads were then compared to themes found in GSK ads. Finally, overarching themes were identified across all ads (Ayres et al., 2003).

B. Focus Groups

After examining the commercials through discourse analysis, this study explored the same vaccine ads from the perspective of the decision-makers. The focus-group component of this study examines how vaccine decision-maker knowledge changed based on the message framing used in the ads, the extent to which the ads targeted underlying beliefs about getting the HPV vaccine and how, if at all, these beliefs resonated with vaccine decision-makers.

Focus groups were first used in World War II to examine morale and propaganda (Morgan, 1997). Shortly thereafter, they were used in marketing research to assess people's responses to radio broadcasts. However, focus groups were not used in academic research until the 1980s (Krueger and Casey, 2009). The purpose of a focus group is to gain understanding of a particular group's opinion on a certain topic (Côté-Arsenault and Morrison-Beedy, 2005). Focus-group interviews are used for a variety of purposes. Lunt and Livingston (1996) suggest that focus groups can be used to better understand how audiences make sense of and distill meaning from what they see on TV. They are often used to explore decisions made in a social context (Patton, 1990) and for exploring knowledge and experiences to better understand not only what people think but how they think (Kitzinger, 1995). All of these suggested uses make focus groups an appropriate format for discussing HPV vaccine ads.

Focus groups relied on a parallel/simultaneous mixed-method design to collect quantitative and qualitative data at the same time (Tashakkori and Teddlie, 1998). Focus-group data (qualitative) and survey data (quantitative) were collected simultaneously from the same sample in a single-phase study in order to generate

numerical and narrative data about the same phenomena (Creswell, 2008): how vaccine decision-maker knowledge changed based on the ads. This approach is illustrated in Figure 4. The focus-group data also explore reactions to the ads more broadly. The sample consisted of males and females ages 15–26 and parents of children ages 11–17. Table IV illustrates how the data collection instruments measure the main constructs being explored in this research.

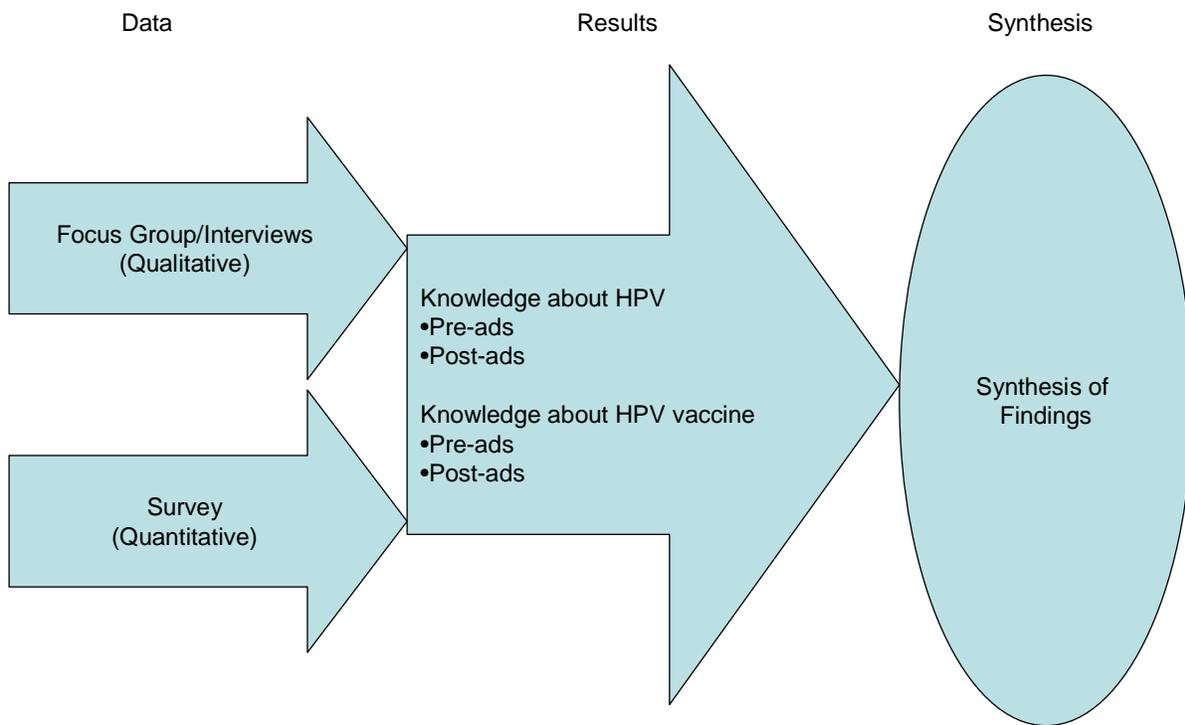


Figure 4. Parallel/simultaneous mixed-methods approach.

TABLE IV
CONSTRUCT-INSTRUMENTATION CROSSWALK

Construct	Question(s)	Instrument
Media Exposure	Has anyone seen ads for the HPV vaccine? Where? Describe them.	FG Discussion Guide
	Before the focus group today, had you seen any television commercials for the HPV vaccine?	Post-FG Questionnaire
Message framing	<p>People have many different opinions about HPV. The following is a list of things that people may think about HPV. For each statement please indicate if you agree or disagree. (See Q3 for list of a-i)</p> <p>People have many different opinions about the HPV vaccine. The following is a list of things that people may think about the HPV vaccine. For each statement please indicate if you agree or disagree. (See Q4 for list of a-i)</p>	Pre-FG Questionnaire
	<p>General thoughts or feedback on the pharma ads?</p> <p>What did the pharma ads tell you about HPV?</p> <p>What did the ads tell you about the HPV vaccines?</p> <p>Based on the information from the ads we have seen, do you understand what HPV is? What about the HPV vaccine?</p> <p>How did the alternative ad compare to the pharma ad?</p> <p>Is there anything the ads don't tell you that you want to know about HPV or the HPV vaccine?</p> <p>Do these ads seem like typical drugs ads?</p>	FG Discussion Guide

CONSTRUCT-INSTRUMENTATION CROSSWALK

Construct	Question(s)	Instrument
Message framing	<p>People have many different opinions about HPV. The following is a list of things that people may think about HPV. For each statement please indicate if you agree or disagree. (See Q10 for list of a-i)</p> <p>People have many different opinions about the HPV vaccine. The following is a list of things that people may think about the HPV vaccine. For each statement please indicate if you agree or disagree. (See Q11 for list of a-i)</p>	Post-FG Questionnaire
Perceived susceptibility	<p>What did the ads tell you about HPV?</p> <p>What did the ads tell you about the HPV vaccines?</p> <p>Based on these ads, how do you get HPV? Cervical cancer?</p> <p>What is the overall tone of the ads?</p> <p>Who should get the HPV vaccine?</p>	FG-Discussion Guide
	<p>If yes to vaccine uptake Q: Did you think you were at risk for HPV because you are/your child is sexually active? Did you think you were/your child was at risk for another reason?</p> <p>If no to vaccine uptake Q: Is it because you do not feel you are at risk because you are not sexually active? Or your child is not at risk?</p>	Post-FG Questionnaire

CONSTRUCT-INSTRUMENTATION CROSSWALK

Construct	Question(s)	Instrument
Perceived barriers	What did the ads tell you about HPV? What did the ads tell you about the HPV vaccines?	FG-Discussion Guide
	If no to vaccine uptake Q: Is it because you are concerned with the vaccine's safety? Is it because you don't think the vaccine is effective? Is it because you don't trust vaccine generally? Is it because you think it's too expensive?	Post-FG Questionnaire
Perceived severity	<ul style="list-style-type: none"> •What did the ads tell you about HPV? •What did the ads tell you about the HPV vaccines? •What is the overall tone of these ads? 	FG-Discussion Guide
	If yes to vaccine uptake Q: Did you get the HPV vaccine because you wanted to protect yourself/your child against cancer? If no to vaccine uptake Q: Is it because you don't think HPV is a serious disease?	Post-FG Questionnaire

CONSTRUCT-INSTRUMENTATION CROSSWALK

Construct	Question(s)	Instrument
Perceived norms	<ul style="list-style-type: none"> •What did the ads tell you about HPV? •What did the ads tell you about the HPV vaccines? •Can you describe the people in the ads? Did you identify with any of them? •Who should get the HPV vaccine? 	FG Discussion Guide
	<ul style="list-style-type: none"> •Do you know anyone who has had the HPV vaccine? <p>If yes to vaccine uptake Q:</p> <ul style="list-style-type: none"> •Did your doctor recommend getting the HPV vaccine? •Did your parents suggest getting the HPV vaccine? •Do you know someone who got the HPV vaccine? •Did you hear about it from someone your trust? <p>If no to vaccine uptake Q:</p> <ul style="list-style-type: none"> •Is it because you don't think <u>you</u> should get vaccinated for an STI? •Is it because you don't think <u>anyone</u> should get vaccinated for an STI? •Is it because your parents do not think you should get it? •Is it because your doctor doesn't think you need it? •Is it because none of your friends plan to get it? 	Post-FG Questionnaire

CONSTRUCT-INSTRUMENTATION CROSSWALK

Construct	Question(s)	Instrument
Self-efficacy	<ul style="list-style-type: none"> •What did the ads tell you about HPV? •What did the ads tell you about the HPV vaccines? •How do you get the HPV vaccine? 	FG-Discussion Guide
	<p>If yes to vaccine uptake Q:</p> <ul style="list-style-type: none"> •Did you get the HPV vaccine because you thought it seemed easy to get? •Did you get the HPV vaccine because it was free or because insurance covered it? <p>If no to vaccine uptake Q:</p> <ul style="list-style-type: none"> •Is it because it seemed difficult to get? 	Post-FG Questionnaire
Intention to vaccinate	<ul style="list-style-type: none"> •If you have not gotten the HPV vaccine, do you plan to get it in the future? 	Pre-FG Questionnaire
	<ul style="list-style-type: none"> •If you have not gotten the HPV vaccine, do you plan to get it in the future? •Do you plan to complete the full vaccination series (for your child)? 	Post-FG Questionnaire
Vaccine uptake	<ul style="list-style-type: none"> •Have you had the Human Papillomavirus (HPV) vaccine sometimes called the cervical cancer vaccine, Gardasil, or Cervarix? •To complete the full vaccination series, there are 3 total shots. How many shots have you/has your child had so far? 	Pre-FG Questionnaire
	<ul style="list-style-type: none"> •Have you had the Human Papillomavirus (HPV) vaccine sometimes called the cervical cancer vaccine, Gardasil, or Cervarix? •To complete the full vaccination series, there are 3 total shots. How many shots have you/has your child had so far? 	Post FG Questionnaire

1. **Data collection**

The focus-group work consisted of six main components and collected both qualitative and quantitative data (Figure 5). First, all participants were given a pre-survey upon arrival to the focus group to collect data on their baseline knowledge of HPV and the HPV vaccine before viewing the HPV vaccine ads during the focus-group session. Beyond collecting baseline data, the pre-survey also served to assess group effects of the focus groups and collect data on vaccine receipt and intention that contributes to our understanding of the relationship between underlying beliefs and intention or uptake. Second, participants discussed what they knew or what they had heard about HPV and the HPV vaccine with other members of the focus group (pre-ad discussion). Third, participants watched the eight direct-to-consumer HPV vaccine ads from the discourse analysis (Table III). Two groups (males and females aged 15–17) were unable to watch one of the ads (“Music Video”) because of technical difficulties. Ads were watched consecutively without discussion in between. Fourth, participants completed a post-survey to measure short-term knowledge change based on message framing in the ads. The post-survey was given before discussing the ads with the group to capture the influence of the message frame only and not potential group effects. Fifth, participants discussed their reactions to the ads, both in terms of what they learned and the extent to which the ads resonated with them (post-ad discussion). Finally, after the post-ad discussion, the moderator provided factual information about topics discussed and answered participant questions (fact reveal). Each component is discussed in detail below.

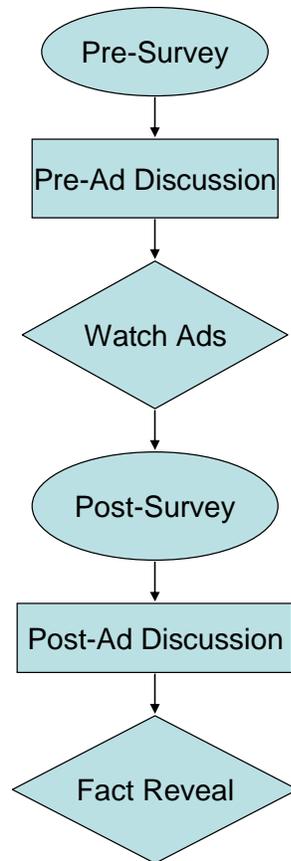


Figure 5. Mixed methods process used to collect data during focus groups.
Ovals = quantitative method; rectangles = qualitative method; diamonds = study component.

a. **Pre-focus-group questionnaire**

A brief, anonymous, self-administered, pen-and-paper survey was given to all participants (Appendix A). Questionnaires took less than five minutes to complete and contained questions to gather data about HPV vaccine receipt, intention to vaccinate, and knowledge of HPV and the HPV vaccine. Gathering these data established participant baseline knowledge prior to seeing the commercials and engaging in the focus-group discussion.

b. **Focus-group session**

Focus groups are semi-structured conversations, led, but not controlled, by a facilitator. Discussion guides aid the facilitator in moderating the conversation but must necessarily be flexible enough to allow the facilitator to ask clarifying or probing questions based on comments, thoughts, or ideas of the participants. It must also be broad enough to allow participants the freedom to respond and interact with one another. Questions should begin broad and move toward the specific (Côté-Arsenault and Morrison-Beedy, 1999). Krueger and Casey (2009) recommend about 12 questions per 1–2 hour focus-group session but others suggest using fewer in order to cover all topics and still have ample time for all participants to share their thoughts (Patton, 1990; Côté-Arsenault and Morrison-Beedy, 1999). Similar but separate discussion guides were used for parents and vaccine eligibles (see Appendix B). The focus-group sessions aimed to generate discussion of the following ideas:

Pre-knowledge and attitudes about HPV and the HPV vaccine

- What did participants know about HPV prior to watching the ads?
- What did participants know about the HPV vaccine prior to watching the ads?
- Had participants seen HPV vaccine ads before the focus group?

Post-knowledge and attitudes about HPV and the HPV vaccine

- What did participants know about HPV after watching the ads?
- What did participants know about the HPV vaccine after watching the ads?
- Had participants seen HPV vaccine ads before the focus group?

Discussion of HPV vaccine commercials

- How did the ads target the participants' perceived susceptibility of HPV?
- How did the ads target the participants' perceived barriers to getting the HPV vaccine?
- How did the ads target the participants' perceived severity of HPV?
- How did the ads target the participants' perceived norms about HPV and the HPV vaccine?
- How did the ads target participant self-efficacy in regards to getting the HPV vaccine?
- Which ads were most compelling? Why?

The PI of this study served as the focus-group moderator for all 12 sessions. The same notetaker also attended all 12 sessions and served as a second set of eyes and ears. The moderator and the notetaker debriefed each focus-group session immediately afterward (Côté-Arsenault and Morrison-Beedy, 2005) and documented their observations separately shortly thereafter. Data analysis began with these debriefings and continued through the formal process detailed below.

c. **Post-focus-group questionnaire**

A brief, anonymous, self-administered, pen-and-paper survey was given to all participants directly after watching the HPV vaccine ads during the focus-group discussion. A separate questionnaire was given to parents and vaccine-eligibles. (See Appendix C). The post-focus-group questionnaires helped to assess the extent to which participant knowledge changed immediately after watching the HPV vaccine ads. Questionnaires took no longer than 10 minutes and gathered the following data:

Knowledge

- Same questions as in pre focus-group questionnaire to compare whether ads and discussion changed short-term knowledge

Vaccine behavior and exposure history

- HPV vaccine uptake history
- HPV vaccine future intention
- Reasons for HPV vaccine uptake/abstinence
- Receipt of other vaccines
- Exposure to ads previous to focus group

Demographics

- Age
- Sex
- Race/ethnicity
- Highest grade level completed
- Religious affiliation (Y/N)
- Political affiliation.

2. **Sample**

A stratified purposive sampling design was used to recruit 45 participants (Coyne, 1997; Patton, 1990). A total of 12 qualitative interviews were conducted. Eleven focus-group sessions were held at the University of Illinois (UIC) School of Public Health and one was conducted at the Illinois Caucus for Adolescent Health (a Chicago community-based organization). Group size varied significantly and consisted of 1–10 people. The target sample size for this study was 72, yielding an average of six people per focus group. This number is commonly suggested in the literature to ensure that the group is large enough to obtain a variety of opinions but small enough to allow each person to contribute in a meaningful way (Krueger and Casey, 2009; Morgan, 1997). In the end, 77 people were recruited and confirmed to participate in this study; however, only 57% of those who said they would attend actually participated. To be eligible for the study, participants needed to fall into one of two categories: males and females

ages 15–26 or parents of a male or female child ages 11–17. Groups were stratified to maximize homogeneity within the groups based on cognitive development, sex, and role (parent or vaccine-eligible) (Côté-Arsenault and Morrison-Beedy, 1999). Of the 12 sessions, six were held for parent groups (n=15) and included 10 mothers (three discussing sons, seven discussing daughters) and five fathers (three discussing sons, two discussing daughters). The other six sessions consisted of males and females between the ages of 15 and 26 or “vaccine-eligibles” (n=30). There were only two sets of parent-child dyads who participated in the focus groups: a 15–17 year old male and his mom and a 15–17 year old female and her mom. Table V describes the sample.

TABLE V

FOCUS GROUPS BY DECISION-MAKER ROLE, AGE, AND SEX

	Parents of 11–12 year olds	Parents of 13–14 year olds	Parents of 15–17 year olds	15–17 year olds	18–21 year olds	22–26 year olds	<i>Total</i>
Females	4	2	3	10	4	6	29
Males	3	1	2	3	2	5	16
<i>Total</i>	7	3	4	13	6	11	45

While youth ages 15–17 are not technically vaccine decision-makers, it was important to include them in the research for two main reasons. First, adolescents have the highest rates of STIs. Nearly half of the 19 million new STI cases each year are among young people aged 15–24 (Weinstock et al., 2004). A recent study examining the prevalence of STIs among this population suggests that nearly 40% of sexually

experienced girls ages 14–19 had one of the five most common STIs (gonorrhea, chlamydia, trichomoniasis, HPV, and herpes) (Forhan et al., 2009). Of these STIs, HPV was by far the most common, with 18.3% of participants yielding a positive test result at the time of the study. In another study examining the prevalence of HPV, researchers found that the virus affects one-third of adolescent females, or roughly 7.5 million females in this age group (Dunne et al., 2007). Conducting research about influences on a behavior that protects against an STI needs to include the entire range of those who have the highest rates (e.g., 15–17-year olds). Second, adolescents are at the greatest risk of contracting an STI because of increased biological susceptibility based on age and development, increased risky sexual behavior, and limited access to healthcare (CDC, 2008). Examining how media influences their underlying beliefs and their understanding of HPV and the vaccine (a protective behavior) is important.

3. **Recruitment**

Recruitment took place from September–December 2012.

Announcements explaining the study were posted on virtual message boards including Facebook, Craigslist, the Neighborhood Parents Network, and Research Chicago. The recruitment process also involved word-of-mouth recruiting as well as a degree of snowballing: the recruitment flyer was emailed to UIC group listservs and sent to other points of contact the PI thought may fit, or know people who fit, the eligibility criteria. Points of contact received the emailed recruitment flyer and were encouraged to forward it on to others they thought may be interested in participating in the research. At a minimum, points of contact included colleagues, friends, and other acquaintances

from the following organizations: Asian Health Coalition, Illinois Caucus for Adolescent Health, Teach for America, and UNO Charter Network.

Announcements invited individuals who were interested in participating to call or email research personnel. The announcement included pertinent details about the research study and eligibility criteria and was approved by the UIC Institutional Review Board. (See Appendix D). The PI conducted a brief eligibility screening of potential participants by phone or email as part of the recruitment process. If a participant met inclusion criteria the PI scheduled them into the appropriate focus group (e.g., for their age, sex, decision-maker role). At that time, the following information was collected: (1) contact phone number or email address in case of cancellation/rescheduling of the focus group; (2) name of participant; (3) age of vaccine-eligible; (4) sex of vaccine eligible; and (5) decision-maker role (e.g., parent or vaccine-eligible). Information about the focus-group location and transportation (train and bus options) was also given to participants. Each participant was sent an information sheet about the focus group after recruitment. Reminders were sent by email to all participants one week before, the day before, and the day of the focus group. Participants without email addresses were reminded by phone.

Informed consent was obtained from each participant age 18 and over upon arrival for the focus group. Assent was obtained from participants ages 15–17. Parental permission was obtained for participants ages 15–17. Parents were allowed to submit their permission by email, mail, or in person before the focus groups. Each session was audio-recorded and transcribed. All participants were given a \$20 Target gift card after

the 90-minute focus-group session. Consent, assent, and permission forms can be found in Appendix E.

4. **Focus-group data analysis**

Audio recordings of the focus groups were transcribed verbatim by a professional transcription service and subsequently reviewed and verified by the focus-group moderator. All participants were given pseudonyms by the moderator before uploading the transcripts to Atlas/TI, a software program for managing and analyzing qualitative data (Muhr, 2012). A description of the data analysis components follows.

a. **Coding**

Transcripts were coded in Atlas/TI by two research assistants: coder A and coder B. Each coded six transcripts. The initial coding guide was developed around the conceptual model hypothesizing the relationship between message framing and five underlying beliefs illustrated in Figure 3. Codes were specified as components of an overarching family. After coding one transcript, the coders met with the PI to discuss any issues encountered and suggest changes to the coding guide (Hruschka et al., 2004). Using the updated coding guide, both coders finished coding their batch of transcripts. Coders were instructed to segment data into “ideas” with each quotation consisting of a complete idea, either from one person or an exchange between focus-group participants. Memos were used to explain why certain codes were used and to provide context to the quote that was not captured within the highlighted text; for example, which clip the respondent was referring to if they did not

state it. The coding guide went through four versions and was amended after several rounds of coding. The final coding guide can be found in Appendix F.

