

THE IMPACT OF THE HEALTH CAMPAIGN MESSAGE AND MEDIA ON
HPV VACCINE INTENTION AMONG MEN AND WOMEN

By

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I dedicate this thesis to my beloved parents.

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Abstract of Thesis Presented to the Graduate School
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The purpose of this study is to examine the effect of the health campaign message (gain-framed message/loss-framed message) on perception of Health Belief Model (HBM) factors and behavioral intention. This study focused on the campaign for the Human Papillomavirus (HPV) vaccine which is the only vaccine for preventing cancer and sexual transmitted infection by HPV. Also, this study compared the media effect of Facebook as a new media and the New York Times as a traditional media. To accomplish the purpose of this study, 147 students at the University of Florida participated and were randomly assigned to one of four experimental conditions.

The results indicated that participants who saw the loss-framed message have a higher level of behavioral intention toward HPV vaccine than those who viewed the gain-framed message. Furthermore, this study found the interaction effect between message framing and media channel. The results showed that the loss-framed message posted on Facebook was the most effective campaign for increasing the number of people who wanted to get the HPV vaccine.

Among Health Belief Model factors, perceived benefit, perceived severity, and perceived barrier significantly affect behavioral intention. Also, this study found that people's perception about HBM factors can differ according to media channel. The results revealed that participants who saw the Facebook had lower perceptions toward barriers for getting the HPV vaccine while participants who viewed the newspaper had higher perceptions toward severity about cervical cancer and genital warts.

This current study extended the message framing research of HPV vaccine campaigns and empirically proved the effect of the media channel on people's intentions to get the HPV vaccine. The results provide health practitioners with useful guideline when they design the HPV vaccine campaigns and determine message media channel.

CHAPTER 1 INTRODUCTION

Human Papillomavirus (HPV) is the most prevalent sexually transmitted infection among men and women in the United States (Hoover, 2000). HPV causes cervical cancer in women, genital warts in both women and men, and other cancers in both men and women. The National Cancer Institute (2013) estimated that approximately 4,030 deaths in the United States are a result of cervical cancer; it also predicted 12,340 new diagnoses of cervical cancer. Meanwhile, 1% of men and women who are engaged in sexual active in the United States contract genital warts, 400 men infect HPV-associated penile cancer and 1,500 men contract HPV-associated anal cancer (CDC, 2012). Given the many HPV-related health problems, preventing HPV is critical for both men and women.

The Food and Drug Administration (FDA) approved the HPV vaccine—the only vaccine available for preventing HPV-related diseases—for use in the United States in females who are 9 to 26 years old in 2006 as well as in males who are 9 to 26 years old in 2009. The HPV vaccination provides a chance to reduce the important burden of cancers and diseases in both males and females. Therefore, an effective HPV vaccine campaign is important for preventing HPV in both women and men.

To ensure the success of the health campaign, using appropriate media channels is critical. The emergence of the Web 2.0 and social network sites as an effective outlet has greatly influenced people looking for health information and seeking to engage in healthy behaviors (CDC, 2011). In the traditional media, health information merely conveys a message to change the public's attitudes and behaviors. However, through social networking sites such as Facebook, people can not only access more

information easily, but also express, share, and disseminate their opinions. Although people are aware of the importance of social network sites, there are few studies about the effect of health campaign. Therefore, this study investigates the effects of social network site when health campaign is conducted.

Message framing is important for maximizing the success of the health campaign as “people respond differentially to messages depending on how these messages are framed” (Detweiler et al., 1999, p.189). Message framing has been applied to various health studies. Many studies have demonstrated that gain-framed messages are more effective for prevention behavior, such as exercise behavior, sunscreen use to prevent skin cancer, and vaccinations (Detweiler, Bedell, Salovey, Pronin, & Rothman, 1999; Jones, Sinclair, & Courneya, 2003; Millar & Millar, 2000; McCaul, John, & Rothman, 2002). Yet despite the numerous studies about prevention behavior in healthcare settings, few studies have examined such behavior in relation to the HPV vaccine.

Health belief model (HBM) is also a useful framework for investigating vaccination behaviors, such as HPV vaccine (Reiter et al., 2009) and the initial goal of HBM is to understand why most people do not participate in programs to prevent illness via checkups (Rosenstock, 1966). HBM is often used when a health professional develops a health education program to promote a health campaign (Witte et al., 2001). The HBM indicates that people’s proactive health behavior such as vaccination behavior is influenced by perceived susceptibility, perceived severity, perceived benefits, perceived barriers (Janz & Becker, 1984) and self-efficacy (Rosenstock, Strecher, & Becker, 1988). Based on the HBM, this study investigates how gain and loss framed

message affect on the HBM factors and how these factors affect on the public's behavioral intention.

Therefore, this study aims to a) discover how the health campaign messages (gain-frame message/loss-frame message) affect university students' perceptions of HBM factors; b) examine how these perceptions of HBM factors influence females' and males' intentions to vaccinate themselves; c) examine which media (social network sites/traditional media) more readily influence university females' and males' perceptions of HBM factors and behavioral intentions. To this end, this study includes an experiment with a 2 (message framing: gain-frame message/loss-frame message) x 2 (media types: social network sites/traditional media) factorial design. By investigating the effect of HPV vaccine campaign messages and media channels, the present study expands the literature on interactive social network sites in the context of health settings in order to understand how social network sites can be effectively utilized in health communication campaign to enhance the public's health.

CHAPTER 2 LITERATURE REVIEW

HPV Vaccine and Health Campaign

HPV, the most prevalent sexually transmitted infection, is the primary cause of cervical cancer (CDC, 2012). Most women are infected within two to five years of commencing sexual activity (Kjaer et al., 2001; Winer et al., 2003). Many studies have demonstrated that almost all cervical cancer patients were initially infected with HPV (Bergeron et al., 1992; Bosch et al., 2002; Lungu et al., 1992; Walboomers et al., 1999). Approximately 30 to 40 types of HPV infect the anogenital area, and 15 to 20 of these cause cervical cancer (Bosch et al., 2002)—in particular, HPV 16, 18, 31, and 45. HPV 16 and 18 are especially high-risk types, accounting for 50% and 20% of cervical cancer outbreaks, respectively.

The most easily recognized symptom of HPV infection is genital warts, a sexually transmitted disease caused by HPV 6 and 11. Genital warts afflict men more than twice as often as women. They occur on the cervix, vulva, vaginal wall, and skin surrounding the vaginal and anal regions in women's cases and the anal region and penis in men's cases (Hoover, 2000). The incubation period is approximately 2 to 3 months. To prevent these illnesses, two HPV vaccines have been developed: Gardasil, made by Merck, and Cervarix, made by GlaxoSmithKline (GSK). Gardasil is effective in preventing HPV 6, 11, 16, and 18 as well as genital warts. The HPV vaccine is effective for men as well as women, but most men are not well informed of the HPV vaccine. Therefore, a health campaign to inform the public about the HPV vaccine is critical for not only women, but also men (CDC, 2012).

Health campaigns have long been the focus of attention for many communication scholars (Kopfman & Smith, 1996). Rice and Atkin (2009) define campaign as “1) purposive attempts, 2) to inform, persuade, or motivate behavior changes, 3) in a relatively well-defined and large audience, 4) generally for noncommercial benefits to the individuals and/or society at large, 5) typically within a given time period, 6) by means of organized communication activities involving mass media and 7) often complemented by interpersonal support”. (p. 436)

One of the purposes of a health campaign is to enhance people’s perceptions and attitudes about health and encourage them to engage in healthy behavior. Therefore, the campaign message should include the serious result that can be caused by the disease, information about the risk or susceptibility to the illness, and preventable behavior (Witte, 2001).

Effective campaign messages intended to facilitate behavior changes are usually based on behavioral-change theories (Fishbein & Cappella, 2006; Noar, 2006; Shafer et al., 2011; Slater, 2006). This study examines two theories—prospect theory and the health belief model—to determine how message content should be presented. The development of the campaign message is informed by the message framing (Kahneman & Tversky, 1979, 1982), and its constructs are critical predictors of an individual’s behavior related to receiving the HPV vaccine (Brewer & Fazekas, 2007).