After all of the transcripts had been coded, coder A reviewed 10% of coder B's codes and vice versa. The moderator also coded one transcript from each coder as an additional reliability check. Inter-rater reliability between the two coders was low. However, inter-rater reliability between coder A and the moderator was satisfactory: 80% overlap. Based on these checks, coder A was asked to re-code coder B's other four transcripts. All transcripts used in the analysis were coded by coder A. The moderator conducted one final inter-rater reliability check on 10% of coder A's transcripts and the overlap level was the same. All discrepancies were examined by the moderator who made the final decision as to which code was accurately applied based on having been in the focus groups, her subject-matter expertise, and familiarity with the coding guide and conceptual model. Most of the discrepancies seemed to be the result of coder fatigue and not systematic coding error.

b. **Qualitative analysis**

Focus-group debrief write-ups guided much of the analysis and provided a starting point for theme generation. Data were analyzed in two separate parts. First, all message-framing codes were queried using Atlas/TI's Query Tool (a search tool in which Boolean connectors can be used to construct complex search strings involving multiple codes). All pre-ad codes were examined together and explored for themes about what focus-group participants knew before watching the ads. Quotes about pre-ad HPV knowledge were coded separately from pre-ad vaccine knowledge.

Themes about what participants as a whole knew about HPV and the HPV vaccine before watching the ads were documented. At this point, each case (one focus group) was examined to see the variability and commonalities across groups. The same process was used to examine the post-ad codes. After both pre-ad and post-ad codes were examined separately, they were compared to see how knowledge had changed before and after watching the ads.

The second part of the analysis was conducted on the underlying belief families (norms, severity, susceptibility, self-efficacy, barriers). First, all of the codes assigned to one family were queried and the attached quotations were examined to see if there were any emerging themes across focus-group discussions. After all of the code families were analyzed separately, themes from each of the code families were compared to see if any of the themes were captured by more than one underlying belief family (Friese, 2011).

5. **Survey data analysis**

Surveys were administered before and after participants watched the eight HPV vaccine ads. All data were entered into Excel for cleaning and coding. Descriptive statistics were calculated in Excel to summarize the sample. To check the normality of the distribution, a Shapiro-Wilks test was conducted. Because the pre- and post-data were normally distributed, I used a paired t test to analyze total knowledge change by participant. McNemar's test was used to calculate pre- and post-knowledge change by survey question. McNemar's exact test was used for samples less than five. Significance level was set at $p < .05$. All data were analyzed using Stata 11.0.

C. **Strengths and Limitations**

This study has several strengths. First, it uses a creative and appropriate mixed-methods design to explore media's distal influence on HPV vaccine decision-making. Discourse analysis was used to examine the HPV vaccine ads themselves—how the vaccine has been framed and if any of these frames target underlying beliefs that predict vaccine intention and uptake. Findings from the discourse analysis were used to inform the focus-group discussions that examined how the framing changed decision-maker knowledge of HPV and the HPV vaccine, and the extent to which the beliefs targeted by the ads resonated among vaccine decision-makers. Most discourse analyses conclude with theme generation and do not go on to explore their findings through subsequent methods; therefore, this approach is not only unique but contributes to an important gap in the methodological literature.

Second, this study addresses several gaps in the HPV-vaccine framing literature. Most studies have examined theoretical message framing and have not looked at how the vaccine has actually been framed. In addition, few studies have explored the effects of framing on underlying beliefs that appear to be predictive of vaccine uptake and/or intention. This study does both. Finally, at the time of this writing, only one study (Leader et al., 2011) had examined actual HPV vaccine ads. In that study, however, researchers only looked at one television ad for Gardasil to gauge understanding and reaction to presented messages and information among female adolescents. The present study examined a range of different television ads and measured reactions of not only females but males as well, an as-yet understudied group when it comes to the HPV vaccine. In addition, this study also involved parents of female- and male-eligibles,

a third group of people that have been and will continue to be included in the target audience for these commercials.

Third, this study systematically examined the overt and latent content of the ads and how they influence attitudes and behaviors about HPV vaccines. While Malkowski (2013) explored the narrative discourse of a different Gardasil campaign (a pamphlet-based communication called “My Voice”), to my knowledge there have not been any studies examining the content of these particular ads.

This research also has several limitations. First, this study used a small purposive sample. While this sampling method is appropriate for a qualitative investigation, the results of this study are not representative of the entire population of vaccine decision-makers. Second, participants knew that the purpose of the focus group was to give feedback on the ads. Therefore, they may have given greater thought to the content of the ads than they would have in a non-research setting. Third, some factual information about HPV was necessarily given in the informed consent documents that could have affected pre-knowledge levels. Finally, although the moderator did not answer questions about HPV or the vaccine during focus groups or interviews, and participants were asked to fill out post-tests immediately after viewing the ads, responses may have been influenced by what other respondents said during pre-ad discussion.

IV. MANUSCRIPTS

Findings from this research are presented in a series of three manuscripts and collectively address the two questions that guided this study. The first paper in the series uses discourse analysis to examine how direct-to-consumer ads frame the vaccine: the extent to which information has been highlighted and downplayed in order to maximize vaccine uptake and thus profit. This analysis also reveals which underlying beliefs are targeted by this framing. Addressing research question 1, the first manuscript provides insight into how the HPV vaccine is framed and sheds light on societal attitudes toward it specifically, and sexual health more broadly. The second manuscript uses a mixed-methods approach to explore how the framing of the ads changed vaccine decision-maker knowledge about HPV and the HPV vaccine. Relying on the focus-group and survey data, paper two addresses the second research question and suggests that the framing changed vaccine decision-maker knowledge and that the messages therein served to clarify some and confuse others based on their previous knowledge and confidence. The third paper is the most integrative of the manuscripts and not only addresses both research questions, but maps the focus-group data onto the discourse analysis themes by way of the five underlying belief constructs that conceptually guide this research.

A. **Manuscript 1: “When Sex Doesn’t Sell: Marketing the Human Papillomavirus Vaccine”**

1. **Summary**

Human Papillomavirus (HPV) is the most common STI in the United States. It typically clears on its own within two years of infection. Therefore, while the majority of sexually active people will contract HPV at some point in their lives, most will not have long-term consequences. However, some strains of persistent HPV can develop into a more serious infection and cause either genital warts or cancer. Although HPV is often associated with cervical cancer it can also lead to anal and oropharyngeal cancers. Over the past seven years, two companies have developed vaccines to prevent several common strains of HPV. While this is an exciting development in public health, it is also a case study in message framing as both companies have marketed their vaccines not as STI prevention but as an antidote to cervical cancer. The present study uses discourse analysis to examine how eight direct-to-consumer ads have framed the HPV vaccine. Both framing theory and a combination of constructs from relevant health-behavior theories guide this analysis and provide the framework in which to understand what the highlighted and downplayed information in these ads suggest about social norms around cancer and HPV specifically and sexual health more broadly.

2. **Introduction**

Although the old adage would have us believe otherwise, sex doesn't always sell. When it's portrayed as glossy and perfect it does, but when it results in an infection, it creates discussion and fear, as opposed to an increased profit margin. So how does a pharmaceutical company market a vaccine that prevents an STI? An illustration of this came in 2006, when the FDA approved the first vaccine to protect against HPV. In order to avoid STI-related stigma, the makers of the vaccine launched a marketing campaign branding it an antidote to cervical cancer and skimming over what the vaccine actually protects against: a sexually transmitted virus. Given the stigma around STIs, and the fact that vaccine administration is recommended before sexual debut, framing the vaccine as protecting against cancer likely makes it more publicly palatable and even desirable: who doesn't want to protect themselves or their children from cancer? When a second company brought their HPV vaccine to market, their TV ads framed the issue in the same way. In order to sell more vaccines, both companies have attempted to bypass any discussion of STIs and focus solely on how their products can prevent cancer. Without a doubt, HPV vaccines are exciting public health advances for both STI and cancer prevention. However, the question remains: what does framing the vaccine as cervical cancer prevention communicate about HPV and cancer specifically and the nature of sexual health more broadly?

a. **Human papillomavirus**

With more than 40 strains that can be contracted through sexual activity, HPV is the most common STI in the United States. Both men and women can

get HPV and subsequently transmit it to their sexual partners. The main risk factors associated with HPV infection appear to be young age at sexual debut and high number of sexual partners (NCI, 2012; Kim et al., 2011; Roteli-Martins et al., 2011). While most sexually active people will contract it at some point in their lives, the majority will not develop HPV-related diseases. However, some strains of persistent HPV can develop into a more serious infection and cause either genital warts or cancer. Although the virus is most commonly associated with cervical cancer, HPV can also cause anal, vaginal, vulvar, penile, and oropharyngeal cancers. High-risk HPV types can develop into cancer including HPV 16 and HPV 18, which cause more than 70% of all cervical cancer cases in the United States (NCI, 2012). Two low-risk strains, HPV 6 and HPV 11, cause 90% of genital warts (Garland et al., 2009). Pap tests are used to detect pre-cancerous cells and cervical abnormalities. While a DNA test can detect HPV, clinical guidelines only recommend screening for women over the age of 30 during a regular Pap test. The prevalence of HPV is highest in women under 30 (Dunne et al., 2007); however, because of the high rate of clearance and lack of treatment for HPV, screening is not recommended for this group. There is no routine screening for other HPV-related cancers or genital warts. This means that while both men and women can get HPV, there is no way to screen men. Condoms do not always protect against HPV infection but there are vaccines available that can prevent the most prevalent strains.

b. **Vaccines on the market**

Two different HPV vaccines are currently on the market in the United States. In 2006, the FDA approved Merck's Gardasil which protects against HPV

6 and 11, two strains that cause 90% of genital warts, and HPV 16 and 18, which cause 70% of cervical cancer and nearly half of all vaginal, vulvar, and penile cancer. One strain, HPV 16, is responsible for more than 85% of anal cancer. Beyond anogenital cancers, HPV 16 also causes more than half of the cancers diagnosed in the oropharynx (NCI, 2012; Chow et al., 2010; Watson et al., 2008). Initially only approved for females 9–26, Gardasil was approved for use in males 9–26 in October 2009. Around the same time, the FDA approved a second vaccine, GSK’s Cervarix, which protects against HPV 16 and 18 for use in females 10–25. Both vaccines provide coverage for the two most common high-risk strains of the infection. Because HPV 6 and 11 cause 90% of genital warts, Gardasil has been shown to benefit males as well as females. The CDC’s ACIP currently recommends Gardasil for routine vaccination in both females and males ages 11 and 12, in order to vaccinate before sexual debut, as part of the adolescent immunization platform but can be started as early as 9 years old per physician discretion. In addition, ACIP recommends that females 13–26 and males ages 13–21 who have not been immunized previously, or who have not received all three doses, complete the vaccine series. Men ages 22–26 may receive the vaccine but ACIP did not find a recommendation for this group to be cost effective (CDC, 2011). Routine use of Cervarix in girls ages 11–12 and as a catch-up vaccination for females ages 13–26 is also recommended by ACIP (CDC, 2010).

c. **Message framing**

Framing theory suggests that how information is presented can influence the way a person thinks about a particular issue by highlighting certain details

and downplaying others. Frames provide a way for people to understand complicated issues by defining a problem, suggesting a cause, and recommending a solution (Entman, 1993). Framing involves two main components: selection (highlighting what is important and what the audience should pay attention to) and salience (making pieces of information noticeable, meaningful, or memorable to the audience). By selecting the right information and elevating an issue's salience, framing increases the probability that audiences will receive the information, discern its meaning, and then process and store it in their memory (Entman, 1993). In addition, media frames often reflect the wider public discourse on certain issues and, if the frame is dominant enough, influence public opinion. Through selection and salience, framing can also prime audiences to be more accepting of certain ideas and perspectives (Kahneman and Tversky, 1984).

Since the development of the HPV vaccine, several studies have examined its framing (Bigman et al., 2010; Gerend and Shepard, 2009; Leader et al., 2009; Sperber et al., 2007) all of which shed some light on why Gardasil and Cervarix are being framed as cervical cancer vaccines and why there has been little focus on HPV or its sexual transmission. The findings of these studies suggest that people are more likely to say they intend to vaccinate if the vaccine protects against cervical cancer, as opposed to an STI and if the effectiveness of the vaccine is framed positively. Further, findings of several of these studies suggest that perceived susceptibility may moderate acceptance and thus needs to be considered when designing messages. Finally, at least one study suggests that people are more likely to remember messages about cancer prevention as opposed to STI prevention.

Most studies exploring message framing and the HPV vaccine have examined the effect of message framing on acceptability (Liddon et al., 2010; Gerend et al., 2008; Sperber et al., 2007; Friedman and Sheppard, 2007; Gerend and Shepherd, 2007) and intention to vaccinate (Lechuga et al., 2011; Bigman et al., 2010; Leader et al., 2009). More recently, several studies have looked at the effects of message framing on vaccine uptake (Gerend and Sheperd, 2011; Jurskova et al., 2011). These studies suggest that framing the vaccine as preventing cervical cancer may: (1) increase vaccine intention by targeting certain underlying beliefs such as perceived susceptibility, perceived costs, perceived severity, and subjective norms; (2) minimize STI-related stigma thus increasing uptake; and (3) not resonate with male vaccine-eligibles, even as a way to protect their female partners. Collectively, these studies suggest that message framing is important and that it may have an effect on parental and adolescent underlying beliefs.

d. **Gaps in the literature**

The framing studies and focus-group research referenced above support the approach taken by Merck and GSK: highlight cervical cancer prevention and downplay the link between cancer and an STI. This approach makes sense for two reasons. First, the vaccine is a great achievement in public health: it prevents the two strains of HPV that cause 70% of all cervical cancer. Increasing acceptability and uptake of the vaccine is clearly a good thing. Second, publicly discussing the link between an STI (HPV) and cervical cancer may stigmatize people who have or have had cervical cancer. The inherent stigma around STIs could lead to decreased rates in

HPV and cervical cancer screenings. So, arguably, framing these vaccines as fighting cervical cancer could minimize stigma of cancer patients.

However, at the time of this writing, none of the available literature analyzes the framing of the ads themselves. This paper examines eight publicly available direct-to-consumer ads to better understand how the HPV vaccine has been framed; which aspects have been selected and made salient and which have been downplayed; how this framing simultaneously reflects and shapes social norms.

3. **Methods**

a. **Discourse analysis**

Discourse includes “spoken or written language use” as well as “visual images (photography, video, diagrams) and non-verbal communication (e.g., gestures)” (Fairclough, 2000, 309). Language use is both shaped by and reflective of the society in which it exists; therefore, social identities, social relations, and systems of knowledge and belief are always embedded in discourse. Media texts like TV ads can act as cultural artifacts that capture and document the social norms of a given time period or “the ‘big’ ideas operating and evolving in a culture” (Thomas, 1994, 686). We can use discourse analysis to distill meaning from these cultural artifacts.

Discourse analysis is a qualitative technique used to examine a text “not only as form, meaning and mental process, but as complex structures and hierarchies of interaction and social practice and their functions in context, society and culture” (van Dijk, 1997, 6). According to Fairclough (1995), analyzing the discourse of any text “involves an alteration between twin, complementary focuses, both of which are

essential: communicative events and the orders of discourse” (56). The communicative event is the unit of analysis. A communicative event is comprised of the text (anything that produces cultural meaning), the discursive practice (how the text is produced and how it is consumed within the society) and sociocultural practice (the immediate situational context or its economic, political or cultural landscape). Discourse analysis examines the relationship between these three dimensions of a communicative event. We can examine a communicative event within the context its orders of discourse, or how language is organized and used within society (referred to as genre) and what social practice or point of view it represents (known as discourse). By examining a communicative event through the lens of its orders of discourse, we can understand the ways in which it is “normative, drawing upon familiar types and formats . . . and creative, using old resources in new ways” (Fairclough, 1995, 56).

b. **Analysis**

In this study, the communicative event is an HPV vaccine commercial where the media text includes spoken and written language as well as visual language (images of people, activities, places) used in the ads. Although nine HPV vaccine television ads were originally identified for the sample, only eight were available for viewing at the time of analysis: three were created by GSK and the other five by Merck. All eight ads were viewed on YouTube in fall 2012 (Table III).

The present study uses framing theory and a combination of health behavior constructs to analyze the vaccine ads. Message frames help audiences understand complicated issues by highlighting certain details and downplaying others in an effort to

make the information more salient. Framing in the media both shapes and reflects social norms. Examining the framing used in these ads will allow us to glimpse how society views not only the HPV vaccine, but sexual health more broadly. In order to understand why certain dimensions of the issue are highlighted and others are not, who produced the text must be considered during discourse analysis. Because the HPV vaccine commercials were created to sell a product advertising logic was also used to guide the analysis.

Finally, this study also draws on a combination of constructs from health behavior theories, including the HBM, TPB, and the IBM, thought to influence HPV vaccine intention or uptake (de Visser et al., 2011; Gerend and Sheperd, 2011; Bleakley et al., 2009): perceived susceptibility (the extent to which someone believes they are at risk for HPV or its sequelae); perceived barriers (potential roadblocks that could prevent someone from getting the HPV vaccine); perceived severity (how serious the consequences of not getting vaccinated are); perceived norms (beliefs about what others think they should do and what others like them are doing); and self-efficacy (the perceived ability to control the behavior and the outcome).

To run this discourse analysis, I viewed all of the ads multiple times and observed them with an eye towards these five underlying beliefs. Since these beliefs are conceptual, I operationalized them along four dimensions: (1) *tone*, in terms of language, overall orientation as well as audio/visual cues capturing perceived susceptibility and perceived severity; (2) *audience*, defined as who the ad is speaking to and who is being portrayed in it reflecting perceived norms; (3) *agency*, or who the ad suggests has the power to prevent the infection encompassing self-efficacy; (4) *frame*,

or what information was highlighted about HPV and HPV-related diseases and what was downplayed, covering perceived barriers, perceived susceptibility, and perceived severity.

Additionally, I observed each ad within the context of its orders of discourse, considering the *genre* and *discourse*. Because the communicative events in this study are advertisements, they are “rooted in the orders of discourse of commodity production, distribution, and consumption” (the genre) but also have elements of the medical institution (discourse) and must be examined within this context (Fairclough, 1995, 63). This analysis also included observation about ways in which the ads were *normative*, reinforcing boundaries and relationships in society and *creative*, redrawing these lines. Ads were viewed repeatedly until no new observations were noted and data reached saturation.

4. **Discussion**

All vaccine ads were viewed multiple times to better understand how they targeted certain underlying beliefs. After noting observations about each individual ad, all ads for the same product were compared. Themes found in Merck ads were then compared to themes found in GSK ads. Finally, four overarching themes were identified across all ads (Ayres et al., 2003).

a. **Prevention and disruption**

While most of the ads mentioned the acronym HPV, that is not what they were about. All eight ads were about cervical cancer, either preventing it or

imagining what a future with the disease would be like. Most of the ads conformed to the traditional direct-to-consumer ad structure, the normative commercial, and showed young women speaking directly to the camera, sometimes with their mothers, about why they chose to get the HPV vaccine. Much like other ads that market other sexual health products, like condoms or herpes treatment medication, the tone of these ads was rather positive: if you get the HPV vaccine you don't need to worry about cervical cancer. As several of the mothers in the ads noted, "It's about prevention." These ads looked and felt like typical pharmaceutical ads with the side effects, contraindications, and warnings listed on the bottom of the screen and described by the vaccinated girls and young women portrayed in the ad. The other half of the ads were a bit darker and more narrative, unlike most drug commercials. These ads didn't always mention the HPV vaccine they were promoting but all acknowledged that there is a way to prevent cervical cancer. One of these more creative commercials, produced by GSK, lets you in on a phone conversation between two good friends, one of whom reveals that their third mutual friend is "a mess" because she just found out she has cervical cancer and "doesn't think she will be able to have kids." The ad closes with a black screen and the words: "But there are ways to prevent it. Talk to your doctor" followed by "Cervical Cancer. Closer than you know." This commercial implies an air of fear and sadness: cervical cancer can happen to anyone, even people close to you, and could impact fertility. No one is safe.

Overall, it was a fairly even split between the more optimistic and pessimistic ads. Regardless of the tone of these commercials, all of the ads suggest that cervical cancer is a "disruption" to the lives of young women. This message was both explicit

and implicit in the normative commercials through lines like “my dreams don’t include cervical cancer.” These ads followed the template of other direct-to-consumer ads by showing young women being active and enjoying life—playing sports, shopping, baking, sewing, drinking tea, and bonding with their mothers—implying that getting the vaccine will protect these happy scenes and prevent any disruption. In the creative ads, the message was more implicit. For example, another one of GSK’s commercials opens with a beautiful couture-clad young woman lounging on a settee reading a book when she notices little glimmers of light moving through her home traveling up the stairs. When she follows these beautiful glimmers she notices a perfume bottle at the end of the hall. As she approaches the bottle the music is light and warm but as she gets closer she notices the bottle is labeled “cervical cancer.” The music stops, her hopes and dreams are shattered. Then a voice says: “maybe it’s unfair to get your attention this way, but nothing’s fair about cervical cancer.” A third ad from GSK shows women strutting confidently in an open loft space to the lyrics “I know where I’m headed if I want it I’ll get it. You can’t stop me I’m a woman on my way.” But the music does stop and so do the beautiful young women. When the words “cervical cancer” appear in red on the wall, the women turn to look at it in surprise and shock. The narrator notes that “nothing should stop young women” and as the wise voice details Cervarix the music begins to play and the women begin to dance synchronously. In both genres, normative and creative, cervical cancer has disrupted or has the potential to disrupt the lives of young women. The ads also remind the audience that there are ways to prevent this possible disruption. The main difference between the two genres is the setup: optimistic commercials begin by talking about preventing the disruption, while the pessimistic

commercials focus on how the disruption could look and then suggest asking your doctor about how to prevent it (e.g., getting the vaccine).

Vaccines prevent diseases. Even still, choosing to “sell” prevention is an interesting approach. While the Affordable Care Act will change things, traditionally, the US healthcare system has not rewarded prevention. Many people are uninsured or underinsured and don’t have access to preventative services and some payers do not cover all preventive care services. Similarly, many people lack a primary-care provider or have other access issues based on environmental barriers. In general, our focus is primarily treatment and not prevention. In many ways people are rewarded for being ill, as ours is a very reactive system: prevention is not always covered by insurance but if someone is ill enough to present in the emergency room the hospital has to treat them. Most drugs on the market are also reactive: take this pill and it will treat your disease. However, because all of the commercials have both a prevention and disruption message, the marketing approach is logical. The disruption theme allows the drug companies to “prescribe” a fix to the problem of cervical cancer “drawing upon familiar types and formats” (Fairclough, 1995, 56) and adhering closely to the organizational properties of advertising. Even though the product is a vaccine that is preventative, the commercials still frame cervical cancer as a problem, something that disrupts the lives of young women; therefore the vaccine “prevents the disruption” of cervical cancer. The distinction between treatment and prevention is often blurred in the public discourse about health. These ads perpetuate this haze by turning a prevention message into a treatment message, a framing that both drug companies and consumers are far more comfortable and familiar with, making even the seemingly creative ads fairly normative.

Unfortunately, reinforcing the confusion between prevention and treatment may result in people using the vaccine incorrectly expecting it to treat the HPV they already have.

b. **Fueling fear**

The second overarching theme is the obvious downplaying of HPV in favor of highlighting cervical cancer. The typical discourse around STIs is vastly different than that of cancer. Having an STI denotes something about the moral fiber of the person; it's stigmatizing (Goffman, 1963). Sometimes the discourse around STIs even suggests that whoever has one somehow deserves it by labeling the person (primarily a woman) a "whore" or "slut." Some advertising for herpes medication reflects this stigma by having people in the ads whisper about their diagnosis but also show the same individuals enjoying their lives in happy partnerships in an effort to conceal their status. Having cancer, on the other hand, elicits sympathy and feelings of "unfairness." There is nothing you can do to prevent it. It can happen to anyone. No one deserves it. Because of this discourse alone, framing the vaccine as preventing cancer makes sense. However, by downplaying HPV these ads necessarily ignore all pertinent information about the virus (like transmission, risk factors, transience, and genital warts) in favor of cancer, painting a rather bleak and often unrealistic picture of long-term outcomes, prevention, and prevalence. Ultimately, by highlighting cervical cancer, these ads intentionally fuel the fear that the very word ignites.

Downplaying the fact that cervical cancer is caused by an STI essentially precludes any of the ads from addressing HPV transmission, risk factors, and prevalence. While many of the ads note that cervical cancer is caused by HPV, none of

them explicitly say how someone can get HPV in the first place: through sexual contact. Only one ad even hints at this fact. In Merck's "What If" commercial, an ad exploring life's possibilities, the narrator asks "what if you meet someone? What if he likes you too? What if he gives you HPV? What if it doesn't go away?" This language makes it clear that HPV is communicable and that you can get it from your partner but never actually says that it is a sexually transmitted infection. This omission shrouds transmission in mystery thus increasing fear about getting cancer: can it just come out of nowhere? Is it "closer than you know" like the commercials state?

Similarly, there is no mention of risk factors for cervical cancer. As all cervical cancer is caused by HPV, only people who are sexually active are at risk and even among those who are sexually active, there are different risk profiles for contracting HPV. Studies examining risk factors for HPV and cervical cancer suggest that the more partners a person has the higher their risk of being exposed to HPV (Roteli-Martins et al., 2011). By framing the vaccine as preventing cervical cancer and downplaying HPV, the ads suggest that all women have the same risk of developing cervical cancer and should harbor the same amount of fear.

By focusing on one possible outcome of HPV, and not the virus itself, the ads do not address its prevalence or transience, which may mitigate anxiety about cervical cancer. Instead of noting the fact that most sexually active people will be exposed to HPV at some time in their lives and that it typically goes away on its own, the ads fuel the fear of cancer by focusing on extreme long-term outcomes of not getting the vaccine. At least one ad from each company suggests that there is a strong chance that if you get cervical cancer you won't be able to have children. Merck's "What If" ad asks

the audience: “what if years later your HPV turns into cervical cancer? What if you have to have surgery to remove it? What if you might not be able to have kids? What if you got really, really sick?” This line of questioning is accompanied by images of surgical implements, adorable babies, and a woman who has lost her hair sitting in a chemo chair. One of the ads from GSK bolsters this idea by letting the audience in on a phone discussion between two friends about their mutual friend Kate and her recent cervical cancer diagnosis. The setting is visually bleak, indicating the seriousness of the situation. The viewer only sees one of the friends on the phone. She is standing outside on the front porch in a sweater on a gray and snowy day as she whispers into the phone that Kate “thinks she might not be able to have kids” to which the second friend exclaims “but she’s only 25!” This exchange is the main text of the commercial, obviously explaining to the audience that young women who get cervical cancer will likely have their dreams of having a family crushed. Moreover, these ads not only suggest that HPV and/or cervical cancer can cause infertility but that the progression from one to the other is quick. Both implications are misleading. Neither HPV nor cervical cancer can directly cause infertility. If a persistent HPV infection eventually develops into cervical cancer, it will likely require treatment. There are several options for treating cervical cancer depending on the stage of the disease. One of the treatment options is a hysterectomy. If a woman has a hysterectomy then she will no longer be able to bear children. Further, both ads show young women being diagnosed with cervical cancer. While young women certainly can and do develop cervical cancer, these ads make it seem like women in their twenties are the majority of cervical cancer incidence. However, SEER data suggest that from 2003–2007 most cases of cervical

cancer were diagnosed in women between the ages of 35 and 44 years old and that the median age of diagnosis was 48.

In order to promote the vaccine as primary prevention for cervical cancer, these commercials gloss over some key facts about early detection and screening for cervical cancer as well. Many of the normative commercials note that continuing regular cervical cancer screening is important but they never tell the audience why: A Pap test, not the vaccine, is primary prevention for cervical cancer. The vaccine is primary prevention for HPV infection that can lead to cancer. Early detection and screening is extremely important because cervical cancer is very slow growing and highly treatable if found early. Often, Pap tests alert healthcare professionals and patients to abnormal cells that are precursors to cancer, and not cancer itself. The earlier abnormal cells are identified, the easier it is to remove them and stop them from developing into cancer. Even if a follow-up to a Pap test shows that cell abnormalities are cancerous, the earlier the cancer is detected the higher the survival rate. By focusing on the vaccine as primary prevention, these ads contribute to the growing public confusion about screening guidelines and recommendations, raising its salience and making it seem like the only way to protect oneself against cervical cancer.

Finally, while many of these commercials use incidence and mortality rates of cervical cancer to frame the issue, they avoid discussion of the true prevalence of cervical cancer compared to other cancers, and the fact that cervical cancer is not the only possible outcome of HPV. Without knowing anything else about cervical cancer, watching these commercials could be terrifying, which, as discussed, is likely the purpose. Most of them show the same statistics, “every 47 minutes another woman is

diagnosed with cervical cancer” and “each year thousands of women learn they have cervical cancer.” While these statistics are true, the ads decontextualize them: Is that a lot of women compared to other cancers? Is cervical cancer a significant cause of death for all women in the United States? The answer to both of these questions is no, though it is not offered by the ads. Cervical cancer is diagnosed far less often than breast, lung, colon, or ovarian cancers, as well as many others. This low incidence rate is largely because of screening and early detection efforts in the United States, something downplayed in the ads. While the most recent projections suggest that a little more than 4,200 women died from cervical cancer in 2010 (SEER, 2010), this figure is far lower than that of other causes of death. Even when this number is compared to other cancers, cervical cancer mortality is still quite low in the United States.

Beyond failing to put cervical cancer statistics into context, these ads also neglect to mention all of the possible outcomes of HPV. Because these ads focus exclusively on cervical cancer prevention they fail to mention other site-specific cancers, all of which can be caused by the same two strains of HPV the vaccine protects against. In addition, HPV can cause genital warts; however, as genital warts are inextricably linked to an STI, mentioning this possible outcome would only serve to remind (or alert) the audience to the fact that HPV is sexually transmitted. In several of the normative commercials, the audience is told that the vaccine can protect against “other HPV diseases” but those are never enumerated. Finally, while HPV can lead to several unfortunate outcomes, most of the time the virus clears on its own and goes away without ever being noticed. Only one commercial acknowledges this fact.

While it makes marketing sense for the vaccines to be framed as preventing cervical cancer, in doing so the drug companies only highlight one potential outcome of HPV. This framing avoids discussion of HPV, preventing the commercials from addressing what causes cervical cancer, how someone can get it, who is most at risk, and how common it is, all of which would potentially mitigate the fear of cervical cancer. As it stands, the tone and frame of the ads maximize the perceived severity and susceptibility by decontextualizing prevalence rates and focusing on extreme sequelae thus fueling the fear of cancer.

c. **The face of the vaccine**

By and large, all of these commercials suggest that anyone can get cervical cancer. This is actually true. Any woman *can* get cervical cancer. However, the reality of who *actually* gets cervical cancer, and later, who *dies* from cervical cancer is not reflected in the faces shown in these commercials. While many of the HPV vaccine commercials highlight women and girls of various races and ethnicities, the majority of the women featured in these ads are White. Off screen, however, cervical cancer actually affects a disproportionate number of Black and Hispanic women. The data from SEER (2010) show that Hispanic women have the highest incidence rates of cervical cancer (12 cases per 100,000 women) followed by Black women (10 per 100,000 women). This means that these two groups are diagnosed with cervical cancer most often. The rates for Black and Hispanic women are much higher than rates for all women combined (8 per 100,000). Looking specifically at mortality rates, Black women have the highest rate of death from cervical cancer at 4.4 deaths per 100,000 women,

almost double the rate of all women (2.4 per 100,000). This rate is also twice that of White and Asian/Pacific Islander women (2.2 and 2.1 respectively). While these data suggest that there are significant health disparities when it comes to cervical cancer, they are not reflected in the advertisements. Looking at the commercials alone, one could assume that cervical cancer mostly affects White women, thus the panoply of White faces in the ads. The question remains, why don't the images of women and girls in these commercials match the faces of those who are actually at highest risk? One likely explanation for this is that White women and girls are actually the target audience for these commercials because this group is more likely to have a regular source of healthcare, get cancer screenings, and receive childhood or routine vaccinations than other groups (Agency for Healthcare Research and Quality, 2013; Kaiser Family Foundation, 2012). Because of this, White women are more likely to actually talk to their healthcare provider about the vaccine as well as receive it. Therefore, these ads seem to be targeted at those who are most likely to get the vaccine, and not necessarily a diagnosis of cervical cancer.

Another, perhaps more generous, explanation for this misalignment is that Merck and GSK were afraid of stigmatizing groups who have higher rates of cervical cancer and therefore focused on a group (White women and girls) who are less often affected. This explanation is consistent with the literature that suggests stigma can be perpetuated in the media when those portrayed as having a condition or being at risk for a disease are representative of those who are stereotypically known for the condition (Wang, 1998). However, this explanation seems less plausible when applied to cervical

cancer, which is not historically a stigmatized condition. If the ads had focused more on HPV, this argument would be more persuasive.

d. **Where the boys are: the feminine frame**

Watching these ads it is pretty clear where the boys are: they are almost nowhere to be found. These commercials take on a feminine frame, one that very nearly excludes men and boys from the narrative entirely. All of the normative ads show young women as strong and in control of their lives: they choose to be “one less woman affected by cervical cancer,” “one less statistic”; they choose to get vaccinated, or their mothers choose to get them vaccinated. The women and girls featured in these ads are active and happy. They play sports, pursue hobbies, bond with their mothers, and support each other. Even in the creative commercials, women are strong, supportive, and independent. The absence of men indicates that women do not need men to tell them what to do, to support them, or to help them. The HPV vaccine gives women, girls, and mothers the power of prevention, or at least the opportunity to talk to their doctor. This approach is very reminiscent of those utilized by pharmaceutical companies to market other sexual health products, as empowerment is a central theme in direct-to-consumer advertising for herpes treatment prescriptions and erectile dysfunction medication.

Only one commercial prominently features men. Merck’s “What If” commercial shows several different men: four boyfriends who have given their partners HPV (which later turns into cervical cancer), and the surgeon who helps to remove the cancer. Interestingly, this commercial has darker, more masculine tones than some of the other

ads. The ad begins with a comfortable pace, upbeat music, and light colors. It is previewing what one's life could be like "if." As the ad progresses, however, and the "what if" becomes meeting a guy, the music becomes more serious, the cadence quicker, and the colors darker. The inclusion of men in this commercial is important and striking; however, even though they are included in this ad, they appear in the female narrative almost as interlopers, the person who gave the promising young women HPV and eventually cervical cancer. They also shatter their dreams of having adorable babies. They are there to support them after they give them HPV, but they slowly disappear after the cervical cancer diagnosis. By the time the viewer sees a woman having chemotherapy she is all alone. The subtext is abundantly clear: cervical cancer takes everything away and women are left to fight on their own. Therefore, the inclusion of men in this ad leaves the audience wondering what their role really is or should be.

So what does this lack of maleness say about HPV and cervical cancer? One could derive from these texts that cervical cancer is a female-only issue and that because men do not have cervixes, they aren't involved in or even aware of the realities of cervical cancer. The lack of maleness in these commercials essentially suggests that men should not and do not have a place in this narrative. When maleness is inserted into the narrative the connotation is negative. Another interpretation of the exclusion of men from these ads is that women alone should carry the burden of protecting themselves against HPV and cervical cancer. Women are the ones who get HPV and they are the ones who will suffer the consequences if it turns into cervical cancer. However, both of these readings are incorrect: men absolutely have a role in this narrative. They can contract HPV and give it to their partners, as the "What If"

commercial implies, but they can also support their partners, daughters, mothers, sisters, and friends who may be diagnosed with cervical cancer. Excluding men from the overall narrative is problematic, not just because it downplays the fact that men get HPV (which can lead to anal, penile, and head and neck cancer, as well as genital warts) and that they can pass it to their partners, but because the HPV vaccine is now routinely recommended for males, which means they have a significant role to play in protecting themselves and their partners against HPV and, by extension, several types of cancer and genital warts. To be fair, these ads were created before boys and young men were able to get the HPV vaccine; however, the lengths to which these ads go to exclude men is significant regardless of whether males can get the vaccine or not.

This lack of maleness certainly reflects prevailing ideas about the fairer sex being responsible for their own sexual and reproductive health, with little to no contribution from their opposite-sex partners. In these ads, women are empowered to “choose to be one less” but they are also disempowered as they alone carry the burden of protection. Men are mostly absent from the narrative and when they are included they give the women HPV and slowly disappear from view as the prognosis gets worse. Perhaps including males in these ads would have been controversial, something the marketing is desperately trying to avoid. It’s hard to sell something that challenges social norms. However, perhaps showing more male faces in these ads would have suggested that when the vaccine was approved for boys and young men it was important for them to get it, not only to protect themselves but for their partners too. One has to wonder if Merck has painted themselves into a proverbial corner with this narrative and how it has affected male uptake of their vaccine.

5. **Conclusions**

All media messages are framed. Framing helps the audience know what is important and relevant. In reviewing the HPV vaccine commercials for Gardasil and Cervarix, four overarching themes were evident, helping us understand their orientation beyond their cervical cancer-prevention framing. Collectively, these themes all target perceived susceptibility of cervical cancer by highlighting that all women are at risk. Only half of the themes rely on perceived severity (Prevention and Disruption and Fueling Fear); self-efficacy (Prevention and Disruption and Where the Boys Are); and perceived norms (The Face of the HPV Vaccine and Where the Boys Are) to reach the audience. Not surprisingly, these ads downplay perceived barriers of getting the vaccine as a way to increase audience's perceived self-efficacy and generally make the idea of purchasing this vaccine easy and accessible. Taken together, these themes largely reflect how society views sexual health: a female burden that is best discussed with hushed tones and knowing nods and often results in a punishment, in this case, cervical cancer. By framing the HPV vaccine as cervical cancer these ads highlight the benefits of vaccine receipt for girls and young women and downplay any information about its sexual transmission, all in an effort to present their product in a tidy package that any consumer would eagerly purchase.

Future research in this area should focus on how this media framing affects the vaccine-eligible population's understanding of cervical cancer and HPV. In order to understand this issue in-depth, it would be interesting to show these ads in a series of focus groups of vaccine-eligible males and females (ages 15–26) and parents of vaccine-eligible girls and boys (ages 11–17). These focus groups could explore the four

themes identified in this discourse analysis regarding what the ads communicate about cervical cancer and HPV, what information they felt was noticeably missing, who is most at risk for cervical cancer, and what role, if any, men and boys play in this issue.

Further, focus groups could help explore how future ads and media coverage of the vaccine can help improve knowledge and underlying beliefs about HPV and cancer prevention.

B. **Manuscript 2: “Clarity or Confusion: What Do Parents and Young People Learn from Human Papillomavirus Vaccine Ads?”**

1. **Summary**

The Human Papillomavirus (HPV) is the most common STI in the United States. There are two vaccines that help prevent two strains responsible for the majority of HPV-associated cancer. One vaccine also protects against two additional strains that cause almost all genital warts. Knowledge about HPV and its sequelae has increased considerably since the introduction of the first vaccine in 2006. Several studies have found that direct-to-consumer ads are the biggest source of information about HPV and the vaccine in the United States; however, little research has been conducted to examine what the target audience learns from these ads. This study used a mixed-methods approach to explore how vaccine decision-maker knowledge changes as a result of watching eight direct-to-consumer ads. Qualitative and quantitative methods were integrated to more comprehensively understand knowledge change among this population. Findings suggest that watching ads did result in changes in knowledge, but whether it provided greater clarity or greater confusion depended on baseline knowledge.

2. **Background**

a. **Human papillomavirus**

With approximately 79 million people currently infected, HPV is the most common STI in the United States (Satterwhite et al., 2013). It is easily transmitted through direct skin-to-skin contact during vaginal, oral, and anal intercourse. Although

90% of HPV infections clear on their own within two years, some persistent cases can lead to various types of cancer and genital warts. The cervix is the most common site of cancer associated with HPV but the virus can lead to vaginal, vulvar, anal, penile, and oropharyngeal cancers as well. In addition, HPV causes for all cases of genital warts and nearly all cases of cervical and anal cancer. Two vaccines on the market can help protect against several common strains of the virus.

b. **The vaccines**

In 2006, the FDA approved the first HPV vaccine in the United States. Merck's Gardasil protects against HPV 6 and 11, two strains that cause 90% of genital warts and HPV 16 and 18, two strains that cause the majority of cervical and anal cancer and nearly half of all vaginal, vulvar, and penile cancer. While Gardasil can be started as early as nine years old per physician discretion, it is recommended for females and males ages 11–12 in order to vaccinate before sexual debut. The ACIP also recommends that females ages 13–26 and males ages 13–21 receive the complete vaccine series. While men ages 22–26 are licensed to receive the vaccine, ACIP did not find a recommendation for this group to be cost effective (CDC, 2011). In fall 2009, a second vaccine, GSK's Cervarix was approved by the FDA. Cervarix protects against two strains of HPV, 16 and 18, and is recommended for routine vaccination in girls ages 11–12 and as a catch-up vaccination for females ages 13–26 (CDC, 2010). Cervarix is not currently licensed for males.

c. **Sources of information and knowledge**

Prior to the approval of a vaccine, knowledge about HPV was quite low (Tiro et al., 2007). In the last few years, however, awareness of and knowledge about HPV and the vaccine has increased (Hughes et al., 2009; Sandfort and Pleasant, 2009). Various studies have found that pharmaceutical ads were the most-often cited information source among vaccine-eligible males and females as well as parents of vaccine-eligible youth (Katz et al., 2011; Cates et al., 2010; Hughes et al., 2009; Caskey et al., 2009). A recent study suggested that awareness of HPV was higher in the United States than in the United Kingdom or Australia, likely because of the ubiquity of pharmaceutical ads (Marlow, 2013). Looking at knowledge of HPV and sources of information, Almeida et al. (2012) found that vaccine-eligible women and parents who reported advertisements as their only source of information had lower knowledge of HPV than those who cited getting information from non-advertisements or advertisements plus another source. Groups that reported only getting information from ads were less likely to have received or intend to receive the vaccine, suggesting that the most utilized source of information may contribute to awareness but not knowledge or uptake.

d. **Purpose of study**

Though recent studies have shown that advertisements are the most commonly cited source about HPV, at the time of this writing, only one published study (Leader et al., 2011) had examined audience reactions to these HPV vaccine

direct-to-consumer ads. The present study seeks to address this gap in the literature by exploring the following research question: how do TV ads change knowledge about HPV and the HPV vaccine?

3. **Methods**

This study uses a mixed-methods approach involving survey questions and focus-group interviews to examine participants' understanding of HPV and the HPV vaccine before and after viewing eight HPV vaccine direct-to-consumer ads.

Participants were males and females age 15–26 (vaccine-eligibles) and parents of 11–17 year olds. The particular style of method mixing is known as a parallel/simultaneous mixed-method design (Figure 4), meaning that “the quantitative and qualitative data are collected at the same time and analyzed in a complementary manner” (Tashakkori and Teddlie, 1998, 47). This approach is useful when integrating convergent results in order to develop a more complete understanding of a phenomenon, as in the present study. It differs from other mixed-methods designs in that data are collected in a single-phase study and both methods are equally valued. Figure 5 illustrates the procedures used to collect the data.

a. **Sample and recruitment**

This study used a purposive sample of vaccine decision-makers: males and females ages 15–26 and parents of males and females ages 11–17. A total of 45 people participated in 12 focus groups held between October 2012 and December

2012. Groups were stratified by age (11–12, 13–14, 15–17, 18–21, 22–26), sex of vaccine-eligible (male, female), and decision-maker role (parent, vaccine eligible). Six parent groups (n=15) included 10 mothers (3 discussing sons, 7 discussing daughters) and 5 fathers (3 discussing sons, 2 discussing daughters). The other six sessions consisted of vaccine-eligibles: males and females ages 15–26 (n=30). Only two vaccine-eligibles had parents who also participated in focus groups. Participants were initially recruited online through virtual message boards and word-of-mouth. Interested participants called or emailed research personnel and were screened for eligibility as part of the recruitment process. Interested participants who met the inclusion criteria were enrolled into the appropriate focus group. All enrolled participants were sent information sheets by email or mail prior to the focus-group meeting. All recruitment materials were approved by the UIC Institutional Review Board.

Informed consent was obtained from each participant age 18 and over upon arrival for the focus group. Assent was obtained from participants ages 15–17. Parental permission was also obtained for participants ages 15–17. Each session was audio-recorded and transcribed. All participants were given a \$20 gift card after the 90-minute focus-group session.

b. **Focus groups**

Twelve focus groups were conducted in Chicago, Illinois either at the UIC School of Public Health (n=11) or a community-based organization (n=1). The same moderator and research assistant facilitated all focus groups. A separate but

similar discussion guide was used for parents and vaccine-eligible groups. After discussing previous knowledge of HPV and the HPV vaccine (“pre-ad discussion”) participants were asked to watch eight vaccine ads (Table III). Two groups (males and females aged 15–17) were unable to watch one of the ads (“Music Video”) because of technical difficulties. Ads were shown consecutively without discussion in between. Participants discussed their reactions to the ads including what they learned about HPV and the HPV vaccine (“post-ad discussion”). Ads were selected from those publicly available on YouTube. After the post-ad discussion, the moderator provided factual information about topics discussed and answered participant questions (“fact reveal”).

c. **Pre/post survey**

Participants were asked to complete a brief, anonymous, self-administered, pen-and-paper survey before the discussion began (“pre-survey”) and directly after watching the HPV vaccine ads (“post-survey”). Pre-questionnaires gathered data about knowledge of HPV and the HPV vaccine and vaccine receipt. Post-questionnaires contained the same knowledge questions but also asked about reasons for vaccination/non-vaccination, plans for future vaccination, and demographics.

d. **Data analysis**

Parallel analysis of two types of data (qualitative and quantitative) provides a richer understanding of the study variables and their relationships

(Tashakkori and Teddlie, 1998). In the present study, qualitative and quantitative data were initially analyzed separately, as described below, then integrated and synthesized.

i. **Qualitative data**

Based on established methods of qualitative research, data analysis began immediately after each focus group with a meeting between the moderator and notetaker to debrief the discussion. Additionally, the moderator and notetaker wrote up their individual notes and observations after each session (Côté-Arsenault and Morrison-Beedy, 2005). Audio recordings were transcribed verbatim by a professional transcription service. Transcripts were reviewed by the moderator and uploaded to Atlas/TI, a qualitative data analysis program (Muhr, 2012).