Message Framing

Prospect theory has helped guide how message content should be presented in this study. Prospect theory argues that “people respond differentially to messages depending on how these messages are framed.” (Detweiler et al., 1999, p.189). Message framing can be divided into two varieties: gain-framing and loss-framing

(Tversky & Kahneman, 1981). Gain-framed messages (i.e., advantages or benefits) are defined by concentrating on the benefits gained by adopting a certain type of behavior (Rothman & Salovey, 1997; Tversky & Kahneman, 1981). Loss-framed messages (i.e., risks and costs of not performing the behavior) are defined by the emphasis on the losses that accompany non-adoption (Rothman & Salovey, 1997; Tversky & Kahneman, 1981). Gain-framed message can refer to both the benefits that might happen and the negative outcomes that will not come to pass whereas loss-framed message can pertain to the negative outcomes that will happen and the benefits that will not happen (Rothman et al., 2006). In general, gain-framed messages are more effective for prevention behavior while loss-framed messages are more effective for illness-detecting behavior (Rothman & Salovey, 1997; Rothman et al., 1999; Rothman et al., 2006; Garcia-Retamero & Cokely, 2011).

Many studies support the premise that gain-framed messages are more effective for prevention behavior, such as exercise behavior (Jones et al., 2003), safe driving behavior (Millar & Millar, 2000), sunscreen use to prevent skin cancer (Detweiler et al., 1999), and intention to use condoms (Garcia-Retamero & Cokely, 2011). Detweiler et al. (1999) investigated the effect of gain- and loss-framed skin cancer pamphlets and which message is more effective to beachgoers. The result revealed that the participants who had received the gain-framed pamphlet were noticeably more receptive to the free sunscreen.

Jones et al. (2003) argued that participants who receive a positively framed message with a credible source tend toward more positive exercise intentions and behaviors than participants in other situations. Millar and Millar (2000) examined the

influence of framing and issue involvement on participants' intentions to abide by safe driving behaviors. Based on the result, gain messages enhanced intentions to perform prevention behavior, such as safe driving behaviors, more than loss messages when participants were involved with the issue.

On the other hand, many studies have supported the premise that loss-framed messages are more effective for illness-detecting behaviors such as breast self-examination (Meyerowitz & Chaiken, 1987), STD screening (Garcia-Retamero & Cokely, 2011), and mammography screenings (Abood et al., 2005; Banks et al., 1995). Meyerowitz and Chaiken (1987) were the first researchers to investigate the effect of gain- and loss-framed messages on health behavior. They created a pamphlet to facilitate breast self-examination that included loss- or gain-framed statements of breast self-examination and breast cancer. The loss-framed pamphlet was found to be more effective in engaging the recipient in the behavior over a 4-month follow-up period than women who viewed the gain-framed pamphlet. Garcia-Retamero and Cokely (2011) also investigated the effect of message framing to promote the prevention behavior and detection of STDs. The results indicated that gain-framed messages were more powerful for prevention behavior such as condom use while loss-framed messages were more effective for promoting illness-detect behavior such as STD screening.

Based on the existing literature, a number of studies have argued that the public's health prevention behavioral intention is influenced more by gain-framed messages than loss-framed messages whereas illness-detecting behaviors are more influenced by loss-framed messages than gain-framed messages. However, few studies have examined how message framing influences individuals' behavioral intention.

Rothman and Salovey (1997) argued that message framing on behavior can be mediated by risk perceptions along with other cognitive and affective factors. Therefore, researchers should consider the factors that mediate the relationship between message framing and behavioral intention (Rothman & Salovey, 1997). In this sense, the current study investigates five factors of the Health Belief Model as mediating factors between message framing and behavioral intention.

Health Belief Model

The health belief model (HBM) has been one of the most broadly employed conceptual frameworks in the health behavior field (Rosenstock, 2000). The HBM was developed by a group of social psychologists, including Hochbaum, Kegles, Leventhal, and Rosenstock, at the U.S. Public Health Service in the late 1950s (Janz & Becker, 1984; Rosenstock, 1974). It is often used when a health professional develops a health education program to promote a health campaign (Witte et al., 2001) and is a useful framework for investigating vaccination behaviors, such as those related to the HPV vaccine (Reiter et al., 2009).

The HBM suggests that people's preventive health behavior is influenced by perceived susceptibility, perceived severity, perceived benefits, perceived barriers (Janz & Becker, 1984) and self-efficacy (Rosenstock, Strecher, & Becker, 1988). For people to engage in preventive health behavior, they would need to believe that people 1) are susceptible to illness; 2) should be concerned about the severity of a disease; 3) should consider preventive health behavior to be a beneficial action; 4) need to overcome barriers such as cost, pain, and convenience (Becker, 1974); and 5) should have the self-efficacy to implement a health behavior successfully (Rosenstock, Strecher, & Becker, 1988).