A coding guide was developed based on the focus-group session format and helped categorize data into pre- and post-ad discussion as well as topic. All transcripts were coded in Atlas/TI by a research assistant (“coder”) in accordance with this coding guide. After coding one transcript, the coder met with the moderator to discuss issues encountered and suggest changes to the coding guide. The coding guide went through four versions and was amended after several rounds of coding. After all transcripts were coded by the primary coder, the moderator coded a 10% subsample of the transcripts as an inter-rater reliability check yielding an 80% agreement. All discrepancies were examined by the moderator who made the final decision as to which code was accurately applied.

Theme generation began during the post-session debriefs and continued through the coding process. Quotes that corresponded with pre-ad discussions were assigned pre-knowledge codes; those relating to discussion after watching the ads were coded as post-knowledge. All pre-ad codes were examined together and explored for themes about what focus-group participants knew before watching the ads. Quotes about pre-ad HPV knowledge were coded separately from pre-ad vaccine knowledge. Themes about what participants as a whole knew about HPV and the HPV vaccine before watching the ads were documented. At this point, each case (one focus group) was examined to see the variability and commonalities across groups. The same process was used to examine the post-ad codes. After both pre-ad and post-ad codes were examined separately, they were compared to see how knowledge had changed before and after watching the ads.

ii. **Quantitative data**

Surveys were administered before and after participants watched the eight HPV vaccine ads. All data were entered into Excel for cleaning and coding. Descriptive statistics were calculated in Excel to summarize the sample. To check the normality of the distribution, a Shapiro-Wilks test was conducted. Because the pre- and post-data were normally distributed, a paired t test was used to analyze total knowledge change by participant. McNemar's test was used to calculate pre- and post-knowledge change by survey question. Significance level was set at $p < .05$. All data were analyzed using Stata 11.0.

4. **Results**

Across all participants, the vast majority had heard of HPV (91%) and the vaccine (84%) prior to attending the focus group or interview. Vaccine uptake among participants was not nearly as high. Of those who had heard of the HPV vaccine, only 33% reported getting at least one dose for themselves or their child. Only female participants and mothers of girls reported having gotten it for themselves or their children. Almost two-thirds of respondents had seen a TV ad for the HPV vaccine prior to the focus group. Participant characteristics are summarized in Table VI. Qualitative and quantitative data findings are synthesized below.

TABLE VI

FOCUS-GROUP PARTICIPANT CHARACTERISTICS

	Parents (n=15)		Vaccine Eligible (n=30)		Total (n=45)	
Sex						
Females	10	67%	20	67%	30	67%
Males	5	33%	10	33%	15	33%
Race/ethnicity						
Black	5	33%	13	43%	18	40%
Hispanic	4	27%	3	10%	7	16%
White	3	20%	10	33%	13	29%
Asian	3	20%	3	10%	6	13%
Other	0	0%	1	3%	1	2%
Education						
Less than 8th	0	0%	0	0%	0	0%
Some high school	0	0%	10	33%	10	22%
High school degree/GED	3	20%	2	7%	5	11%
Some college	7	47%	8	27%	15	33%
2 year college degree	0	0%	1	3%	1	2%
4 year college degree or higher	5	33%	9	30%	14	31%
Previous exposure						
Heard of HPV	15	100%	26	87%	41	91%
Heard of HPV vaccine	12	80%	26	87%	38	84%
Received at least 1 dose of HPV vaccine	3	20%	12	40%	15	33%
Received complete HPV vaccine series	2	13%	7	23%	9	20%

a. **Baseline knowledge**

In the focus-group discussions, participants often had difficulty articulating what they knew about HPV and the HPV vaccine. Knowledge and ability to discuss HPV and the HPV vaccine varied greatly by group and often by individual participants within groups. One participant explained his knowledge as “very vague . . . sort of background noise,” which aptly described other groups’ knowledge as well. Table VII shows what respondents knew before watching the ads.

i. **Human papillomavirus**

While almost all participants seemed to know how HPV was transmitted, they often lacked confidence in their answers: “it’s classified as an STD, right?” or “VD or herpes or syphilis. Like that. That’s what pops in my mind.” Although their confidence may have been low in discussion, survey data reveal that 98% of participants accurately knew how HPV was transmitted prior to viewing the ads. While knowledge that females could get HPV was universal, far fewer were aware that males could also contract the virus. Many participants who thought that boys and men could get HPV also noted that it was “asymptomatic” in males or that it “can be transmitted by either sex but . . . [the] health consequences would be felt by women and not men.”

Both survey and focus-group data gathered before participants viewed the ads indicate that participants saw HPV as quite common. In the surveys only 13% thought that HPV was “not very common,” and in pre-ad focus-group discussions the vast majority of respondents described HPV as “very common.” However, further probing

suggested that “very common” had many definitions, from “top five sexually transmitted infections” to “like 80% of sexually active people or something have it” to “70-something [%]” to “like more than a quarter of the population.” Beyond definitions of “very common,” several groups mentioned they thought HPV was “on the rise” because more and more people, including their doctors, seemed to be talking about it.

The connection between HPV and cervical cancer seemed to be common knowledge in pre-ad discussions, aligning with pre-test data (98% of respondents accurately answered a question about HPV causing cervical). However, knowledge about other types of cancer was less common. Less than half of respondents reported that HPV could cause “many types” of cancer on the pre-survey and even fewer were able to identify a non-cervical type. About half the groups seemed to know that HPV was associated with genital warts or “some sort of sore.” Complementing this finding, survey data revealed that 64% of participants thought that HPV could cause genital warts prior to viewing ads in the session.

ii. **The vaccine**

When asked to explain what they had heard about the vaccine, several people commented on the number of shots in the series (three), the company who created one of the vaccines (Merck) or the name of one vaccine (Gardasil). They also recalled seeing ads for an HPV vaccine or having discussed it with their physicians. Specific knowledge of the vaccine appeared to be the result of having had the vaccine or having discussed it with a healthcare provider in the past.

Of the nine questions asked at baseline, only one was discussed in focus groups: who is eligible for the HPV vaccine. Survey data revealed that 80% of participants thought that both males and females could get the vaccine; however, discussions revealed uncertainty on this point. Knowledge about age range also varied. Some reflected on their own age group or that of their child by hazarding a guess of “maybe puberty age,” “teenagers, mostly” “between 13 and 19” or “nobody under 16.” Others offered thoughts on age-range eligibility based on what their doctor had told them about their own eligibility or gave estimates based on more general awareness that “they want you to get it before you are sexually active.” Still others gave extreme estimates like age “16 to 90” or indicated that there wasn’t an age restriction at all.

TABLE VII

FOCUS-GROUP KNOWLEDGE BEFORE AND AFTER WATCHING HPV VACCINE ADS

Knowledge	Pre Correct # (%)	Post Correct # (%)	Difference # (%)	P value [^]
HPV				
Can be transmitted through oral, anal, and vaginal sex [TRUE]	43 (96)	45 (100)	2 (4)	0.500
Is not very common [FALSE]	39 (87)	43 (96)	4 (9)	0.289
Can be treated with antibiotics [FALSE]	26 (58)	26 (58)	0 (0)	1.000
Can cause cervical cancer [TRUE]	44 (98)	44 (98)	0 (0)	1.000
Can cause many types of cancer [TRUE]	20 (44)	23 (51)	3 (7)	0.648
Can cause genital warts [TRUE]	29 (64)	28 (62)	-1 (-2)	1.000
Only females can get HPV [FALSE]	30 (67)	32 (71)	2 (4)	0.791
If a woman has a normal Pap smear she doesn't have HPV [FALSE]	33 (73)	38 (84)	5 (11)	0.179
HPV Vaccine				
Can prevent cervical cancer [TRUE]	26 (58)	35 (78)	9 (20)	0.049*
Prevents against all types of HPV [FALSE]	21 (47)	35 (78)	14 (31)	0.004*
Both males and females can get the HPV36 vaccine [TRUE]	36 (80)	27 (60)	-9 (-20)	0.049*
Can cause cervical cancer [FALSE]	30 (67)	35 (78)	5 (11)	0.302
Can cause HPV [FALSE]	37 (82)	40 (89)	3 (7)	0.508
People who are vaccinated no longer have to use condoms [FALSE]	44 (98)	44 (98)	0 (0)	1.000
Lasts forever [FALSE]	31 (69)	31 (69)	0 (0)	1.000
If a woman gets the HPV vaccine she still must get a regular pelvic exam and Pap smear [TRUE]	23 (51)	42(93)	21 (42)	0.000*
Mean Total Correct Score	12.1 (66.6)	13.4 (74.4)	1.3 (7.7)	0.001**

*Statistical significance at $p < .05$.

[^]McNemar p value (exact test used when sample < 5).

+ Paired t test.

b. **Post-knowledge**

Table VII shows knowledge change after watching the HPV vaccine ads. Overall knowledge (change in mean score of correct responses) increased by almost 8% and was statistically significant ($p=.001$). Looking at knowledge change by individual question, participants seemed to learn more about the HPV vaccine than the virus itself.

i. **Human papillomavirus**

Although not statically significant, there was some HPV knowledge change after viewing the ads. Most participants knew that HPV was sexually transmitted before viewing the ads but many were confused afterward about why the ads didn't explicitly mention this fact. As one father of a teenage son noted, "they didn't really get into the depth of explaining exactly how it's transmitted." Most participants agreed that only one of the ads "hinted" that HPV was sexually transmissible but that "they didn't really come out and say anything." Similarly the vast majority agreed that one ad suggested that HPV was an STI because it said "something like what if you find a guy and what if he gives you HPV." As another participant joked, "you can't just like give it to [a girl]. Like, here's a box with HPV in it" so it must be spread through sex. Other groups noted that it "just broadly" confirmed their previous knowledge about transmission, and that there was "nothing more specific than that about what type of sexual activity."

Many participants were confused about where HPV “comes from” and whether sex was the only mode of transmission. After viewing the ads participants across several groups felt that while HPV was sexually transmissible it could also be hereditary or “something that just happens.” As one mother of a young daughter noted, “I think you can get it like you get breast cancer It just seems like it. I don’t know. Because basically . . . the majority of the commercials are telling you to just be safe. You can prevent it. You know what I mean? There’s only one [ad] that was sexual.” However, despite this confusion, the post-test survey revealed that 100% of respondents (up from 96% before the ads) thought HPV was sexually transmitted after viewing the ads.

For some, the ads seemed to reinforce the notion that males can get HPV but that it doesn’t necessarily affect them. As one participant noted, men “don’t have any . . . there’s no side effects. It doesn’t really affect them unless, yeah. And then they give it to their partner and they’re like, oh, sorry. Yeah. I didn’t know. There’s no way to screen me. So. Sorry.” Similarly, a mother of a teenage son noted that “boys won’t get cervical cancer from HPV [but can get] vaccinated so that when they become sexually active they won’t give it to a partner.” Others indicated that they “didn’t know that men get it” while still others pondered the question “so if guys can give it to girls that must mean that guys have it?”

Knowledge about cervical cancer remained the same (98% pre-post) but the post-ad discussion revealed that those who were unclear about the connection between HPV and cervical cancer became more confident in their knowledge. As one mother noted, “HPV leads to cervical cancer. That’s what I understood. That’s the confusion

that I had, that I didn't know whether these are related or not. But from [the ads], I understood that cervical cancer happens from one of the HPVs." While the ads seemed to reinforce the idea that there is a relationship between HPV and cervical cancer, details about the connection were not always clear: "HPV is just so open-ended [in the ads]. They just want you to jump automatically to think about cervical cancer."

Cervical cancer was the primary HPV-related outcome mentioned in the post-ad discussion. Genital warts and other cancers were only brought up in the post-ad discussion to express confusion based on previous knowledge. As a mother of a teenage daughter explained after watching the ads, "I kind of had a question mark like, okay, what are the other things that [HPV] causes? I didn't know if it was genital warts or what else." To that end, survey data showed a slight dip (2% decrease) in knowledge about genital warts after watching the ads. Despite the lack of discussion about other cancers, survey data show that knowledge about other types of HPV-related cancer increased, although not significantly. Finally, discussions revealed that the ads may have inaccurately introduced the idea that infertility is a possible outcome of HPV. While this was not discussed in the pre-ad session, many respondents noted that the ads informed them that women "might not be able to have kids" or could become "barren" as a result of HPV.

Survey data indicate there was an increase in knowledge about HPV prevalence after watching the ads. This is an interesting finding as the ads themselves do not mention HPV prevalence. When asked how common they thought HPV was, many participants cited statistics about cervical cancer in post-ad discussions suggesting that

they may have been confused by the incidence rates given in the ads. One mother of an adolescent son noted that the ads “said something about . . . oh goodness. Everyday 30 women find out they have HPV . . . it seems like a lot. I mean, less than, you know, more than once an hour, somebody finds out they have it. You know?” Several groups recognized their confusion and admitted not being able to remember if the statistics in the ads were about cervical cancer or HPV. Only one group, females ages 22–26, clearly remembered that the incidence rates presented were for cervical cancer while lamenting the fact that HPV is “really really common” but the ads “just talked about, like, the percentages of women with cervical cancer.”

ii. **The vaccine**

The post-survey data indicate that the ads influenced knowledge about several aspects of the vaccine. The most significant change in knowledge was about the need to continue annual pap smears and pelvic exams after receiving the HPV vaccine (42% increase, $p < .001$). As one mother of a teenage daughter reflected, “I liked the [ad] where the lady said . . . you still have to have your annual pap smears. So that . . . I think that was very good information so that people didn’t walk away thinking that I [got the vaccine] once or three times and now I’m just good to go.” Similarly, knowledge about the vaccine not preventing all types of HPV also increased (31% increase, $p < .001$). Recall of this detail was evident across all of the focus groups as people explained that the vaccine “only prevents certain types” of HPV and that “it’s not always a sure thing; that it’s not going to totally prevent it.” Finally,

there was a significant increase in knowledge about the vaccine protecting against cervical cancer (20% increase, $p=.049$).

After watching the ads, participants were able to identify the age range of those licensed to get the HPV vaccine and in many cases were able to recall that the information was in “the fine print” or that it was “just a flash at the bottom.” Participants were still very unclear as to whether only women could get it or if men could get it too. This confusion was evident in the post-survey data as knowledge about who could get the vaccine actually decreased after seeing the ads (20% decrease, $p=.049$) as well as in the post-ad discussion. Males (18–21 and 22–26) in particular expressed uncertainty about their eligibility status after watching the ads noting that “pretty much all of them make me want to get it. Cause if you can prevent something then, yeah, you should try to. My only thing is still can guys get [the vaccine]?” and “I still don’t know if I can get [the vaccine] or not . . . not from these commercials. I learned that I can give [HPV] though and you better be afraid.” Females (15–17 and 18–21) were also unclear about whether males could get the vaccine. Parents who knew that males could get the vaccine in the pre-ad discussion remained confident of this fact after watching the ads.

5. **Discussion**

This study examines how TV ads change vaccine decision-maker knowledge both qualitatively and quantitatively. Using a mixed-methods design allowed me to answer the same research question from two different approaches measuring specific knowledge change as well as examining the depth of that knowledge.

a. **Knowledge change**

Participants were asked to watch eight direct-to-consumer ads about the HPV vaccine. The purpose of these ads is to promote and sell a pharmaceutical product, not raise awareness of a complicated STI. Therefore, not surprisingly, significant knowledge change was only seen on questions about the vaccine, not the virus. After watching the ads, knowledge increased on three important aspects of the HPV vaccine: its potential to prevent cervical cancer, its inability to prevent all types of HPV, and the necessity for women to continue getting Pap smears and pelvic exams after vaccination. Post-ad discussions reflected these knowledge increases as participants openly discussed these topics and confirmed that these messages were received.

While knowledge seemed to increase on several important features of the vaccine, knowledge about who could get the HPV vaccine actually declined. In the pre-survey and pre-ad discussion, the majority of participants correctly reported that both males and females could get the vaccine. After watching the ads, however, significantly fewer people understood this to be true. This trend makes sense given the context of the ads. First, while one of the vaccines (Gardasil) is approved and even recommended for some males, the Merck ads were created during a time when males were not approved to get the HPV vaccine. Second, three of the ads viewed were for Cervarix, a vaccine that is only available for females. This decrease in knowledge suggests that these ads were so specifically targeted that it convinced respondents that only females were currently eligible to get the vaccine. This finding suggests that in order to

successfully reach male vaccine-eligibles, health educators and public-health professionals must try to undo some of the effects of this messaging and figure out ways to communicate not only male eligibility but relevance as well.

b. **Knowledge confidence**

After watching the ads, the groups who knew a bit more in the pre-ad discussion (and those who noted learning about it from a doctor in particular) seemed to be less confused after the ads, suggesting the ads explicated a few concepts for them. In general, their previous knowledge of HPV and the HPV vaccine did not waver but they often had questions about why certain details (like sexual transmission, timing of the vaccine, and male vaccination) were omitted from the ads. This was particularly clear in vaccine eligible women ages 22–26 who had the highest levels of accurate knowledge and overall awareness of HPV and the HPV vaccine. For groups that had high levels of knowledge and confidence in the pre-ad discussion, the HPV vaccine ads seemed slightly clarifying.

Groups with less knowledge in the pre-ad discussion and those that had a hard time specifying what they knew found the ads “interesting” or “informative” at first reaction, but had difficulty articulating what they had learned. In addition, these groups tended to only process the information presented in the ads and in many cases assumed that if facts were omitted or downplayed they must not be true or relevant. As one father noted, the ads “mentioned specifically cervical cancer and you can sort of then imply from that that the virus must not cause other types of cancers.” Details from

the ads were often mixed up or confused during recall—especially the distinction between HPV (a virus) and cervical cancer (a potential outcome of the virus) and statistics about cervical cancer diagnosis. For several groups, the more they “learned” from the ads, the more questions they had. In other words, the more they thought about the information presented the more confused they became. Participants in these groups often questioned the origin of HPV and suggested that HPV could be contracted through a wide variety of pathways including but not limited to sexual contact. This confusion seemed to stem from the fact that the ads only featured women (reflecting who was able to get the vaccine at the time). For groups that had lower levels of knowledge and confidence in pre-ad discussions, the vaccine ads introduced more questions they could not answer.

6. **Strengths and limitations**

This study has two major strengths. First, it goes beyond the traditional mixed-methods approach that uses qualitative and quantitative data in a multiphase study. Instead, this study integrates qualitative and quantitative paradigms at many levels of the research process (Tashakkori and Teddlie, 1998; Creswell, 1995). Second, ads are a huge source of information for vaccine decision-makers. To date, only one other study has examined what these ads communicate or what vaccine eligibles learn from them. Leader et al. (2011) examined one direct-to-consumer advertisement among female adolescents. The present study examined eight ads and included all decision-makers (female and males 15–26 and parents of youth 11–17).

In addition to its strengths, this study also has several limitations. First, this study used a small purposive sample; therefore it is not representative of the entire population of vaccine decision-makers. Participants in this study likely had a higher level of knowledge than the general population or some personal interest in the topic. Second, some factual information about HPV was necessarily given in the informed consent documents that could have affected pre-knowledge levels. Finally, although the moderator did not answer questions about HPV or the vaccine during focus groups or interviews, and participants were asked to fill out post-tests immediately after viewing the ads, responses may have been influenced by what other respondents said during pre-ad discussion.

7. **Conclusions**

This study examined how pharmaceutical ads for Gardasil and Cervarix changed vaccine decision-maker knowledge about HPV and the HPV vaccine. Data suggest that knowledge improved in many areas after watching the direct-to-consumer ads but more importantly they reveal that the messages therein served to clarify some and confuse others based on their previous knowledge and confidence. This confusion could have unanticipated adverse outcomes as some individuals may have a false sense of security and perceive their risk of HPV and its sequelae to be low or non-existent. Eligible males seemed to be particularly confused by the ads due to their focus on females, which may partially explain the lower rate of uptake among this population. For the purposes of communicating HPV prevention in the future, public-health

professionals need to reframe the vaccine for a larger target audience—highlighting the high prevalence of HPV, non-cervical cancer sequelae such as genital warts and head and neck cancer, and who is now eligible for the vaccine. As the vaccine is now approved and recommended for males and females, messaging needs to make HPV more salient for both groups.

C. **Manuscript 3: “As Seen on Television: A Qualitative Examination of Human Papillomavirus Vaccine Ads”**

1. **Summary**

The Human Papillomavirus (HPV) is the most common STI in the United States and can cause genital warts as well as cervical, anal, and oropharyngeal cancers. Two vaccines are currently available to prevent several strains of HPV. Both vaccines help prevent two strains responsible for the majority of HPV-related cancer. One also protects against two other strains that cause almost all genital warts. Research suggests that framing the HPV vaccine as cancer prevention may increase vaccine uptake among key decision-makers (males and females ages 18–26 and parents of youth 11–17) by targeting certain beliefs about getting the vaccine. However, research about how the HPV vaccine has actually been framed has not yet been conducted. This study uses a mixed-methods approach, involving discourse analysis and focus groups of vaccine decision-makers, to examine eight direct-to-consumer HPV vaccine ads. This approach allowed me to analyze the same media text from two different perspectives to gain a more comprehensive understanding of how the ads frame the HPV vaccine, what underlying beliefs they target, and how decision-makers react to them. Findings from the discourse analysis were confirmed and elaborated on by the focus groups: the ads frame the HPV vaccine as cervical cancer prevention and target many underlying beliefs such as perceived susceptibility, perceived severity, and perceived norms. While many of the underlying beliefs targeted by the ads resonated with vaccine decision-makers,

the overall framing of the vaccine should be changed to include both females and males.

2. **Background**

a. **Human papillomavirus**

Human papillomavirus (HPV) is the most common sexually transmitted infection (STI) in the United States. Of the estimated 14 million new cases each year, nearly half are among those aged 15–24 years old (Satterwhite et al., 2013). The virus is spread through direct skin-to-skin contact during vaginal, oral, and anal intercourse. Most HPV infections go away on their own within two years. However, in some cases, HPV can develop into genital warts or cancer. Cervical cancer is most often associated with HPV but the virus can also lead to vaginal, vulvar, anal, penile, and oropharyngeal cancer. In addition, HPV is responsible for all cases of genital warts and nearly all incidence of cervical and anal cancer. While there is no cure for HPV, there are two vaccines on the market that help prevent the most common strains of the virus.

b. **The vaccines**

The FDA approved the first HPV vaccine, Merck's Gardasil, in 2006. This quadrivalent vaccine prevents four strains of HPV: 6 and 11 (responsible for 90% of genital warts) and 16 and 18 (which cause 70% of cervical cancer and nearly half of all vaginal, vulvar, and penile cancer). In addition, HPV 16 alone is responsible for more than 85% of anal cancer and more than half of all cancers diagnosed in the oropharynx (NCI, 2010; Chow et

al., 2010; Watson et al., 2008). Gardasil is licensed for use in males and females ages 9–26. However it is routinely recommended for females and males ages 11–12 as part of the adolescent immunization regimen, as well as females ages 13–26 and males ages 13–21 who have not been immunized previously, or who have not received all three doses of the vaccine series. Men ages 22–26 may receive the vaccine, but it is only recommended for men who have sex with men (MSM) and others at high risk in this age group (CDC, 2011). A second vaccine, GSK’s Cervarix, was approved in fall 2009 and protects against HPV 16 and 18. This bivalent vaccine is recommended for routine vaccination in girls ages 11–12 and as a catch-up vaccination for females ages 13–26 (CDC, 2010). Cervarix is not approved for males.

c. **Advertising as a main source of information**

Shortly after FDA approval, both Merck and GSK launched advertising campaigns to market their vaccines. In the last few years, direct-to-consumer ads have become a major source of information about the HPV vaccine both for youth and parent decision-makers. Cates et al. (2010) investigated how parents learned about the HPV vaccine, and found that pharmaceutical ads were the most commonly cited information source (64% of respondents). Similarly, another study by Hughes et al. (2009) found that 83% of parents had heard of the vaccine through drug company ads. Youth and young adults eligible for the vaccine have also reported hearing about it through such ads. Caskey et al. (2009) found that 66% of female respondents age 13–26

reported Gardasil commercials as their primary source of vaccine information. More recently, Katz et al. (2011) reported that 59% of male college students surveyed cited commercials as their primary source of information. As advertising seems to be one of the main sources that decision-makers use to get information about the HPV vaccine, it is important to explore the content of the ads, as well as what audiences derive from them.

d. **Message framing**

Message frames provide a way for people to understand complicated issues and can influence a person's views on a particular issue. Framing involves highlighting important details the audience should pay attention to and downplaying other information ("selection") and making certain pieces of information noticeable, meaningful, and memorable to the audience ("salience"). By *selecting* particular information and elevating its *salience*, framing helps audiences process the information, understand its meaning, and store it in their memory (Entman, 1993). Media frames often reflect and influence public opinion on certain issues (Kahneman and Tversky, 1984).

Recent studies have examined the effect of message framing on HPV vaccine acceptability (Liddon et al., 2010; Gerend et al., 2008; Friedman and Sheppard, 2007; Gerend and Shepherd, 2007; Sperber et al., 2007), intention to vaccinate (Lechuga et al., 2011; Bigman et al., 2010; Leader et al., 2009), and vaccine uptake (Gerend and Sheperd, 2011; Jurskova et al., 2011). These studies suggest that framing the vaccine as preventing cervical cancer may

influence parental and adolescent beliefs about the HPV vaccine and minimize STI-related stigma. However, some of these studies also indicate that this framing does not resonate with all vaccine decision-makers, especially males.

e. **Vaccine behavior**

Most studies examining HPV vaccine behavior have focused on vaccine acceptability, meaning the willingness to vaccinate oneself or one's child. A review of these studies found a significant relationship between acceptability and most HBM constructs including perceived susceptibility, perceived benefits, perceived barriers, and physician recommendation as a cue to action (Brewer and Fazekas, 2007). A few studies have examined predictors of HPV vaccine uptake and found that subjective norms, perceived barriers, perceived susceptibility, and a physician's cue to action are associated with HPV vaccine uptake (Allen et al., 2009; Brewer et al., 2011; Rosenthal et al., 2011; Reiter et al., 2009). Another study by Gerend and Shepherd (2011) found that intention to vaccinate was the strongest predictor of HPV vaccine uptake. It also found that a combination of five constructs, two from the TBP and three from HBM were most predictive of vaccination intention: subjective norms, self-efficacy, perceived severity, perceived susceptibility and safety concerns.

f. **Purpose of the study**

Research conducted before HPV vaccine licensure suggests that framing the HPV vaccine as cancer prevention may target certain underlying

beliefs about getting the vaccine and increase intention to vaccinate among key vaccine decision-makers (Leader et al., 2009; Sperber et al., 2008). However, research has yet to examine how the vaccine has actually been framed. The present study aims to address this gap in the literature by examining the following research questions: (1) how do direct-to-consumer ads frame the HPV vaccine? (2) To what extent do the ads target five underlying beliefs about getting the HPV vaccine (perceived susceptibility, perceived barriers, perceived severity, perceived norms, and self-efficacy)? (3) How do these underlying beliefs resonate with vaccine decision-makers?

3. **Methods**

This study uses a mixed-methods approach, which in Creswell's (2003) typology would be characterized as a sequential transformative strategy—a two-phased approach in which different types of data are collected and analyzed at different time points, and then integrated at the interpretation stage. While traditionally used in studies that combine qualitative and quantitative methods, this approach can also be used for multi-method qualitative research. The present study uses two different qualitative methods to explore the latent content of eight direct-to-consumer HPV vaccine ads (Table III). First, discourse analysis was used to explore how the HPV vaccine has been framed across vaccine ads and how this framing may reflect and at the same time influence vaccine decision-makers' attitudes towards the vaccine specifically and about sexual health more broadly. Next, the same ads were shown to focus groups of

vaccine decision-makers (males and females ages 15–26 and parents of youth ages 11–17) to gauge their reactions to the content. The data from each were analyzed separately. Later, findings were integrated by mapping focus-group themes onto the thematic findings of the discourse analysis. The following sections describe each method in detail.

a. **Discourse analysis**

Discourse is defined as “spoken or written language use” and “other types of semiotic activity (i.e., activity that produces meanings), such as visual images (photography, video, diagrams) and non-verbal communication (e.g., gestures)” (Fairclough, 2000, 309). It reflects and reinforces what is happening in society at any given time and is often documented in media texts such as books, television, and movies. We can use discourse analysis to examine media texts as cultural artifacts, “exploring the tension between two sides of language use, the socially shaped and the socially constitutive” (Fairclough, 2000, 309).

The purpose of discourse analysis is to examine a text “not only as form, meaning and mental process, but as complex structures and hierarchies of interaction and social practice and their functions in context, society, and culture” (van Dijk, 1997). Using Fairclough’s (2000) framework for critical discourse analysis, we can examine a communicative event within the context of how society uses language, or its “orders of discourse.” This approach involves examining the relationship between the three dimensions of a communicative

event: the text (anything that uses language to produce meaning), the discursive practices of a community (how the text is produced and used), and the sociocultural context of the event (the immediate situational context of the communicative event or its wider context like the economic, political, or cultural landscape in which it exists) (Fairclough, 2000). By examining a communicative event through the lens of its orders of discourse, we can understand its genre: the ways in which it is “normative, drawing upon familiar types and formats . . . and creative, using old resources in new ways” (Fairclough, 1995, 56).

In this study, discourse analysis was used to examine HPV vaccine commercials (the communicative events) analyzing the actual words used in each advertisement along with the nonverbal cues (the text), the production elements of the ads and how advertising is consumed in the culture (the discursive practice) and how HPV and the HPV vaccine is viewed within broader society (the socioculture practice). The communicative event was also examined within the context of its orders of discourse: pharmaceutical advertising logic.

b. **Focus groups**

Lunt and Livingston (1996) suggest that focus groups can be used to better understand how audiences make sense of and distill meaning from what they see on television. To that end, this study used focus groups to explore audience reaction to eight direct-to-consumer HPV vaccine ads. All focus groups were conducted in Chicago, Illinois either at the UIC School of Public Health (n=11) or a community-based organization (n=1). The same moderator and

notetaker facilitated all focus groups. Separate discussion guides were used for the parents and vaccine-eligible groups, but there was a considerable amount of overlap in their content. Focus-group participants were asked to watch eight vaccine ads and discuss their reactions.

This study used a purposive sample of vaccine decision-makers: males and females ages 15–26 and parents of males and females ages 11–17. Focus groups were divided by age of vaccine-eligible (11–12, 13–14, 15–17, 18–21, 22–26), sex of vaccine-eligible (male, female), and decision-maker role (parent, vaccine eligible). A total of 45 people participated across 12 focus groups held between October 2012 and December 2012. Of the 12 sessions, six were held for parent groups (n=15) and included 10 mothers (three discussing sons, seven discussing daughters) and five fathers (three discussing sons, two discussing daughters). The other six sessions consisted of males and females between the ages of 15 and 26 or “vaccine-eligibles” (n=30).

Participants were initially recruited online through virtual message boards and word-of-mouth. Interested participants called or emailed research personnel and were screened for eligibility as part of the recruitment process. Those who met the inclusion criteria were enrolled into the appropriate focus group (e.g., for their age, sex, decision-maker role). All enrolled participants were sent information sheets either by email or by mail prior to the focus-group meeting. All recruitment materials were approved by the UIC Institutional Review Board. Informed consent was obtained from each participant age 18 and over upon arrival for the focus group. Assent was obtained from participants ages 15–17 as

was parental permission. All participants were given a \$20 gift card after the 90-minute focus-group session.

c. **Data analysis**

To analyze the data in this study, I drew on a combination of constructs from HBM, TPB, and IBM that may influence HPV vaccine intention or uptake (Figure 3). The constructs examined were: perceived susceptibility (the extent to which someone believes they are at risk for HPV or its sequelae); perceived barriers (potential roadblocks that could prevent someone from getting the HPV vaccine); perceived severity (how serious the consequences of not getting vaccinated are); perceived norms (beliefs about what others think they should do and what others like them are doing); and self-efficacy (the perceived ability to control the behavior and the outcome). These constructs guided the discourse analysis and development of the focus-group coding guide.

i. **Discourse analysis**

This study uses framing theory and a combination of health behavior constructs to analyze the vaccine ads. First, using framing theory, it is important to recognize who produced the text in order to better understand why certain dimensions of the issue are highlighted and others are not. Therefore, when examining the framing of the ads, I used advertising logic to guide the analysis: these ads are framed to increase profit margins and sell not only a product, but the idea of prevention as a sound investment in the future.

Second, ads were examined for inclusion of the five belief constructs noted above. These five constructs were operationalized along four dimensions and each ad was viewed for: (1) *tone*, in terms of language, overall orientation as well as audio/visual cues; (2) *audience*, defined as who the ad is speaking to and who is being portrayed in it; (3) *agency*, or who the ad suggests has the power to prevent the infection; (4) *frame*, or what information was highlighted about HPV and HPV-related diseases and what was downplayed. In addition, I observed the genre of each ad to examine the orders of discourse and see if they were normative (like typical drug ads) or creative (unlike traditional direct-to-consumer advertising approaches).

Ads were viewed repeatedly until no new observations were noted and data reached saturation. All vaccine ads were viewed multiple times to better understand how they reflected these dimensions. After analyzing each ad individually, all ads for the same product were compared. Themes found in Merck ads were compared to themes found in GSK ads (Ayres et al., 2003).

ii. **Focus groups**

Data analysis began immediately after each focus-group session with a meeting between the moderator and notetaker to debrief about the discussion. Additionally, the moderator and notetaker independently wrote up their notes and observations after each session (Côté-Arsenault and Morrison-Beedy, 2005). Audio recordings of the focus groups were transcribed verbatim by a professional transcription service. The moderator reviewed all

transcripts and assigned aliases before uploading them to Atlas/TI, a software program for managing and analyzing qualitative data (Muhr, 2012).

All transcripts were coded in Atlas/ TI by a research assistant (“coder”) in accordance with a pre-established coding guide. The initial coding guide was developed around the conceptual model hypothesizing the relationship between message framing and five underlying beliefs illustrated in Figure 3. After coding one transcript, the coder met with the PI to discuss any issues encountered and suggest changes to the coding guide. The coding guide went through four versions and was amended after several rounds of coding. The text in each transcript was segmented into discrete passages, with each segment capturing one complete “idea”—i.e., a cohesive narrative from one person or an exchange on a given topic among two or more focus-group participants. (In Atlas/TI these segments are called “Quotations.”) The Memo function in Atlas/TI was used to explain why certain codes were used or to provide context to the quote that was not captured within the highlighted text—for example, which clip the respondent was referring to if they did not state it. After all transcripts were coded by the primary coder, the moderator coded a 10% subsample of the transcripts as an inter-rater reliability check yielding 80% agreement. The moderator resolved all discrepancies and decided which code was accurately applied.

Theme generation began during the post-session debriefs and continued through the coding process. Atlas/TI’s Query Tool (a search tool in which Boolean connectors can be used to construct complex search strings involving

multiple codes) was used to extract and analyze groups of passages on similar topics.

4. **Results**

The discourse analysis revealed that all eight of the direct-to-consumer ads framed the HPV vaccine as a method of cervical cancer prevention. By framing the vaccine as preventing cervical cancer, these ads attempt to downplay the sexual transmission of HPV and highlight the extreme and potentially devastating long-term consequences of the virus. Because cancer is universally feared, this framing helps the vaccine become more salient and appeal to a larger swath of the target audience, including parents who do not want to think about their daughters becoming sexually active. By avoiding discussion of sex and primarily featuring women in these ads, the framing also reflects social norms about sexual health: women must shoulder the burden of protection and endure the long-term consequences silently and alone.

Overall, focus-group discussions reflected many of the thematic findings of the discourse analysis and offered additional insights into the latent content. Participants noted that the ads blurred the relationship between HPV and cervical cancer in a concerted effort to focus on the seriousness of the latter as communicated through stark statistics, severe imagery, and emotionally charged fear appeals. Because most participants knew that HPV was an STI prior to watching the ads, the downplaying of sexual transmission was noticeable and largely distracting for participants. Participants viewed ads through their own

experience and identity and responded to ads from a relatively personal perspective. Females tried to see themselves in the ads and with a few exceptions reported that they felt represented in the ads on the basis of sex, age, and race. Males felt either excluded from or blamed for female misery by the ads. The considerable lack of males in these ads suggested to most participants that this was a female issue only and while males could give their female partners cervical cancer, women alone were responsible for protecting themselves and dealing with the consequences.

Using the discourse analysis themes as a framework, the following sections integrate findings from both methods to answer my research questions: how the eight direct-to-consumer ads have framed the HPV vaccine, to what extent the ads targeted five underlying beliefs, and which beliefs resonated with the vaccine decision-makers. The full discourse analysis can be found elsewhere. Table VIII maps the five underlying belief constructs, discourse analysis themes, and focus-group reactions. The following are four overarching themes that emerged from this analysis—themes that integrate findings from the two phases of the study.

TABLE VIII

MAPPING OF UNDERLYING BELIEFS, DISCOURSE ANALYSIS THEMES AND FOCUS-GROUP REACTIONS

Underlying Beliefs	Discourse Analysis Themes				Focus-group Reactions
	Prevention and Disruption	Fueling Fear	The Face of the HPV Vaccine	Where the Boys Are	
Perceived Susceptibility	X	X	X	X	<ul style="list-style-type: none"> • All women are at equal risk for cervical cancer • Males can't get HPV/sequelae • Cancer comes out of nowhere
Perceived Severity	X	X			<ul style="list-style-type: none"> • Cancer is scary • HPV can cause infertility • HPV can make women really sick • Women deal with cancer alone
Perceived Barriers					<ul style="list-style-type: none"> • No mention of cost or access • Side effects seemed typical • Perceptions of vaccine safety were influenced by personal experience rather than ads
Perceived Norms			X	X	<ul style="list-style-type: none"> • Boys are to blame • Token diversity • Self-identify in various ways
Self-Efficacy	X			X	<ul style="list-style-type: none"> • Women and parents have the power of prevention • Getting the vaccine seems easy

a. **Prevention and disruption**

Discourse analysis revealed that ads were evenly divided between those that were optimistic and light, much like a typical or normative pharmaceutical ad, and those that were pessimistic and dark, a decidedly more creative direct-to-consumer approach. Regardless of the tone and genre, the common subtext informs the audience that a cervical cancer diagnosis comes out of nowhere (perceived susceptibility), shatters dreams and disrupts the lives of young women (perceived severity). Luckily this disruption can be prevented by getting the HPV vaccine and girls and women “have the power to choose” (self-efficacy). Pharmaceutical ads typically follow a familiar template: show the problem and suggest how a certain drug can fix it. Each genre uses a prevention template to advertise the HPV vaccine, but the orientation is different. Optimistic commercials talk about how the vaccine could prevent cervical cancer (a future disruption). The pessimistic ads graphically illustrate this future disruption and then recommend the vaccine as a “cure” for it. These ads also perpetuate the confusion in the public discourse between treatment and prevention by turning a prevention message (the vaccine protects against HPV and by extension cervical cancer) into a treatment message (the vaccine is the prescription for cervical cancer). This works for the drug companies because they know how to sell treatment, as well as consumers who exist within the US healthcare system that historically rewards treatment over prevention.

Focus groups immediately noticed that certain ads were “dark and sad” or “negative” while others were “positive” and “lighthearted.” Moreover, focus-group

participants understood the subtext of the ads: cervical cancer is disruptive. As Evan, a 21-year-old male noted: “well, I guess that’s how [cervical cancer] attacks people. It comes out of nowhere. So you’re just living your life and then you’re diagnosed with cervical cancer. They use it in a way to get women’s attention . . . [but] that’s also how it happens in life.” Taking this idea one step further, others discussed the notion that it made them “think about the consequence” of what happens if you don’t “get yourself immunized” particularly in the darker, more creative ads. As Puja, mother of an adolescent daughter put it, “basically I thought the ad was trying to give you the message that your life can be completely changed if HPV happens or cervical cancer happens, so think about the vaccination, which can prevent . . . this pause and you can continue your life.” This theme was also observed in the more positive ads as well. Lisa, mother of an adolescent son reported “the message I got was showing the . . . you know, parents and daughters enjoying life. To me, indirectly it said, you know, enjoy life. You take the vaccine, it will keep going this way.”

While participants understood the ads focused on prevention and disruption, this did not preclude them from being confused about the distinction between prevention and treatment. Many comments made throughout the focus groups suggested there was confusion about this. As one mother of a teenage daughter noted, in one of the ads “everything was kind of poppy and sensational and then the picture just kind of went to blah . . . it just went downhill and then it came back up . . . their life went back to being okay after they got the vaccine.”

This comment suggests that the vaccine can treat the disruption of cervical cancer, as the advertisers intended.

b. **Fueling fear**

Because of the cancer prevention frame, these ads intentionally downplay some pertinent information about HPV, including transmission, risk factors, non-cervical cancer sequelae, and primary prevention recommendations. Details about an STI often spark feelings of disgust (Smith, 2007), an emotion that is hard to sell. Highlighting and decontextualizing cervical cancer incidence and prevalence (perceived susceptibility) and inaccurately suggesting that HPV and cervical cancer can directly lead to infertility (perceived severity), however, ignites fear that can be turned into profit. Fueled by seemingly bleak statistics, serious music, and severe images, the cancer frame paints a frightening picture of what could happen (perceived severity) to women who don't get the HPV vaccine, making uptake more salient.

Focus-group participants were keenly aware that the ads talked about cervical cancer and not HPV and many noted that the ads "made it seem like it was all the same thing." As Julia, a 19-year-old female, noted: "in the middle [of the "What If" ad], I guess that's when she got HPV and then she got cervical cancer afterwards. I feel like it was kind of blurred so that it makes it seem like HPV does that to you. Like it does, but it's just they're two different things that weren't distinguished the way I would have liked them to be." While most groups questioned why HPV's sexual transmission was largely omitted, they did not fully

appreciate that other details like risk factors, genital warts, and primary cancer prevention was also downplayed; nor did they understand that the vaccine framing necessitated the highlighting of cervical cancer at the expense of other information.

The message framing in the ads not only highlighted cervical cancer, it both targeted the audience's perceived severity and instilled a perception of severity through the dark tone of the ads making the issue more salient. This fear framing was very compelling to them and often left them feeling both emotionally moved and "kind of manipulated." For some, hearing the word cancer was enough to inspire fear and "make the alarm start ringing." Parents reacted especially strongly to the notion of cancer in the ads suggesting that "when you hear the word 'cancer' it's shocking," "no matter what kind of cancer, it is serious. Anything that says cancer is just, it's a red flag," and "the minute you say cancer, it's like we know how bad cancer is." Many vaccine-eligibles, however, noted cancer was abstract to them and felt "far away" or "futuristic."

For some people, it was the images of cancer that struck them the hardest. This seemed especially true of male vaccine-eligibles and parents of sons. As Peter, the father of a teenage son suggested:

[The ad where] the woman was in the hospital and she had a shaved head . . . you know, I think that's an image that people can relate to. Most people have known at least one person—a friend or a relative—who's had some sort of cancer, so . . . so it was just up there a few seconds, but that's all I think they needed to do. It stuck with me.

This image also resonated with Lisa, the mother of an adolescent son:

Yeah, when they showed her up in the stirrups, you know. When they went to the extreme of [showing] a healthy young lady at the beginning and then she was all sick. You know . . . in the chair with that IV connected to her. And I'm sure everyone who has [cancer] doesn't go through the extreme but they're just showing how bad it can get.

Evan, 21, remembered the same image: "one of the girls . . . she was bald and sickly. She was plugged up to IVs. Like that imagery was pretty . . . serious."

Beyond the language and images, the ads used statistics to communicate the severity and ubiquity of cervical cancer. These statistics "seemed like a lot" for some but after contextualizing the numbers, they lost their impact for most groups, including 15–17 year old males:

Charlie: I mean, that's a lot but it's not a ton.

Roberto: When you first hear it, it sounds like a lot. But then when you think about it, it's not that much.

Jack: I mean, it's still a lot of people, but that is out of 300 million or so Americans. So it's a lot, but it's not like every single person you see walking down the street or anything.