Perceived susceptibility. Perceived susceptibility indicates the level of individual perception about the possibility of acquiring an illness (Rosenstock, 1974). People perceive susceptibility differently according to the specific illness because the perception can be influenced by demographic and sociopsychological characteristics. For example, people who have mothers with cervical cancer or genital warts tend to perceive themselves as having a high possibility of contracting cervical cancer and genital warts while people with no close friends with cervical cancer or genital warts think that they do not have any possibility of contracting it. The HBM explains that people's preventive behavior can be different according to the level of perceived susceptibility to the illness.

Perceived severity. Perceived severity refers to the level of an individual's perception about the likelihood of being at risk for developing a disease (Rosenstock, 1974). People perceive the severity of illness differently. For instance, people who have been completely cured because they found cervical cancer in the initial stages and subsequently had successful surgery do not think of cervical cancer as a serious disease. However, people who cannot be healed because their cervical cancer is found in the later stages tend to think of cervical cancer as a serious illness. The HBM indicates that people's preventive behavior can be different according to the level of severity of the disease.

Perceived benefits. Perceived benefits are defined as the level of individual perception of how healthy behavior can be beneficial (Rosenstock, 1974). People judge the benefits of the HPV vaccine subjectively. Some people think that the HPV vaccine is very effective in the prevention of cervical cancer or genital warts whereas others think

that the HPV vaccine is useless. The perception of the benefits of the HPV vaccine can influence whether people engage in preventative behavior or not. The HBM argues that, as people perceive the benefits of preventive behavior more and more, the possibility of engaging in prevention behavior increases.

Perceived barriers. Perceived barriers are the level of an individual's perception of cost, pain, and discomfort in engaging in healthy behavior (Janz & Becker, 1984). For example, if people who perceive the HPV vaccine to be very expensive, they might not request vaccination. However, people who perceive the HPV vaccine to be cheap will request vaccination because the perceived barrier is low. The HBM indicates that, as people perceive lower barriers of prevention behavior, the possibility of engaging in prevention behavior increases.

Self-efficacy. Bandura (1977) introduced the concept of self-efficacy, which is defined as "the conviction that one can successfully execute the behavior required to produce the outcomes" (p. 79). In addition to the original factors of the HBM, the proponents of the HBM added the factor of self-efficacy in order to extend its explanatory power (Rosenstock, Strecher, & Becker, 1988). Many researchers have adopted self-efficacy in their health belief model studies. Witte, Meyer and Martell (2001) defined it as "individuals' perceptions concerning their ability to perform the recommended response" (p. 54). Self-efficacy is a significant factor in preventing behavior; thus, the HBM indicates that people's prevention behavior can be different according to the level of self-efficacy.

The HBM has been empirically tested as the basis for many campaigns to determine which factors are the strongest and weakest predictors. Janz and Becker

(1984) investigated 29 HBM studies published from 1974 to 1984 as well as 17 studies published prior to 1974. The results indicated that perceived barriers have been the strongest predictors and perceived severity was the weakest predictor of prevention behavior. Harrison et al. (1992) investigated 16 studies to examine the relationships between HBM dimensions and health behavior using a meta-analysis. They found that the strongest factors were perceived benefits and barriers.

However, few studies have examined HPV vaccine acceptance behavior. Furthermore, most researchers have excluded self-efficacy in their studies because this factor was only recently included in the HBM (Tanner-Smith & Brown, 2010). Therefore, the current study determines how predictors (i.e., the HBM factors, including self-efficacy) influence on the behavioral intention and how predictors mediate between message framing and behavioral intention.

Traditional Media and Social Network Sites for Health Campaign

It is important to know not only how message framing and the HBM affect behavioral intention, but also how various channels to design an effective health campaign influence on the behavioral intention. Kevin et al. (2008) argued that considering the type of channel is critical when researchers design a health campaign to disseminate the campaign message. In disseminating messages, most campaigns have been presented via television, radio, newspaper, and printed materials. Indeed, mass media campaigns have long been a tool to change public health behaviors (Noar, 2006). Hafstad and Aaro (1997) argued that “mass media can be effective in promoting health knowledge and awareness of health messages (p.254). Although there are various mass media, choosing an appropriate channel is critical in disseminating health messages. According to the concept of “the medium is the message” by McLuhan