Still others remained unimpressed given the broader context of cancer. As Kelly, a woman in her early 20s noted, "there's other cancers that have higher prevalence rates . . . I'm pretty sure only . . . I mean, 11,000 is a lot a year, but [not] like compared to, you know, breast cancer."

c. **The face of the vaccine**

While these ads intentionally show a diverse group of women (simultaneously targeting perceived norms and perceived susceptibility),

proportionally, they do not reflect the groups most affected by cervical cancer (both in terms of diagnoses and mortality). While African American and Hispanic women have the highest mortality and incidence rates respectively (NCI, 2012), most of the women and girls seen in the ads are White, which may be indicative of the market segment they are meant to target. One likely explanation for this is that White women and girls are actually the target audience for these commercials because this group is more likely to have a regular source of healthcare and health insurance, get cancer screenings, and receive childhood or routine vaccinations (Agency for Healthcare Research and Quality, 2013; Kaiser Family Foundation, 2012). Because of this, White women are more likely than other groups to actually talk to their healthcare provider about the vaccine as well as receive it (CDC, 2012). Therefore, these ads are targeted at those who are most likely to get the vaccine, and not necessarily a diagnosis of cervical cancer.

Focus-group discussion about who was portrayed in the ads and the extent to which participants identified with them varied significantly. As Karen, a college student noted, “by putting in different races in the commercial, it means this is all women . . . it’s how you know you’re included in this demographic.” With the exception of sex, there was little discussion about what the inclusion or exclusion of certain groups of people meant. Only two mothers made observations along these lines. Most astutely, one mother wondered: “the one where they showed . . . the dancing women . . . I noticed there are about six women. There are two African Americans. So I wondered if when it comes to

people who have it, if that's the scale of, you know, how many African Americans out of the group have it? That's what I wondered about, if they are showing an accurate representation of people who actually have HPV."

In general, respondents tried to see themselves in these ads and identify with at least one of the faces shown. Since the ads showed purposefully diverse females, most of the vaccine-eligible women and several of the mothers with daughters in the focus groups were able to identify themselves or their daughters based on age, race, or situation. As Olivia, a female college student noted:

There are things [the ads portrayed] like, yeah, I want to go to college. I want to travel. I was getting into it. I was like thinking in the back of my head, oh, I have to fill out my passport and all this stuff. And then all of the sudden it's just like "cancer" . . . and she was young, too. Like she was our age, which was . . . just like unsettling. She was just like our age. She had a boyfriend that's our age. And like I don't know. It was unsettling.

Not all women identified with what they saw, however. Hispanic women in particular reported having a difficult time identifying with the ads. As Isabella, a parent, nervously told the group, "I don't see myself there. There were no Hispanic people [in the ads]. I see that they focus on some groups, like [Lisa] said, like African Americans. But I don't see Hispanics there. So . . . I don't see myself in there." Julia, 19, echoed this sentiment, "besides the fact that they were like young females with their moms, I didn't feel like I saw myself in them. Cause they represented African Americans, Whites, and Asians. But I didn't see any Hispanics. So I was just kind of like, oh, that's not me." Other people felt excluded from the ads based on their sexual orientation, with one woman in her twenties noting "the biggest thing that

bugged me about [the ads] is just like obviously the commercials are really geared towards, like, straight people.” Finally, at least one person suggested that the ads didn’t speak to her because everyone in them “seemed pretty upper middle class.”

d. **Where the boys are: the feminine frame**

The female narrative is so dominant in these ads that men are almost entirely excluded from the ads. In most of the ads, women are empowered to “choose to be one less” (self-efficacy) but they are simultaneously disempowered as they alone carry the burden of protection. When men are included in the ads they give the women HPV, which quickly turns into cervical cancer, and the men slowly disappear as the prognosis gets worse. Because the ads have framed the vaccine as preventing cervical cancer and not HPV, the female narrative is logical but inaccurate. Excluding men from the ads speaks directly to perceived susceptibility. This is problematic because men can get HPV (which can lead to anal, penile, and head and neck cancer, as well as genital warts) and pass it to their partners. In addition, men and boys can now get the Gardasil vaccine, which means they should be included in the narrative to increase perceived norms around protecting themselves and their partners against HPV and, by extension, cancer and genital warts. To be fair, these ads were created before males were able to get the HPV vaccine; however, the lengths to which these ads go to exclude men is significant regardless of whether males can get the vaccine or not.

Focus-group participants were very quick to notice the lack of males in the HPV vaccine ads. Isabella, a mother of an adolescent son noted “I think they have to focus on boys. I have boys, so I’m worried that, you know, that they can get some diseases, too. . . . That piece is missing.” Participants noted that the ads portrayed HPV as a “female virus” or “female problem,” making the “HPV vaccine seem irrelevant or unnecessary” for guys. Almost all male participants and parents of males noted that they would “tune out” these ads if they were on. As Roberto, a 15-year-old male noted, ‘I don’t think from the commercials that I would consider getting the vaccine. Just because it wasn’t even geared towards men at all. It was all women.”

The most interesting finding from the focus groups, however, was the idea that ads actually blame men for giving their female partners cervical cancer. Participants used words like “culprit,” “transmitter,” “bad guy,” and “villain” to describe the men shown in the one ad featuring them. Males around the same age as the guys in the “What If” ad seemed to take this portrayal personally. As Evan, 21, reflected:

[The ad] started off on like a happy note and then out of nowhere it was like this guy’s photo and then it was like ‘what if you get HPV?’ So like it kind of just made guys seem like villains or something. So it kind of made me think, like, okay, you don’t want to hurt your partner, so . . . I mean, even though he did it unintentionally. But if someone gives their partner HPV, pretty much you could destroy them from having children. So I don’t know . . . when that happened, it made me think, like, man, I should get [the vaccine] to protect her . . . cause everything’s all happy and then it’s like what if *he* gives you HPV? Like that could be me, I don’t want to be the villain that like hurts . . . cause just in general no one wants to do that, but you could be put in that position.

Males were also quick to notice that the men portrayed in the “What If” ad fade away as the woman grows sicker. Echoing the discourse analysis, Chad, 26, noticed:

So when they were falling in love in the hammock, it's all great. But then when she's like in the chemo chair, the guy was nowhere to be seen. Which to me is like, okay, if you don't get the vaccine, you might get HPV. And then you will no longer be desirable. And you will no longer . . . there's no men in your life. Which honestly is a very subtle thing that I noticed, but I thought that was just kind of weird. They're in love and now she's alone and bald and in a chemo chair. She looks miserable, you know? So . . . They could have shown him like holding her hand. You know, like being there when he's old and gray. He's still with her. But like, no. You're all by yourself and no one loves you.

Peter, a father of a teenage son, remembers the ad the same way:

In the one ad . . . she meets the Prince Charming, the dark-haired guy, they go off together . . . [then] he gives her the virus. Okay. But the message of that commercial was, well, *she* should get the vaccine. Okay. Why not have a double message there? ‘You’ve gotta to get the [vaccine], too, so you don’t get . . . give her the cancer.’ I mean, that’s not at all present in this. I mean, he gives her the virus and then he disappears. Then it shoots to her in the hospital. And that’s it . . . maybe he’s at the bedside there, but in terms of the impression . . . he’s not there. Then she gets sick and, yeah, he’s gone.

Peter recognizes that the ads put the burden of protection on women and suggests a viable way to add males to the narrative. Following on from this suggestion, David, 26, noted that the ads would have been more effective if they were more like “the herpes commercials [where] there's always a partnership. There's always a couple. We're fighting together. I think those are a little bit more effective than the Gardasil and all of them that make it look like it's just about girls . . . and that guys are the villains.”

Finally, confirming findings from the discourse analysis, the lack of males in the ads made several participants reflect that women are ultimately responsible for protecting their own sexual health. Commenting on the “What If” ad that hints at HPV’s sexual transmission, Rachel, the mother of a teenage daughter noted, “I think that I do like the idea of it being . . . coming to the forefront that men are the carriers. And it kind of gets you . . . it helps, I think, as a woman to make you more responsible for your body.” But Dahlia, a woman in her mid-20s, had a very different reaction to this implication: “it’s so annoying it’s my responsibility. Dang it.”

5. **Discussion**

Based on the conceptual model in Figure 3 this study addressed three interrelated research questions. First, it identified how direct-to-consumer ads frame the HPV vaccine. Discourse analysis and focus groups revealed that the HPV vaccine was framed as cervical cancer prevention. This framing necessarily highlights the severity of the disease relying on generalized fear associated with cancer to make the issue more salient among audiences. Highlighting cervical cancer also allowed the ads to focus on the female narrative of health in an effort to both empower women and mothers to get the vaccine and feature a diverse range of faces in the ads to suggest that all women and girls are at risk. The cancer prevention angle also avoids the implication that parents must consider their child’s future sexual health, something parents of young adolescents may prefer. But framing is more than just what is selected and made

salient, it is also about what is downplayed. Through cancer framing, the ads downplay many pertinent facts about HPV (transmission, risk factors, transience, other sequelae) leaving more room in the ads to fuel audience fear about the perceived severity of cancer as well as their own perceived susceptibility. The downplaying of transmission, in particular, allowed advertisers to focus solely on the female narrative and all but exclude men and boys from seven of the eight ads. The lack of men was among the strongest themes in both the discourse analysis and the focus groups.

In addition, this study examined the extent to which the message framing in the ads targets five underlying beliefs and how these constructs resonate with vaccine decision-makers (Table VIII). Of these beliefs, perceived susceptibility is the most pervasive across the discourse analysis themes as well as the most resonant among vaccine decision-makers. The ads not only suggest that cervical cancer comes out of nowhere but they tell the audience that it's "closer than you know." Since the ads almost exclusively feature women and mothers with daughters, not surprisingly, perceived susceptibility seemed to be split by sex in focus groups. Women and parents with daughters felt more at risk for cervical cancer. Their perceived susceptibility for HPV was not fully discussed as ads prompted participants to think mostly about cervical cancer. Because males are virtually absent from the ads, males and parents with sons were confused about whether HPV affected them and didn't find the cervical cancer prevention message in the ads relevant to them.

When ads targeted perceived norms, it was almost always in conjunction with perceived susceptibility: showing diverse, healthy women engaging in a variety of activities. The images make the audience understand that any woman can get cervical cancer, including them. Interestingly, women tried to identify with something or someone in the ads. People self-identified in various ways. They felt included or excluded for different reasons. Males had a difficult time identifying with the ads and almost unanimously felt blamed by them. While perceived severity is only found in half of the themes, it is present in all of the ads. The main message is clear, if you don't get the vaccine you will get cancer and end up alone. The severity of cancer was conveyed through images (a woman who has lost her hair receiving chemotherapy), statistics ("every 47 minutes another woman is diagnosed"), storyline ("she doesn't think she will be able to have kids"), and tone (dark music, drab colors, sad expressions). Perceived severity of cancer, not necessarily HPV, was felt very strongly by focus-group participants. Infertility as well as the portrayal of a young woman getting sick very much resonated across all groups. Emotional responses to these ads based on perceived severity of cancer were almost always through the lens of the participant's personal experience.

Not surprisingly, many of the ads targeted self-efficacy and downplayed perceived barriers. Half of the ads directly told the audience that they "had the power to choose" suggesting that women and mothers could control both the behavior and the outcome. Other ads cued the viewer to "talk to your doctor" making vaccine decision-makers understand that there was something relatively

easy they could do to prevent cancer. All focus groups recognized that the ads made it seem like getting the HPV vaccine was an easy thing to do. However, they also recognized that the ads did not mention cost, access, or safety of the vaccine, confirming the discourse analysis finding that ads downplay perceived barriers.

6. **Strength and limitations**

This study has two major strengths. First, it uses a mixed-methods approach that is well suited to the research questions being explored. By using two different qualitative methods, discourse analysis and then focus groups, to examine the same text (HPV vaccine ads), this study offers a more complete analysis of the latent content of the ads than using a single method. Second, ads are a huge source of information for both parents and those eligible to get the vaccine, but relatively few published studies have systematically examined their overt and latent content or how they influence consumers' attitudes and behaviors around HPV vaccines. While Malkowski (2013), explored the narrative discourse of a different Gardasil campaign (a pamphlet-based communication called "My Voice"), to my knowledge there have not been any studies examining the content of these particular ads. Additionally, only one other study (Leader et al., 2011) has examined reactions to an HPV vaccine ad. In that study, female adolescents were asked to provide feedback on one direct-to-consumer ad ("One Less"). The present study goes beyond Leader et al. (2011) by examining eight

different ads and including all possible decision-makers (female and males 15–26 and parents of youth 11–17) in the focus groups.

This study should be viewed in light of its limitations. First, as is typical of qualitative studies, this investigation used a small purposive sample; therefore feedback on the ads is not representative of the entire population of vaccine decision-makers. Second, although the moderator was careful to remain neutral and not lead the discussion, participants knew that the purpose of the focus group was to give feedback on the ads. Therefore, they may have given greater thought to the content of the ads than they would have in a non-research setting.

7. **Conclusions**

Both the discourse analysis and focus groups suggested that HPV is a female virus and that women are ultimately responsible for protecting their own sexual health and dealing with the burden of the consequences, often alone. Despite the nearly unanimous reaction that the ads were framed to highlight HPV vaccine as only relevant for women, many men and parents of boys suggested that males could very naturally be inserted into the ads to make the narrative more inclusive, something that should be considered in future HPV vaccine ads. This reaction supports the findings of a recent study that suggested parents of pre-teenage sons wanted to see racially diverse images of sons and parents in motivational vaccine ads (Cates et al., 2012). While these suggestions may expand the target audience for the ads and increase resonance among all vaccine decision-makers, ads would also need to communicate potential

outcomes of HPV that affect males (e.g., head and neck, anal, and penile cancer, as well as genital warts) as other research has shown that males and parents of sons are not motivated to get the HPV vaccine in order to protect female partners alone (Liddon et al., 2010). In addition, these sequelae need to be highlighted so that the narrative includes the MSM population, a group at high risk for HPV who received an extended recommendation for getting the vaccine by ACIP.

Analysis revealed that these ads highlighted cancer and downplayed HPV and its sexual transmission in an attempt to circumvent the stigma attached to STIs. This may have made logical sense when marketing the vaccine at a time where knowledge about HPV was relatively low. However, almost all focus-group participants in this study knew that HPV was sexually transmitted prior to watching the ads. Therefore, not mentioning HPV's sexual transmission in the ads was not only confusing but distracting for focus-group participants: by intentionally downplaying how HPV is spread, vaccine ads may have increased the taboo around its sexual transmission and, by extension, perpetuated stigma. Future advertising should also address HPV's sexual transmission and highlight its prevalence helping to normalize the virus and possibly alleviate some of the surrounding stigma (Waller et al., 2007).

V. CONCLUSION

The HPV vaccines are an important public health tool. Both vaccines help to prevent strains of the most common STI in the United States and the cause of many different types of anogenital cancers, as well as head and neck cancers. One of the vaccines, Gardasil, also protects against the two strains that cause 90% of genital warts. Preventing HPV means reducing the disease burden of this STI as well as its potential sequelae. Unfortunately, HPV vaccination rates in the United States are considerably lower than that of other vaccines as well as the Healthy People 2020 goals (series completion for 80.0% of females aged 13–15). Data from NIS show that 53% of females ages 13–17 had received one or more doses, and 35% of females in the same age group had received three or more doses in 2011. While recommendations suggest that 11–12 years of age is the ideal time for administration, NIS data also show a statistically significant increase in vaccine uptake with every year from age 13–17. This trend suggests that, despite the recommended age of vaccination, parents may be getting their daughters vaccinated according to their own timeline, likely corresponding with when they expect their daughters to become sexually active. Rates of vaccination dip after the age of 18, with 43% of females 19–21 years of age and 21.5% of females 22–26 years of age receiving one or more doses of the HPV vaccine in 2011 (CDC, 2013).

Male vaccine rates are expected to be lower than female rates given the length of time the vaccine has been licensed for this population and when it received routine recommendation status, and they are. Only 8% of males ages 13–17 received one or

more doses, and only 1% of males in the same age-range group received three or more doses of the HPV vaccine (CDC, 2012). Males 19–26 also had low rates of uptake in 2011: only 2.8% of males 19–21 and 1.7% of males 22–26 had received one or more doses of the HPV vaccine (CDC, 2013). These rates suggest that we have a way to go to reach herd immunity levels (80%–85% of the recommended population).

According to a recent review of the literature by Etter et al. (2012), many factors likely contribute to these low rates, including lack of healthcare provider recommendation, beliefs about not being at risk, institutional barriers (Liddon et al., 2012), negative attitudes about the vaccine, and lack of information (Guerry et al., 2011). Addressing these factors will undoubtedly require a multi-pronged approach including but not limited to several of those shown in Figure 2: policy level recommendations, healthcare providers, and media.

Although the first two of these influences are beyond the scope of this research, they need to be expanded upon here. Policy recommendations to improve uptake are already in place: ACIP routinely recommends the HPV vaccine for both females and males ages 11–26 and 11–21 (and MSM 22–26), respectively, which should trickle down to other policy-level recommendations and influence beliefs about the vaccine. However, it is also important to point out that state-level policies, primarily those at the school-level should be considered for improved uptake. Several studies have shown that school-based promotion initiatives can achieve higher rates of vaccination (Gold et al., 2011; Skinner and Robbins, 2010). School mandates have also been shown to increase vaccination rates of other vaccines and could have the same effect on HPV vaccine rates (Dempsey and Schaffer, 2010). In addition, these types of policy

recommendations could influence underlying beliefs about the vaccine by sending a strong message to parents and adolescents about the importance of this vaccine and their risk of infection. Presumably, these types of policies would also have an effect on vaccine decision-maker information and reduce institutional barriers.

Healthcare-provider recommendation has been shown to be one of the most influential factors in vaccine uptake (Gerend et al., 2009; Reiter et al., 2009). However, while receiving this information from their healthcare providers may be preferable, most adolescents and parents appear to hear about the vaccine from the media first (Rand et al., 2011; Caskey et al., 2009). Further, a content analysis of patient-provider discussions revealed that, on average, patients and parents do not ask questions or indicate their level of knowledge about this vaccine (Goff et al., 2011). Taken together, this may mean that healthcare providers have to go out of their way to clarify information their patients have previously heard or reframe the vaccine for them in order to highlight its importance and the patient's risk factors. Healthcare providers need to talk to patients and parents about HPV and the vaccine, stressing who is at risk for HPV, who can get the vaccine, and how vaccination well before sexual debut is best.

Reactions to how the vaccine has been framed in the media may have important implications for ways to increase vaccine uptake, especially as they relate to reasons for non-vaccination such as lack of information about the vaccine and beliefs about not being at risk. The present study found that eight direct-to-consumer TV ads have framed the HPV vaccine as cervical cancer prevention, reflecting and perpetuating social norms about sexual health: females must protect themselves against disease—and sometimes their partners—or suffer the consequences alone. This framing

contributed to short-term knowledge change and impressions about HPV, cervical cancer, and the vaccine. According to focus-group participants, the ads suggested that all women are at risk for cervical cancer, tapping into their perceived susceptibility and targeting a universal fear of cancer. This framing resonated with parents of daughters and some females ages 15–26. However, adolescents and young adults also noted that cancer felt “futuristic” and that the threat of more immediate outcomes (like genital warts) may be more salient among their age group. Vaccine decision-makers were keenly aware that the ads downplayed HPV transmission and, by extension, excluded men and often found this omission distracting and confusing. These findings suggest that undoing the previous cervical cancer prevention framing may help improve the salience of this vaccine and encourage broader uptake, especially among males.

Clear, consistent communication about the HPV vaccine is key and will require work on all three of these levels. Going forward, we need to make the vaccine salient to a wider target audience, thus reflecting the most recent recommendations. One approach may be to highlight three aspects currently downplayed in the vaccine framing: HPV transmission, prevalence, and all potential outcomes. Parents may be reluctant to think about their children becoming sexually active. Therefore, more clearly articulating how HPV is transmitted will allow for a more open discussion of the best time to vaccinate and why the recommendation is set in adolescence. Vaccine trends already suggest that parents are factoring sexual debut into their decision-making so there seems little reason not to open the lines of communication around this point. Focus-group parents in the current research also reflected on trying to figure out the “right time” to vaccinate based on their suspicions of their child’s sexual activity.

Discussing transmission also provides clarity about who is at risk for HPV and highlights that although it has been framed as a female-only concern, males can get HPV, pass it on to their partners, and develop a range of HPV-related diseases. This approach is undoubtedly controversial but allows for the opportunity to normalize HPV, make its prevalence known, and illustrate that almost everyone is or will be at risk of contracting it.

Finally, vaccine decision-makers need to understand that persistent HPV is linked to many outcomes, including anal and oropharyngeal cancers and genital warts, not just cervical cancer. Focusing attention on oropharyngeal cancer is important for two reasons. First, it reemphasizes that both males and females are at risk. Second, it reflects current and future trends in HPV-related cancers. Research by Chaturvedi et al. (2011) suggests that if current incidence trends of HPV-related oropharyngeal cancers continue, they will surpass annual cervical cancer rates by 2020. Additionally, as the present research suggests, bringing more attention to genital warts as an outcome of this extremely common STI may resonate more strongly with older adolescents who have not been vaccinated yet, and who currently show lower rates of uptake.

Returning to where this study began, framing is an important part of how we communicate, both on an interpersonal level as in patient-provider discussions and a broader media communication level. Frames help individuals and larger audiences understand complex topics, like HPV, by highlighting what is important and what is salient. If done well, message framing can influence underlying beliefs and lead to certain behaviors. The purpose of this research was to better understand the current framing and examine the extent to which it resonated with vaccine decision-makers.

Future studies should explore and test alternative messages and framing that include some of the recommendations above and appeal to different segments of the target audience.

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APPENDICES

APPENDIX A

Human Papillomavirus (HPV) Survey—15–26 year olds

Please circle ONE number for your answer to each question unless you are given other instructions. Answer each question honestly. Your answers will be kept anonymous.

1. Have you had the Human Papillomavirus (HPV) vaccine, sometimes called the cervical cancer vaccine, Gardasil or Cervarix?

Yes	1→ GO to Q.3
No	2→ GO to Q.4

2. If you have not received the HPV vaccine, do you plan to get it in the future?

Yes	1→ GO to Q.4
No	2→ GO to Q.4

3. To complete the full vaccination series, there are 3 total shots. How many shots have you had so far?

1 shot.....	1
2 shots.....	2
3 shots.....	3
Not sure exact number of shots	4

APPENDIX A (continued)

The next two questions ask for your opinion about the information you have heard about HPV and the HPV vaccine.

4. People have many different opinions about the Human Papillomavirus (HPV). The following is a list of things people may think about HPV. For each statement, please indicate if you agree or disagree.

	<u>Agree</u>	<u>Disagree</u>
a. HPV can be transmitted through oral, anal, and vaginal sex	1	2
b. HPV is <u>not</u> very common.....	1	2
c. HPV can be treated with antibiotics	1	2
d. HPV can cause cervical cancer.....	1	2
e. HPV can cause many types of cancer.....	1	2
f. HPV can cause genital warts.....	1	2
g. Only females can get HPV	1	2
h. Condoms can protect against HPV	1	2
i. If a woman has a normal Pap smear, she doesn't have HPV.....	1	2

5. People have different opinions about the HPV vaccine. The following is a list of things people may think about the HPV vaccine. For each statement, please indicate if you agree or disagree.

	<u>Agree</u>	<u>Disagree</u>
a. The HPV vaccine can prevent cervical cancer	1	2
b. The HPV vaccine prevents against all types of HPV	1	2
c. Both males and females can get the HPV vaccine	1	2
d. The HPV vaccine can cause cervical cancer.....	1	2
e. The HPV vaccine can cause HPV.....	1	2
f. People who are vaccinated no longer have to use condoms.....	1	2
g. The HPV vaccine lasts forever	1	2
h. The vaccine is most effective for people who are sexually active	1	2
i. If a woman gets the HPV vaccine, she still must get a regular pelvic exam and Pap smear	1	2

THANK YOU VERY MUCH FOR YOUR COOPERATION

Coder I.D. _____

Date _____

APPENDIX A (continued)

Human Papillomavirus (HPV) Survey—Parents

Please circle ONE number for your answer to each question unless you are given other instructions. Answer each question honestly. Your answers will be kept anonymous.

1. Has your child had the Human Papillomavirus (HPV) vaccine, sometimes called the cervical cancer vaccine, Gardasil or Cervarix?

Yes	1→ GO to Q.3
No	2→ GO to Q.4

2. If your child has not received the HPV vaccine, do you plan to get it for them in the future?

Yes	1→ GO to Q.4
No	2→ GO to Q.4

3. To complete the full vaccination series, there are 3 total shots. How many shots has your child had so far?

1 shot.....	1
2 shots.....	2
3 shots.....	3
Not sure exact number of shots.....	4

APPENDIX A (continued)

The next two questions ask for your opinion about the information you have heard about HPV and the HPV vaccine.

4. People have many different opinions about the Human Papillomavirus (HPV). The following is a list of things people may think about HPV. For each statement, please indicate if you agree or disagree.

	<u>Agree</u>	<u>Disagree</u>
a. HPV can be transmitted through oral, anal, and vaginal sex	1	2
b. HPV is <u>not</u> very common.....	1	2
c. HPV can be treated with antibiotics.....	1	2
d. HPV can cause cervical cancer.....	1	2
e. HPV can cause many types of cancer.....	1	2
f. HPV can cause genital warts.....	1	2
g. Only females can get HPV	1	2
h. Condoms can protect against HPV	1	2
i. If a woman has a normal Pap smear, she doesn't have HPV.....	1	2

5. People have different opinions about the HPV vaccine. The following is a list of things people may think about the HPV vaccine. For each statement, please indicate if you agree or disagree.

	<u>Agree</u>	<u>Disagree</u>
a. The HPV vaccine can prevent cervical cancer	1	2
b. The HPV vaccine prevents against all types of HPV	1	2
c. Both males and females can get the HPV vaccine.....	1	2
d. The HPV vaccine can cause cervical cancer.....	1	2
e. The HPV vaccine can cause HPV.....	1	2
f. People who are vaccinated no longer have to use condoms.....	1	2
g. The HPV vaccine lasts forever	1	2
h. The vaccine is most effective for people who are sexually active.....	1	2
i. If a woman gets the HPV vaccine, she still must get a regular pelvic exam and Pap smear	1	2

THANK YOU VERY MUCH FOR YOUR COOPERATION

Coder I.D. _____

Date _____

APPENDIX B

Focus-Group Discussion Guide (15–26 years old)

Introduction: Thank you all so much for agreeing to participate in this focus-group session. My name is Sarah Redman. I am the principal investigator on this research study. We are looking at how media influences decisions about getting the HPV vaccine. Before we start I wanted to go over a few things:

- We have a lot to do and talk about today!
 - We will talk about the Human Papillomavirus (HPV) and the HPV vaccine
 - We will watch a few commercials
 - We will take a brief survey
 - We will discuss the commercials
 - We should be finished in about 90 minutes

- Please remember that:
 - The focus-group session is being audio recorded
 - You do not have to answer any questions that make you feel uncomfortable
 - You can leave the focus group at any time
 - Anything you say in this room will be kept confidential by research staff. Only research staff will have access to the audio recordings. However, we need your help in keeping the discussion today confidential—so please do not discuss what is said in this room with anyone else after we leave today.
 - You do not have to raise your hand to speak, but do respect each other and try not to interrupt one another.

- And finally: please feel free to get snacks at any point during the session!

Are there any questions before we start?

PRE-Knowledge and attitudes about HPV and the HPV vaccine

So, let's start by talking about what you know about the Human Papillomavirus (HPV).

Raise your hand if you have heard of Human Papillomavirus (HPV).

What do you know about HPV? (*Probe as necessary*)

What is it?

How it is transmitted?

Who can get it?

What it can cause?

How it can be treated?

How it can be prevented?

How common is it?

APPENDIX B (continued)

What do you know about the HPV vaccine?

Probe if respondents can't think of anything:

Who is eligible to get the HPV vaccine?

Can anyone get it? Just girls? What about boys?

Who should get the HPV vaccine?

Who gets to make the decision?

Has anyone seen ads for the HPV vaccine? Where?

HPV vaccine commercials

Now we are going to watch eight ads created by the drug companies who make the vaccines.

(WATCH ADS)

Ok, now we are going to take a short break so that you can get food and fill out a brief questionnaire. After everyone completes their questionnaire we will discuss the HPV vaccine ads as a group.

POST-discussion

General thoughts or feedback?

What do these commercials tell you about HPV?

Probe if necessary:

What is it?

How it is transmitted?

Who is at risk to get it?

What it can cause?

How can it be prevented?

How common is it?

What do they tell you about the HPV vaccine?

Probe if necessary:

Who is eligible to get the HPV vaccine?

What does the HPV vaccine do?

How do you get the HPV vaccine? (is it hard to get? Where do you get it?)

What is the overall tone of the ad? (Probe: how serious is HPV? Can it be treated? Who can get HPV?)

APPENDIX B (continued)

Can you describe the people in the ads? Did you identify with them?

Based on the ads, who should get the HPV vaccine?

Did these commercials seem like typical drug ads? (*Probe: which ones, if any? Why do you think some are different?*)

Is there anything these ads *don't* tell you that you want to know about HPV or the HPV vaccine?

Based on the information from the ads we have seen, do you understand what HPV is? What about the HPV vaccine?

Which ads were most compelling to you? Why?

Future Ads about HPV vaccine (18–26 ONLY)

Now we are going to watch another commercial. This one was not produced by the drug companies that make the HPV vaccines.

General feedback on the alternative ad?

What about compared to the drug company ads we watched before? (*Probe: How is this ad different from the other ads?*)

Fact Reveal: If there aren't any other thoughts or comments, I will tell you a little bit about HPV and the HPV vaccine and answer any questions you may have had along the way. (Move to slides)

Wrap up: Any final comments or thoughts before we finish? If not, I want to thank you all again for participating today. I really appreciate your time. Please remember to collect your honorarium before you leave. If you have any questions or concerns please let me know. Thanks again!

APPENDIX B (continued)

Focus-Group Discussion Guide (PARENTS)

Introduction: Thank you all so much for agreeing to participate in this focus-group session. My name is Sarah Redman. I am the principal investigator on this research study. We are looking at how media influences decisions about getting the HPV vaccine. Before we start I wanted to go over a few things:

We have a lot to do and talk about today!

We will talk about the Human Papillomavirus (HPV) and the HPV vaccine

We will watch a few commercials

We will take a brief survey

We will discuss the commercials

We should be finished in about 90 minutes

Please remember that:

The focus-group session is being audio recorded

You do not have to answer any questions that make you feel uncomfortable

You can leave the focus group at any time

Anything you say in this room will be kept confidential by research staff. Only research staff will have access to the audio recordings. However, we need your help in keeping the discussion today confidential—so please do not discuss what is said in this room with anyone else after we leave today.

You do not have to raise your hand to speak, but do respect each other and try not to interrupt one another.

You are here because you are the parent of a (insert group type). When answering questions, please think about that child only.

And finally: please feel free to get snacks at any point during the session!

Are there any questions before we start?

PRE-Knowledge and attitudes about HPV and the HPV vaccine

So, let's start by talking about what you know about the Human Papillomavirus (HPV).

Raise your hand if you have heard of Human Papillomavirus (HPV).

What do you know about HPV? (Probe as necessary)

What is it?

How it is transmitted?

Who can get it?

What it can cause?

How it can be treated?

APPENDIX B (continued)

How it can be prevented?

How common is it?

What do you know about the HPV vaccine?

Probe if respondents can't think of anything:

Who is eligible to get the HPV vaccine?

Can anyone get it? Just girls? What about boys?

Who should get the HPV vaccine?

Who gets to make the decision?

Has your child had the HPV vaccine?

Has anyone seen ads for the HPV vaccine? Where?

HPV vaccine commercials

Now we are going to watch a eight ads created by the drug companies who make the vaccines.

(WATCH ADS)

Ok, now we are going to take a short break so that you can get food and fill out a brief questionnaire. After everyone completes their questionnaire we will discuss the HPV vaccine ads as a group.

POST-discussion

General thoughts or feedback?

What do these commercials tell you about HPV?

Probes if necessary:

What is it?

How it is transmitted?

Who is at risk to get it?

What it can cause?

How can it be treated?

How can it be prevented?

How common is it?

Is it serious?

What do they tell you about the HPV vaccine? (PROBE if necessary)

Who is eligible to get the HPV vaccine?

What does the HPV vaccine do?

APPENDIX B (continued)

What is the overall tone of the ads?

Can you describe the people in the ads? Did you identify with them?

Based on the ads, who should get the HPV vaccine?

Did these commercials seem like typical drug ads?

Is there anything these ads *don't* tell you that you want to know about HPV or the HPV vaccine when making a decision to get your child vaccinated?

Based on the information from the ads we have seen, do you understand what HPV is? What about the HPV vaccine?

Which ads were most compelling? Why?

Fact Reveal: If there aren't any other thoughts or comments, I will tell you a little bit about HPV and the HPV vaccine and answer any questions you may have had along the way. (Move to slides)

Wrap up: Any final comments or thoughts before we finish? If not, I want to thank you all again for participating today. I really appreciate your time. Please remember to collect your honorarium before you leave. If you have any questions or concerns please let me know. Thanks again!

APPENDIX C

Post Focus-group Questionnaire—15–26 year olds

Please circle ONE number for your answer to each question unless you are given other instructions. Answer each question honestly. Your answers will be kept anonymous.

1. Before today's focus group, had you ever heard of the Human Papillomavirus (HPV)?

Yes	1
No	2

2. Before today's focus group, had you ever heard of the Human Papillomavirus (HPV) vaccine, sometimes called the cervical cancer vaccine, Gardasil, or Cervarix?

Yes	1 → GO to Q.3
No	2 → GO to Q.6

3. Have you had the Human Papillomavirus (HPV) vaccine, sometimes called the cervical cancer vaccine, Gardasil or Cervarix?

Yes	1 → GO to Q.4
No	2 → GO to Q.5

APPENDIX C (continued)

If YES to Question 3.

4. The following is a list of reasons a person may get the HPV vaccine. For **part a**, please indicate whether any of the following happened before you got the vaccine, and then for **part b**, please rate how influential this was in deciding to get the HPV vaccine.

a. Did ...			<u>If YES to part a:</u>				
	<u>No</u>	<u>Yes</u>	b. If 1 is not at all influential and 5 is extremely influential, how influential was this?				
			<u>Not at all Influential</u>		<u>Extremely Influential</u>		
(1) your doctor recommend getting the HPV vaccine?	1	2→	1	2	3	4	5
(2) your parents or guardians suggest getting it?	1	2→	1	2	3	4	5
(3) you know someone else that got it?	1	2→	1	2	3	4	5
(4) you hear about it from someone you trust?	1	2→	1	2	3	4	5
(5) you think you were at risk for HPV because you are sexually active?	1	2→	1	2	3	4	5
(6) you think you were at risk for HPV for another reason?	1	2→	1	2	3	4	5
(7) you want to protect yourself against cancer?	1	2→	1	2	3	4	5
(8) you think it seemed easy to get?	1	2→	1	2	3	4	5
(9) get it because it was free or insurance covered it?	1	2→	1	2	3	4	5
(10) you get it for another reason? (Please write in below)	1	2→	1	2	3	4	5

4c. To complete the full vaccination series, there are 3 total shots. How many shots have you had so far?

- 1 shot 1
- 2 shots 2
- 3 shots 3→ GO to Q.7
- Don't know 4

APPENDIX C (continued)

4d. Do you plan to complete the full vaccination series?

Yes 1 → GO to Q.7

No 2 → GO to Q.7

If No to Question 3

5. Why have you decided not to get the HPV vaccine so far? Is it because...

	<u>Yes</u>	<u>No</u>
a. you are concerned about the vaccine's safety?.....	1	2
b. you don't think the vaccine is effective?	1	2
c. you don't trust vaccines generally?	1	2
d. you do not feel you are at risk for HPV because you are not sexually active?.....	1	2
e. you do not think that <u>you</u> should get vaccinated for a sexually transmitted infection?	1	2
f. you do not think <u>anyone</u> should get vaccinated for a sexually transmitted infection?	1	2
g. you think it's too expensive?.....	1	2
h. your parents/guardians do not think you should get it?	1	2
i. your doctor doesn't think you need it?.....	1	2
j. none of your friends plan to get it?	1	2
k. it seems difficult to get?	1	2
l. you don't think HPV is a serious disease?.....	1	2
m. of another reason? (Please write reason below)	1	2

6. If you have not had the HPV vaccine, do you plan to get it in the future?

Yes 1

No 2

7. Do you know anyone who has had the HPV vaccine?

Yes 1

No 2

APPENDIX C (continued)

8. Have you had other vaccines besides the HPV vaccine?
- | | | |
|--|-----------|---|
| | Yes | 1 |
| | No | 2 |
9. Before the focus group today, had you seen any television commercials for the HPV vaccine?
- | | | |
|--|-----------|---|
| | Yes | 1 |
| | No | 2 |

The next two questions ask for your opinion about the information you have heard about HPV and the HPV vaccine.

10. People have many different opinions about the Human Papillomavirus (HPV). The following is a list of things people may think about HPV. For each statement, please indicate if you agree or disagree.
- | | <u>Agree</u> | <u>Disagree</u> |
|---|--------------|-----------------|
| a. HPV can be transmitted through oral, anal, and vaginal sex | 1 | 2 |
| b. HPV is <u>not</u> very common | 1 | 2 |
| c. HPV can be treated with antibiotics | 1 | 2 |
| d. HPV can cause cervical cancer | 1 | 2 |
| e. HPV can cause many types of cancer | 1 | 2 |
| f. HPV can cause genital warts | 1 | 2 |
| g. Only females can get HPV | 1 | 2 |
| h. Condoms can protect against HPV | 1 | 2 |
| i. If a woman has a normal Pap smear, she doesn't have HPV | 1 | 2 |

APPENDIX C (continued)

15. How would you describe your racial and ethnic background? *(Circle all that apply).*
- | | |
|--|---|
| a. Black or African American | 1 |
| b. Hispanic or Latino | 2 |
| c. White..... | 3 |
| d. Asian | 4 |
| e. American Indian or Alaska Native | 5 |
| f. Native Hawaiian or Other Pacific Islander | 6 |
| g. Other (Please write in below) | 7 |
-
16. What is the highest grade level you have completed?
- | | |
|---|---|
| a. Less than 8th grade..... | 1 |
| b. Some high school..... | 2 |
| c. High school diploma or GED | 3 |
| d. Some college | 4 |
| e. Two year college degree/Associate's degree | 5 |
| f. Four year college degree or more | 6 |
17. Do you belong to a church, synagogue, mosque, temple, or any other religious organization?
- | | |
|-----------|---|
| Yes | 1 |
| No | 2 |
18. How would you describe your views on most political matters?
- | | |
|-------------------|---|
| Liberal..... | 1 |
| Moderate | 2 |
| Conservative..... | 3 |
| Don't know..... | 4 |

THANK YOU VERY MUCH FOR YOUR COOPERATION

Coder I.D. _____ Date _____

APPENDIX C (continued)

Post-Focus-Group Survey—Parents

Please circle ONE number for your answer to each question unless you are given other instructions. Answer each question honestly. Your answers will be kept anonymous.

If you have more than one child/guardian—when answering questions that ask about “your child” please only think about the child you discussed during the focus-group session today.

1. Before today’s focus group, had you ever heard of the Human Papillomavirus (HPV)?

Yes 1

No 2

2. Before today’s focus group, had you ever heard of a Human Papillomavirus (HPV) vaccine, sometimes called the cervical cancer vaccine, Gardasil, or Cervarix?

Yes 1→ GO to Q.3

No 2→ GO to Q.6

3. Has your child had the Human Papillomavirus (HPV) vaccine, sometimes called the cervical cancer vaccine, Gardasil or Cervarix?

Yes 1→ GO to Q.4

No 2→ GO to Q.5

APPENDIX C (continued)

If YES to Question 3.

4. The following is a list of reasons a person may get the HPV vaccine. For **part a**, please indicate whether any of the following happened before your child got the vaccine, and then for **part b**, please rate how influential this was in deciding to get your child vaccinated.

			<u>If YES to part a:</u>				
			b. If 1 is not at all influential and 5 is extremely influential, how influential was this?				
a. Did you get your child vaccinated because...			<u>Not at all Influential</u>			<u>Extremely Influential</u>	
	<u>No</u>	<u>Yes</u>					
(1) your doctor recommended he or she get the HPV vaccine?	1	2→	1	2	3	4	5
(2) your child wanted it?	1	2→	1	2	3	4	5
(3) you knew someone else that got it?	1	2→	1	2	3	4	5
(4) you heard about it from someone you trust?	1	2→	1	2	3	4	5
(5) you thought he or she was at risk for HPV?	1	2→	1	2	3	4	5
(6) you wanted to protect your child against cancer?	1	2→	1	2	3	4	5
(7) you thought it seemed easy to get?	1	2→	1	2	3	4	5
(8) it was free or covered by insurance?	1	2→	1	2	3	4	5
(9) something else happened? (Please write in below)	1	2→	1	2	3	4	5

4c. To complete the full vaccination series, there are 3 total shots. How many shots has your child had so far?

- 1 shot 1
- 2 shots 2
- 3 shots 3→ GO to Q.7
- Not sure exact number of shots 4

APPENDIX C (continued)

4d. Do you plan to complete the full vaccination series for your child?

- Yes 1 → GO to Q.7
 No 2 → GO to Q.7

If No to Question 3

5. Why have you decided not to get the HPV vaccine for your child so far? Is it because...

- | | <u>Yes</u> | <u>No</u> |
|---|------------|-----------|
| a. you are concerned about the vaccine's safety?..... | 1 | 2 |
| b. you don't think the vaccine is effective? | 1 | 2 |
| c. you don't trust vaccines generally? | 1 | 2 |
| d. you do not feel your child is at risk for HPV
because he or she is not sexually active? | 1 | 2 |
| e. you do not think that <u>your child</u> should get
vaccinated for a sexually transmitted infection? | 1 | 2 |
| f. you do not think <u>anyone</u> should get vaccinated for
a sexually transmitted infection? | 1 | 2 |
| g. you think it's too expensive?..... | 1 | 2 |
| h. your child does not want it?..... | 1 | 2 |
| i. your doctor doesn't think your child needs it?..... | 1 | 2 |
| j. none of your friends plan to get it for their children? | 1 | 2 |
| k. it seems difficult to get? | 1 | 2 |
| l. you don't think HPV is a serious disease?..... | 1 | 2 |
| m. of another reason? (Please write reason below) | 1 | 2 |
-

6. If your child has not had the HPV vaccine, do you plan to get it for your child in the future?

- Yes 1
 No 2

7. Do you know anyone your child's age that has had the HPV vaccine?

- Yes 1
 No 2

APPENDIX C (continued)

8. Has your child had other vaccines besides the HPV vaccine?
- | | |
|-----------|---|
| Yes | 1 |
| No | 2 |
9. Before the focus group today, had you seen any television commercials for the HPV vaccine?
- | | |
|-----------|---|
| Yes | 1 |
| No | 2 |

The next two questions ask for your opinion about the information you have heard about HPV and the HPV vaccine.

10. People have many different opinions about the Human Papillomavirus (HPV). The following is a list of things people may think about HPV. For each statement, please indicate if you agree or disagree.
- | | <u>Agree</u> | <u>Disagree</u> |
|---|--------------|-----------------|
| a. HPV can be transmitted through oral, anal, and vaginal sex | 1 | 2 |
| b. HPV is <u>not</u> very common..... | 1 | 2 |
| c. HPV can be treated with antibiotics..... | 1 | 2 |
| d. HPV can cause cervical cancer..... | 1 | 2 |
| e. HPV can cause many types of cancer..... | 1 | 2 |
| f. HPV can cause genital warts..... | 1 | 2 |
| g. Only females can get HPV | 1 | 2 |
| h. Condoms can protect against HPV | 1 | 2 |
| i. If a woman has a normal Pap smear, she doesn't have HPV..... | 1 | 2 |

APPENDIX C (continued)

11. People have different opinions about the HPV vaccine. The following is a list of things people may think about the HPV vaccine. For each statement, please indicate if you agree or disagree.

	<u>Agree</u>	<u>Disagree</u>
a. The HPV vaccine can prevent cervical cancer	1	2
b. The HPV vaccine prevents against all types of HPV	1	2
c. Both males and females can get the HPV vaccine	1	2
d. The HPV vaccine can cause cervical cancer.....	1	2
e. The HPV vaccine can cause HPV.....	1	2
f. People who are vaccinated no longer have to use condoms.....	1	2
g. The HPV vaccine lasts forever	1	2
h. The vaccine is most effective for people who are sexually active	1	2
i. If a woman gets the HPV vaccine, she still must get a regular pelvic exam and Pap smear	1	2

APPENDIX C (continued)

The last group of questions asks for some background information about you. It is for analysis purposes only and will not be used to identify you.