(1964), media characteristics are critical in terms of disseminating the message successfully. Atkin (1994) argued that channel effect can be differed by those characteristics: “1) reach (proportion of community exposed to the message), 2) specialization (targetability for reaching specific sub-groups), 3) intrusiveness (ability to overcome selectivity and command attention), 4) safeness (avoidance of risk of boomerang or irritation), 5) participation (active receiver involvement while processing stimuli), 6) meaning modalities (array of senses employed in conveying meaning), 7) personalization (human relational nature of source-receiver interaction), 8) decidability (mental effort required for processing stimuli), 9) depth (channel capacity for conveying detailed and complex content), 10) credibility (believability of material conveyed), 11) agenda-setting (potency of channel for raising salience priority of issues), 12) accessibility (ease of placing message in channel), 13) economy (low cost for producing and disseminating stimuli), and 14) efficiency (simplicity of arranging for production and dissemination)” (p. 58). In other words, campaign effect can be different according to the characteristics of the media channel, so an appropriate media choice is critical.

Print media has been a popular selection for health campaigns on various topics, such as anti-smoking (Hafstad & Aaro, 1997; McAlister et al., 2004; Owen, 2000; Pierce et al., 2002; Siegel & Biener, 2000), melanoma prevention (Hill et al., 2002), emergency contraception (Larsson et al., 2004; Trussel et al., 2001), alcohol and drug use (Miller et al., 2000), cardiovascular prevention (Nishtar et al., 2004), seatbelt use (Williams et al., 2002), and vaccinations (Zimicki et al., 2002). According to Salmon and Atkin (2003), Newspapers have high accessibility, depth, reach, agenda-setting power, economy, efficiency, and credibility. Schooler et al. (1998) examined the five health campaign

channels by using the Stanford Five-City Multifactor Risk Reduction Project. The results indicated that newspaper media are the most powerful media for promoting health information and are more powerful than booklets, television public service announcements, tip sheets, and television programs. However, this narrow traditional choice has not consistently led to successful results.

Today, the emerging Web 2.0 has changed the media environment. Therefore, many researchers focus on interactive media, such as social network sites (Thompson et al., 2003). The use of social network sites to distribute health information has grown rapidly in recent years (CDC, 2011). Boyd and Ellison (2008) define social network sites as “web-based services that allow individuals to (1) construct a public or semi-public profile within a bounded system, (2) articulate a list of other users with whom they share a connection, and (3) view and traverse their list of connections and those made by others within the system” (p. 211).

Social network sites are used to find and disseminate health information to the public and healthcare practitioners, who use the sites to gain health-related information (CDC, 2011). In the National Research Corporation’s (2011) survey of nearly 23,000 people in the United States, one in five Americans was found to use social network sites as a source of healthcare information; respondents who used social network sites were on average 41 years old. People in households earning more than \$75,000 were more likely to use social network sites for healthcare purposes than households earning less than this amount. In addition, Facebook topped the list of available websites, with 94% of respondents indicating they have used the popular social network to gather information on their healthcare, while 32% used YouTube and 18% used Twitter

(National Research Corporation, 2011). Furthermore, when asked about social network sites' influence, one in four respondents indicated that it was "very likely" or "likely" to impact their future healthcare decisions (National Research Corporation, 2011). This study indicated that Facebook is one of social network sites for finding health information. Social network sites can also be used to "expand reach, foster engagement, and increase access to credible, science-based health messages" (CDC, 2011, p.1).

Social network sites provide crucial channels through which to search for health information while using interactive features (Macias & McMillan, 2008), which has led social network sites to become a more suitable channel for effective health campaigns. Many researchers have argued that interactivity is an important factor for measuring the effects of new media (McMillan, 1999; Macias & McMillan, 2008) and is a distinct characteristic compared to print media.

Many health-related sites have started to include more interactive features (McMillan, 2001). Facebook in particular has proven the effectiveness of disseminating messages and utilizing interactive capabilities. Established in February 2004, Facebook is one of the fastest-growing websites that people can use to communicate and interact. With 1 billion visitors each month, this site features more than 219 billion photos, 17 billion location-tagged posts, and 62.6 million songs that have been played 22 billion times (Facebook, 2012). Due to this popularity of Facebook, both health communication researchers and practitioners are starting to investigate how Facebook could be employed for health campaigns.

Although many studies (National Research Corporation, 2011; Schooler et al., 1998) have argued that print media and social network sites can be a very useful tool to find and disseminate health information, few studies have compared social network sites and traditional media's effect on HPV vaccine campaign. Therefore, the current study examines the effect of a health campaign on the behavioral intention depending on the media used.

Hypotheses and Research Questions

This study determines how message framing affects vaccination behavioral intention. Many studies have argued that gain-framed messages could be more effective for prevention behavior (Detweiler et al., 1999; Jones et al., 2003; McCaul et al., 2002; Millar & Millar, 2000). Thus, the following hypothesis is proposed:

H1: Individuals will exhibit a higher level of behavioral intention to use the HPV vaccine when they are exposed to a gain-framed message than when exposed to a loss-framed message.

This study examines how the HPV vaccine campaign's message framing influences the HBM factors, such as perceived susceptibility, perceived severity, perceived benefits, and perceived barriers. Based on the literature review, this study assumes that perceived severity will be affected by a loss-framed message and perceived benefits will be affected by a gain-framed message. However, there are few studies about the power of the message framing on perceived susceptibility, perceived barriers, and self-efficacy. Also, this study examines how message framing affects the HBM factors for both men and women and whether the effect is different or not. The hypotheses and research questions are as follows.

H2: Individuals will exhibit a higher level of perceived severity of cervical cancer and genital warts when they are exposed to a loss-framed message than when exposed to a gain-framed message.

H3: Individuals will demonstrate a higher level of perceived benefit of using the HPV vaccine when they are exposed to a gain-framed message than when exposed to a loss-framed message.

RQ1: Are there differences in the level of perceived susceptibility of cervical cancer and genital warts according to message framing exposure?

RQ2: Are there differences in the level of perceived barrier to using the HPV vaccine according to message framing exposure?

RQ3: Are there differences in the level of self-efficacy when using the HPV vaccine according to message framing exposure?

Also, this study determines how HBM factors affect vaccination behavioral intention. Although there are many studies about HBM on various campaigns, there are conflicting results about the power of HBM factors when individuals engage in health prevention. Therefore, the research questions are as follows:

RQ4: Is there a correlation between behavioral intention and HBM factors (perceived susceptibility, perceived severity, perceived benefit, perceived barrier, self-efficacy)?

This study investigates how media channels influence HBM factors and behavioral intention. Thus the research questions are as follows:

RQ5: Do media channels affect those HBM factors (perceived susceptibility, perceived severity, perceived benefit, perceived barrier, self-efficacy)?

RQ6: Do media channels affect the behavioral intention?

To understand the interaction effect between message framing and media types, the research questions are as follows:

RQ7: Is there an interaction effect between message framing and media channel?