12. What is the age of your child?..... _____
age in years
13. What is the sex of your child?
- | | |
|-------------|---|
| Female..... | 1 |
| Male..... | 2 |
14. What is your sex?
- | | |
|-------------|---|
| Female..... | 1 |
| Male..... | 2 |
15. Do you consider yourself to be Hispanic or Latino?
- | | |
|-----------|---|
| Yes | 1 |
| No | 2 |
16. How would you describe your racial and ethnic background? (**Circle all that apply**).
- | | |
|--|---|
| a. Black or African American | 1 |
| b. Hispanic or Latino | 2 |
| c. White..... | 3 |
| d. Asian..... | 4 |
| e. American Indian or Alaska Native | 5 |
| f. Native Hawaiian or Other Pacific Islander | 6 |
| g. Other (Please write in below) | 7 |
-

APPENDIX C (continued)

17. What is the highest level of education you have completed?
- | | |
|--|---|
| a. Less than 8th grade..... | 1 |
| b. Some high school..... | 2 |
| c. High school diploma or GED..... | 3 |
| d. Some college | 4 |
| e. Two-year college degree/Associate's degree..... | 5 |
| f. Four-year college degree or more..... | 6 |
18. Do you belong to a church, synagogue, mosque, temple, or any other religious organization?
- | | |
|-----------|---|
| Yes | 1 |
| No | 2 |
19. How would you describe your views on most political matters?
- | | |
|-------------------|---|
| Liberal..... | 1 |
| Moderate | 2 |
| Conservative..... | 3 |
| Don't know..... | 4 |

THANK YOU VERY MUCH FOR YOUR COOPERATION

Coder I.D. _____ Date _____

APPENDIX D

Media influence on HPV vaccine decision-making behavior

Want to be in a research study that only requires you to talk about your opinions, watch some TV ads, and fill out a brief questionnaire? If so, read on!

What is the research study about?

The research study is about how commercials for the Human Papillomavirus (HPV) vaccine influence people's decisions to get the HPV vaccine. This study is being conducted at the University of Illinois, Chicago (UIC).

What will participants have to do?

UIC Researchers are looking to conduct focus groups to discuss media and the HPV vaccine. Participants will be asked to talk about what they have heard about the HPV vaccine, watch a few TV commercials and discuss them, and complete a brief questionnaire. The whole process will take approximately 90 minutes. Participants will be compensated for their time and travel.

Who is eligible for the study?

People between the ages of 15 and 26
Parents with children between the ages of 11 and 17

Where will the focus groups take place?

The focus groups will take place at either the UIC School of Public Health or the UIC Survey Research Lab.

If you are interested in being involved in the study or for more information please contact:

Sarah Redman, MPAff
Principal Investigator
1603 W Taylor Street
Chicago, IL 60612
Phone: 312-451-9168
Email: sredma2@uic.edu

APPENDIX E

University of Illinois at Chicago Research Information and Consent for Participation in Social Behavioral Research **Media influence on HPV vaccine decision-making behavior**

You are being asked to participate in a research study. Researchers are required to provide a consent form such as this one to tell you about the research, to explain that taking part is voluntary, to describe the risks and benefits of participation, and to help you to make an informed decision. You should feel free to ask the researchers any questions you may have.

Principal Investigator Name and Title: Sarah Redman, MPAff

Department and Institution: School of Public Health, UIC

Address and Contact Information:

1603 W. Taylor Street, Chicago IL 60602

312-451-9168

sredma2@uic.edu

Why am I being asked?

You are being asked to be a subject in a research study about media and the HPV vaccine.

With over 6.2 million new infections each year, Human Papillomavirus (HPV) is the most common sexually transmitted infection (STI) in the UNITED STATES. Although most cases clear on their own, some strains of HPV can develop into a more serious infection. While there is no cure for HPV, two vaccines have been approved to help prevent it. Both males and females ages 9–26 are eligible for the vaccine. Shortly after becoming available, both vaccines were marketed to the public through television, magazine, and Internet ads. The purpose of this research is to examine the influence of the media on parental and personal decisions to get the HPV vaccine.

You have been asked to participate in the research because either:

You are between the ages of 18 and 26 and are eligible for the HPV vaccine OR

You have a child between the ages of 11 and 17 who is eligible for the HPV vaccine.

Your participation in this research is voluntary. Your decision whether or not to participate will not affect your current or future dealings with the University of Illinois at Chicago. **If you decide to participate, you are free to withdraw at any time without affecting that relationship.**

Approximately 144 subjects may be involved in this research at UIC.

APPENDIX E (continued)

What is the purpose of this research?

Researchers are trying to learn more about how media influences parental and personal decisions to get the HPV vaccine.

What procedures are involved?

This research will be performed at the University of Illinois at Chicago, School of Public Health.

You will need to come to the study site 1 time. That visit will take about 90 minutes.

The study procedures include a focus-group session and two brief questionnaires.

Questionnaire 1: Before the focus group, you will be asked to complete a questionnaire. This questionnaire will take no more than 5 minutes and will be anonymous. You will be asked about what you know or have heard about HPV and the HPV vaccine.

Focus group: All participants will attend a focus group.

During the focus group:

You will be asked what you know or what you have heard about the HPV vaccine.

You will be asked to watch several TV commercials about the HPV vaccine.

You will be asked for your opinion on these TV commercials about the HPV vaccine.

You may also be asked to share:

- Your beliefs about your or your child's risk of getting HPV

- What you think your friends and family think about the HPV vaccine

- How easy or difficult you think getting the HPV vaccine would be

Questionnaire 2: After the focus group, you will be asked to complete a questionnaire.

This questionnaire should take no more than 10 minutes.

This questionnaire will be anonymous.

You will be asked questions about:

- Whether or not you have seen TV commercials about the HPV vaccine before the focus group

- Whether or not you have/your child has received the HPV vaccine

- Whether or not you think you/your child may be at risk for HPV

- Demographics

APPENDIX E (continued)

What are the potential risks and discomforts?

To the best of our knowledge, the things you will be doing have no more risk of harm than you would experience in everyday life. However, some risks of the research include loss of privacy (revealing to others that you are taking part in this study); loss of confidentiality (revealing information about you to others to whom you have not given permission to see this information); and discomfort (because the HPV vaccine prevents against a sexually transmitted infection, some participants may feel uncomfortable discussing aspects of the infection including risk for infection and types sexual activity that may result in HPV).

Are there benefits to taking part in the research?

You will not directly benefit from participation in the research.

What other options are there?

You have the option to not participate in this study.

What about privacy and confidentiality?

The people who will know that you are a research subject are members of the research team. Otherwise information about you will only be disclosed to others with your written permission, or if necessary to protect your rights or welfare or if required by law. The State of Illinois auditors may monitor this research.

Study information which identifies you and the consent form signed by you will be looked at and/or copied for checking up on the research by UIC OPRS. When the results of the research are published or discussed in conferences, no information will be included that would reveal your identity.

The focus groups will be audio recorded and transcribed. The audio recordings and transcripts of the focus-group session will be stored on a secure computer. Paper questionnaires will be stored in a locked file cabinet. Only research personnel will have access to these data. Audio recordings will be destroyed after the study has concluded and the final report has been produced.

Although we ask everyone in the group to respect everyone's privacy and confidentiality, and not to identify anyone in the group or repeat what is said during the group discussion, please remember that other participants in the group may accidentally disclose what was said. Others in the focus group may know who you are and although everyone will be told to please not repeat what is said, there is no guarantee of confidentiality.

What are the costs for participating in this research?

There are no costs to you for participating in this research.

APPENDIX E (continued)

Will I be reimbursed for any of my expenses or paid for my participation in this research?

You will receive a \$20 Target gift card for participating in this research to compensate you for your time. You will receive compensation at the end of the focus-group session, after you complete a short questionnaire.

Can I withdraw or be removed from the study?

If you decide to participate, you are free to withdraw your consent and discontinue participation at any time. The Researchers also have the right to stop your participation in this study without your consent if they believe it is in your best interests.

In the event you withdraw or are asked to leave the study, you will still be compensated as described above.

Who should I contact if I have questions?

Contact the researchers Sarah Redman (principal investigator) at 312-451-9168 or email address: sredma2@uic.edu or Michael Fagen (faculty advisor) at 312-355-0647 or mfagen1@uic.edu:

- if you have any questions about this study or your part in it,
- if you have questions, concerns or complaints about the research.

What are my rights as a research subject?

If you feel you have not been treated according to the descriptions in this form, or if you have any questions about your rights as a research subject, including questions, concerns, complaints, or to offer input, you may call the Office for the Protection of Research Subjects (OPRS) at 312-996-1711 or 1-866-789-6215 (toll-free) or e-mail OPRS at uicirb@uic.edu.

Remember:

Your participation in this research is voluntary. Your decision whether or not to participate will not affect your current or future relations with the University. If you decide to participate, you are free to withdraw at any time without affecting that relationship.

APPENDIX E (continued)**Signature of Subject or Legally Authorized Representative**

I have read (or someone has read to me) the above information. I have been given an opportunity to ask questions and my questions have been answered to my satisfaction. I agree to participate in this research. I will be given a copy of this signed and dated form.

Signature

Date

Printed Name

Signature of Person Obtaining Consent

Date (must be same as subject's)

Printed Name of Person Obtaining Consent

APPENDIX E (continued)

University of Illinois at Chicago

ASSENT TO PARTICIPATE IN RESEARCH**Media Influence on HPV Vaccine Decision-Making**

1. My name is Sarah Redman.
2. We are asking you to take part in a research study because we are trying to learn more about how TV commercials for the Human Papillomavirus (HPV) vaccine influence people's decisions to get the HPV vaccine.

If you agree to be in this study you will be asked to do 4 activities:

Fill out a questionnaire about what you know about HPV and the HPV vaccine. This will take less than 5 minutes and will be anonymous meaning no one will know who filled it out.

Participate in a focus group and discuss what you know about HPV and the HPV vaccine.

You will be asked to watch TV commercials and discuss them.

Fill out a questionnaire about whether you have seen commercials for the HPV vaccine, if you have received the HPV vaccine, and your background. This should take no more than 10 minutes and will also be anonymous.

4. To the best of our knowledge, the things you will be doing have no more risk of harm than you would experience in everyday life. However, because HPV is a sexually transmitted infection (STI), some topics that come up may make you feel uncomfortable. You do not have to answer any questions that make you feel uncomfortable.
5. Others in the focus group will be told to please not repeat what is said or tell anyone else who was in the group. However, there is no guarantee of confidentiality.
6. You will not directly benefit from this research but you may learn some things you didn't know before about HPV and the HPV vaccine.
7. You will receive a \$20 Target gift card for participating in the study after you finish all three activities.
8. Please talk this over with your parents before you decide whether or not to participate. We will also ask your parents to give their permission for you to take part in this study. But even if your parents say "yes" you can still decide not to do this.

APPENDIX E (continued)

9. If you don't want to be in this study, you don't have to participate. Remember, being in this study is up to you and no one will be upset if you don't want to participate or even if you change your mind later and want to stop. If you decide to participate and then change your mind later and want to stop, you will still receive a gift card.
10. You can ask any questions that you have about the study. If you have a question later that you didn't think of now, you can call me 312-451-9168 or email me at sredma2@uic.edu.
11. Signing your name at the bottom means that you agree to be in this study. You and your parents will be given a copy of this form after you have signed it.

Name of Subject

Date

Signature

Age

Grade in School

APPENDIX E (continued)

University of Illinois at Chicago
Research Information and Consent for Participation in Social Behavioral
Research
Media influence on HPV vaccine decision-making behavior

You are being asked to grant permission for your child to participate in a research study. Researchers are required to provide a consent form such as this one to tell you about the research, to explain that taking part is voluntary, to describe the risks and benefits of participation, and to help you to make an informed decision. You should feel free to ask the researchers any questions you may have.

Principal Investigator Name and Title: Sarah Redman, MPAff

Department and Institution: School of Public Health, UIC

Address and Contact Information:

1603 W. Taylor Street, Chicago IL 60602

312-451-9168

sredma2@uic.edu

Why am I being asked?

You are being asked to allow your child to be a subject in a research study about media and the HPV vaccine.

With over 6.2 million new infections each year, Human Papillomavirus (HPV) is the most common sexually transmitted infection (STI) in the UNITED STATES. Although most cases clear on their own, some strains of HPV can develop into a more serious infection. While there is no cure for HPV, two vaccines have been approved to help prevent it. Both males and females ages 9-26 are eligible for the vaccine. Shortly after becoming available, both vaccines were marketed to the public through television, magazine, and Internet ads. The purpose of this research is to examine the influence of the media on parental and personal decisions to get the HPV vaccine.

You are being asked to grant permission because you have a child who is between the ages of 15 and 17 and is interested in taking part in this research.

Their participation in this research as well as your permission is voluntary. Your decision whether or not your child participates will not affect your current or future dealings with the University of Illinois at Chicago. **If you decide to grant you child permission to participate, you are free to withdraw your child at any time without affecting that relationship.**

Approximately 144 subjects may be involved in this research at UIC. Approximately 24 subjects will be between the ages of 15 and 17.

APPENDIX E (continued)

What is the purpose of this research?

Researchers are trying to learn more about how media influences parental and personal decisions to get the HPV vaccine.

What procedures are involved?

This research will be performed at the University of Illinois at Chicago, School of Public Health.

Your child will need to come to the study site 1 time. That visit will take about 90 minutes.

The study procedures include a focus-group session and two brief questionnaires.

Questionnaire 1: Before the focus group, your child will be asked to complete a questionnaire. This questionnaire will take no more than 5 minutes and will be anonymous. Your child will be asked about what he or she knows or has heard about HPV and the HPV vaccine.

Focus group: All participants will attend a focus group.

During the focus group your child will be asked:
 what he or she knows or what he or she has heard about the HPV vaccine.
 to watch several TV commercials about the HPV vaccine.
 for his or her opinion on these TV commercials about the HPV vaccine.
 to share:
 their beliefs about their risk of getting HPV
 what they think their friends and family (e.g. you) think about the HPV vaccine
 how easy or difficult they think getting the HPV vaccine would be

Questionnaire 2: After the focus group, your child will be asked to complete a questionnaire. This questionnaire should take no more than 10 minutes. This questionnaire will be anonymous.

Your child will be asked questions about:
 whether or not he or she had seen HPV vaccine commercials before the focus group
 whether or not your child has received the HPV vaccine
 whether or not your child thinks he or she may be at risk for HPV
 demographics

APPENDIX E (continued)

What are the potential risks and discomforts?

To the best of our knowledge, the things your child will be doing have no more risk of harm than you would experience in everyday life. However, some risks of the research include loss of privacy (revealing to others that your child is taking part in this study); loss of confidentiality (revealing information about your child to others to whom you have not given permission to see this information); and discomfort (because the HPV vaccine prevents against a sexually transmitted infection, some participants may feel uncomfortable discussing aspects of the infection including risk for infection).

Are there benefits to taking part in the research?

Your child will not directly benefit from participation in the research.

What other options are there?

You do not have to grant permission for your child to participate. Even if you grant permission, your child has the option to not participate in this study if he or she does not want to.

What about privacy and confidentiality?

The people who will know that your child is a research subject are members of the research team. Otherwise information about your child will only be disclosed to others with your written permission, or if necessary to protect your child's rights or welfare or if required by law. The State of Illinois auditors may monitor this research.

Study information which identifies your child, the consent form signed by you, and the assent form signed by your child will be looked at and/or copied for checking up on the research by UIC OPRS. When the results of the research are published or discussed in conferences, no information will be included that would reveal your child's identity.

The focus groups will be audio recorded and transcribed. The audio recordings and transcripts of the focus-group session will be stored on a secure computer. Paper questionnaires will be stored in a locked file cabinet. Only research personnel will have access to these data. Audio recordings will be destroyed after the study has concluded and the final report has been produced.

Others in the focus group may know who your child is and although everyone will be told to please not repeat what is said, there is no guarantee of confidentiality.

What are the costs for participating in this research?

There are no costs to you or your child for participating in this research.

APPENDIX E (continued)

Will my child be compensated for his or her participation in this research?

Your child will receive a \$20 Target gift card for participating in the research at the end of the focus-group session.

Can I withdraw my consent for my child?

If you decide to allow your child to participate, you are free to withdraw your consent and discontinue participation at any time. In addition, your child can withdraw their assent and discontinue participation at any time. If you or your child decides to discontinue participation in the study, your child will still receive his or her honorarium.

Can my child be removed from the study?

The Researchers have the right to stop your child's participation in this study without your consent or your child's assent if they believe it is in your child's best interests. In the event you withdraw child or your child withdraws him or herself or your child is asked to leave the study, an honorarium will still be given as described above.

Who should I contact if I have questions?

Contact the researchers Sarah Redman (principal investigator) at 312-451-9168 or email address: sredma2@uic.edu or Michael Fagen (faculty advisor) at 312-355-0647 or mfagen1@uic.edu

- if you have any questions about this study or your child's part in it,
- if you have questions, concerns or complaints about the research.

What are my rights as the parent of a research subject?

If you feel you have not been treated according to the descriptions in this form, or if you have any questions about your rights as a parent/guardian of a research subject, including questions, concerns, complaints, or to offer input, you may call the Office for the Protection of Research Subjects (OPRS) at 312-996-1711 or 1-866-789-6215 (toll-free) or email OPRS at uicirb@uic.edu.

Remember:

Your permission to grant your child's participation in this research is voluntary. Your decision whether or not to participate will not affect your current or future relations with the University. If you decide to allow your child to participate, you are free to withdraw your child at any time without affecting that relationship.

APPENDIX E (continued)**Signature of Legally Authorized Representative**

I have read (or someone has read to me) the above information. I have been given an opportunity to ask questions and my questions have been answered to my satisfaction. I agree to allow my child to participate in this research. I will be given a copy of this signed and dated form.

Signature

Date

Printed Name

Name of person participating in research

APPENDIX F

Coding Guide: Media Influence on HPV vaccine decision-making behavior (V4)

Code	Code Title	Code Family
SEEN-BEFORE	Seen ads before	Media exposure
SEEN-NUMBER	Number of ads seen before	Media exposure
SEEN-WHERE	Where ads have been seen	Media exposure
PRE-HPV KNOWLEDGE	Heard of HPV	Message framing
PRE-HPV-KNOW-TRANSMIT	Knowledge of how HPV is transmitted	Message framing
PRE-HPV-KNOW-AT RISK	Knowledge of who can get HPV	Message framing
PRE-HPV-KNOW-SEQ	Knowledge of HPV sequelae	Message framing
PRE-HPV-KNOW-TREAT	Knowledge of HPV treatment	Message framing
PRE-HPV-KNOW-PREVENT	Knowledge of HPV prevention	Message framing
PRE-HPV-KNOW-COMMON	Knowledge of HPV prevalence	Message framing
PRE-VACCINE-KNOW	General knowledge about HPV vaccine	Message framing
PRE-VACCINE-KNOW-ELIGIBLE	Knowledge of who can get HPV vaccine	Message framing
PRE-VACCINE-KNOW-SHOULD	Knowledge of who should get HPV vaccine	Message framing
PRE-VACCINE-KNOW-DM	Knowledge of who gets to make decision about HPV vaccine	Message framing
ADS-GEN-REACTION	General feedback on ads	Message framing
ADS-CONFUSING	Confusion after seeing the ads	Message framing
ADS-COMPEL	Compelling ads	Message framing
ADS-MORE-BOYS	Ads should have more boys in them	Message framing
ADS-MORE-SEX	Ads should mention sex	Message framing
ALTERN-GEN-REACTION	General feedback on alternative ad	Message framing
POST-HPV-KNOW-TRANSMIT	Knowledge of how HPV is transmitted	Message framing
POST-HPV-KNOW-AT RISK	Knowledge of who can get HPV	Message framing
POST-HPV-KNOW-SEQ	Knowledge of HPV sequelae	Message framing
POST-HPV-KNOW-TREAT	Knowledge of HPV treatment	Message framing

APPENDIX F (continued)

POST-HPV-KNOW-PREVENT	Knowledge of HPV prevention	Message framing
POST-HPV-KNOW-COMMON	Knowledge of HPV prevalence	Message framing
POST-VACCINE-KNOW	General knowledge about HPV vaccine	Message framing
POST-VACCINE-KNOW-ELIGIBLE	Knowledge of who can get HPV vaccine	Message framing
POST-VACCINE-KNOW-SHOULD	Knowledge of who should get HPV vaccine	Message framing
POST-VACCINE-KNOW-DM	Knowledge of who gets to make decision about HPV vaccine	Message framing
ADS-COST	Cost would be a barrier to getting vaccine	Perceived barriers
ADS-SAFETY	Safety would be a barrier to getting vaccine	Perceived barriers
ADS-STIGMA	Stigma would be a barrier to getting vaccine	Perceived barriers
ADS-TONE	Tone of the ads	Perceived severity
ADS-HPV-SERIOUS	How serious HPV is	Perceived severity
ADS-CANCER-SERIOUS	How serious cancer is	Perceived severity
ADS-OTHER-SERIOUS	How serious other HPV diseases are	Perceived severity
ADS-WHO-HPV	Who is at risk for HPV in ads	Perceived susceptibility
ADS-WHO- CANCER	Who is at risk for cervical cancer in ads	Perceived susceptibility
ADS-WHO- OTHER	Who is at risk for other HPV diseases in ads	Perceived susceptibility
ADS-HPV-PREV	HPV prevalence based on ads	Perceived susceptibility
ADS-CANCER-PREV	Cervical cancer prevalence based on ads	Perceived susceptibility
ADS-OTHER-PREV	Other HPV disease prevalence based on ads	Perceived susceptibility
ADS-TRANSMIT	How does HPV spread	Perceived susceptibility
ADS-CONTROL-HPV	Control over getting HPV	Self-efficacy
ADS-CONTROL-CANCER	Control over getting cancer	Self-efficacy
ADS-CONTROL-VACCINE	Control over getting vaccine	Self-efficacy
ADS-BLAME	Ads blame someone or thing	Perceived norms
ADS-WHO-SHOULD-VACCINE	Who should get the vaccine	Perceived norms
ADS-IDENTIFY	Identify with people in the ads	Perceived norms
VACCINE-RECEIPT	Received HPV vaccine	Vaccine uptake

APPENDIX G
STUDY TIMELINE

Task/Deliverable	Dates
IRB submission	August 2012—initial protocol approved
Recruit Focus Groups (FG)	September–November 2012
Conduct FG	October–December 2012 October 17, 24, 30 November 4, 6, 12, 14, 18, 28 December 1, 10, 17
Transcribe FG data	November–December 2012
Coding	December–January 2012
Analysis	October 2012–February 2013
Writing phase	February 2013–April 2013
Dissertation to full committee for review	May 28, 2013
Dissertation Defense	June 11, 2013

VITA

NAME: Sarah Redman

EDUCATION: BA, Political Science, Indiana University, Bloomington Indiana, 1999

MP Aff., Public Affairs, University of Texas, Austin, Texas, 2004

PhD, Public Health, University of Illinois at Chicago, Chicago, Illinois, 2013

TEACHING: School of Public Health, University of Illinois at Chicago, Chicago, Illinois: Health Literacy, 2013

HONORS: Dean's Scholar Award, University of Illinois at Chicago, Chicago, Illinois, 2012–2013

Chancellor's Award, University of Illinois at Chicago, Chicago, Illinois, 2013

Fahs-Beck Scholar, Fahs-Beck Fund for Research and Experimentation, New York Community Trust, 2013