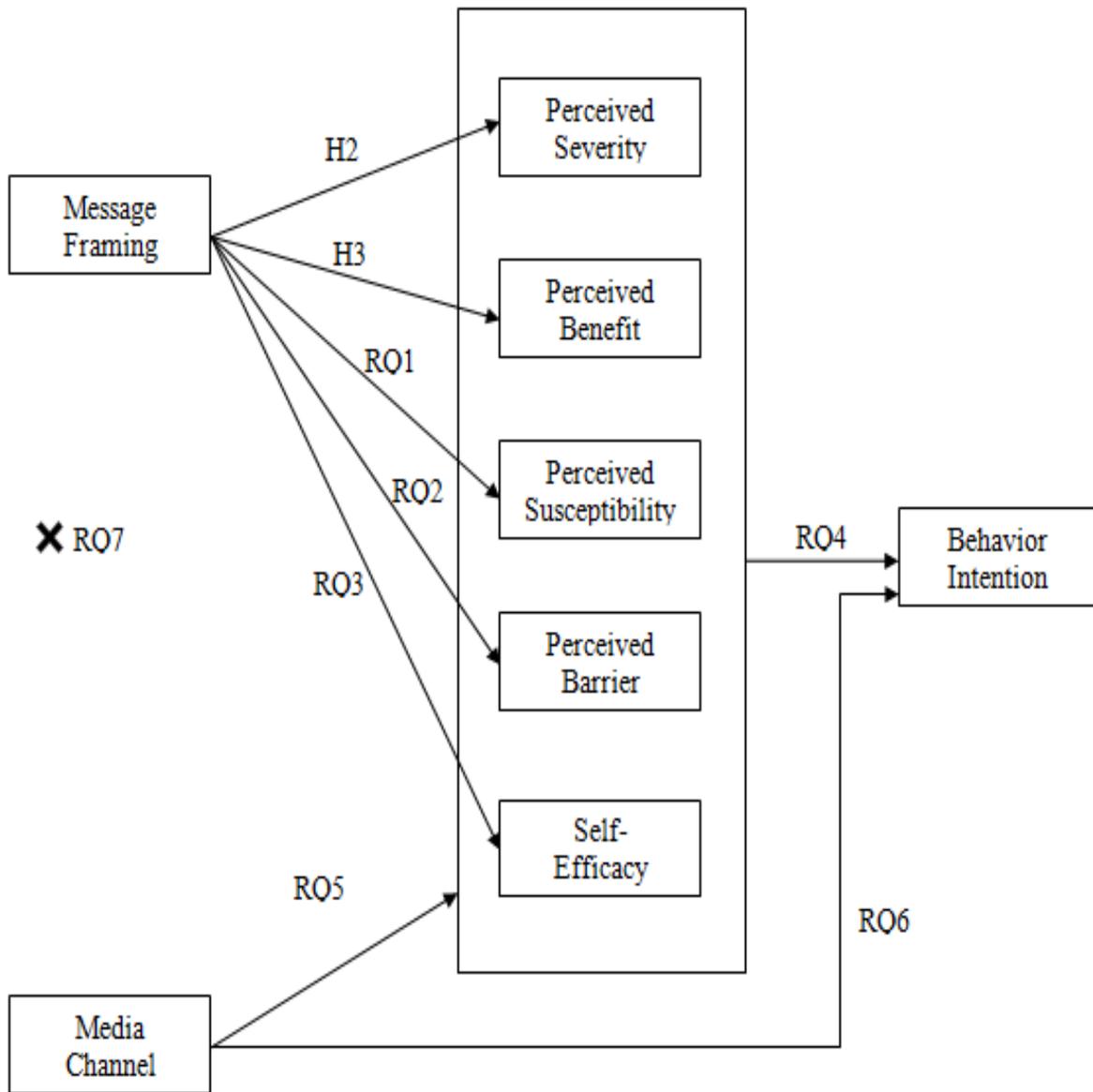


Figure 2-1. Conceptual framework

CHAPTER 3 METHODS

This chapter presents choice of method, a description of manipulation, pretest, a description of the questionnaire, a description of participants, procedure, pretest, and statistical analyses.

Experimental Design

The purpose of the current study is to examine the effect of the HPV vaccine campaign on vaccination behavioral intention for not only women, but also men. To determine whether a relationship exists between these variables, as well as the direction of any effect, an experiment was conducted. The experiment was designed as a 2 (message framing: gain message / loss message) x 2 (media channel: traditional media/social network sites) factorial design. Each participant was randomly assigned to one of the four experimental conditions.

Participants

The sample consisted of 147 students enrolled at the University of Florida in 2013. Participants ranged in age from 21 to 28, $M=22.44$, $SD=1.21$ ($n=147$). Most participants were female (78.9%, $n=116$) and in undergraduate courses (100%, $n=147$). The biggest ethnic group was Caucasian (60.5%, $n=89$), followed by Hispanic (24.5%, $n=36$), African American (8.8%, $n=13$), and Asian (6.1%, $n=9$).

The participants were randomly assigned to one of four experimental conditions. Among 147 participants, 38 received a URL for a gain-framed message on a Facebook website, 39 received a URL for a loss-framed message on a Facebook website, 35 received a URL for a gain-framed message on the *New York Times* website, and 35 received a URL for a loss-framed message on the *New York Times* website.

Procedure

Stimuli Development

Two different messages of HPV vaccine campaign were developed and posted in different media: 2 (message framing: gain message/loss message) x 2 (media type: social network sites/traditional media).

At first, this study developed two different HPV vaccine campaign messages using the information from the CDC website. The gain-framed message focused on the health benefits such as prevention of cervical cancer or genital warts when participants get the HPV vaccine; on the other hand, the loss-framed message emphasized the negative consequences such as getting cervical cancer or genital warts if they don't get the HPV vaccine. Also, these messages were posted on Facebook and newspaper to compare the effect of channel difference. In the case of Facebook, the professional webmaster made an artificial CDC Facebook webpage and posted the information and pictures about HPV vaccine from the CDC webpage. In the case of newspaper, the professional webmaster made an artificial *New York Times* webpage by using the article from the actual *New York Times* online website. All participants were informed that the CDC Facebook webpage and the *New York Times* webpage were artificial and had been created to investigate the effect of the HPV vaccine campaign. Also, the pages were taken down right after they finished the survey.

Stimulus 1: Stimulus 1 was a gain-framed message accessed through fake Facebook page. The titles were "If you get the HPV vaccine, you can live healthy life without cervical cancer or genital warts" and "HPV vaccine is effective for both men and women". The content was "By getting the HPV vaccine, both males and females get a chance to prevent cervical cancer and genital warts. HPV vaccine is 100% effective in

preventing cervical cancer for women and 90% effective in preventing genital warts for both men and women. With the HPV vaccine, you can gain numerous health benefits. Get the HPV vaccine today!”.

Stimulus 2: Stimulus 2 was a gain-framed message accessed through fake online New York Times page. The content was identical to that in Stimulus 1, but it was posted in the fake online newspaper page.

Stimulus 3: Stimulus 3 contained a loss-framed message accessed through fake Facebook page. The titles were “If you do not get the HPV vaccine, you can suffer from cervical cancer or genital warts and “Both men and women can suffer from the disease without HPV vaccine”. The content was “ By not getting the HPV vaccine, both males and females lose a chance to prevent cervical cancer and genital warts. Cervical cancer ranks second among women’s cancer and one person dies every 2 minutes because of cervical cancer. Also, many men and women have genital warts. Without the HPV vaccine, you can lose health benefits. Get the HPV vaccine today!”.

Stimulus 4: Stimulus 4 contained a loss-framed message accessed through fake online New York Times page. It used identical content as in Stimulus 3, but the information was posted in the fake online New York Times page.

Pretest

A pretest was conducted to ensure an appropriate experimental setting. The pretest was designed to select proper message framing that best represented gain and loss framed message. Subjects who participated in the pretests were informed that the objective of the survey is to aid in designing a HPV vaccine campaign to be launched. The manipulation of message framing was examined via eight questions on a 7-point scale (1 = strongly disagree, 7 = strongly agree) to see whether the manipulation of the

messages are successful (e.g., In general, the message emphasizes the positive consequences of getting HPV vaccine; In general, the message emphasizes the gain of getting HPV vaccine; In general, the message describes the advantages of getting HPV vaccine; In general, the message shows what I would gain if I get the HPV vaccine; In general, the message emphasizes the negative consequences of not getting HPV vaccine; In general, the message emphasizes the loss of not getting HPV vaccine; In general, the message describes the disadvantages of not getting HPV vaccine; In general, the message shows what I would lose if I don't get the HPV vaccine.). 125 of University of Florida students participated for pretests.

Manipulation Check

To check whether participants successfully perceived the gain- and loss-framed messages, this study conducted an independent samples t-test with eight items measured on a 7-point scale. The results indicated that participants who saw the gain-framed message ($M=5.71$, $SD=.88$) had a significantly higher level of perception in terms of gain than participants who saw the loss-framed message ($M=4.80$, $SD=1.53$), $t(145)=4.40$, $p<.01$. Also, the perceptions of participants who saw the loss-framed message ($M=5.44$, $SD=1.27$) were significantly higher level of perception in terms of loss than those of the participants who saw the gain-framed message ($M=3.74$, $SD=1.53$), $t(145)=-7.36$, $p<.01$. As a result, gain- and loss-framed message manipulations were successful. Table 4-1 for statistical test results.

Main Test

By distributing four different versions of the material, the participants were randomly assigned to one of four experimental conditions which differ in terms of message framing and media channel. At first, two groups were given a URL to access

the experiment fake Facebook page. On the experiment website, participants were randomly assigned to one of two experimental conditions. One experimental condition was posted on the gain-framed message on fake Facebook page and the other experimental condition was posted on the loss-framed message on fake Facebook page. Secondly, the rest of the two groups were exposed to a fake online *New York Times* page. After exposure to the material, participants were asked to complete a questionnaire that contains measures for the manipulation checks, media channels, HBM model factors (perceived susceptibility, perceived severity, perceived barrier, perceived benefit, and self-efficacy), dependent variables (behavioral intention) and demographic information (age, gender, race, and education).

Measurement

Independent Variables

Message Framing: Gain-framed message (i.e., advantages or benefits) is operationally defined by concentrating on the benefits gained by adopting HPV vaccine. Loss-framed message (i.e., risks of not performing the behavior such as cervical cancer and genital warts) is defined by the emphasis on the losses that accompany non-adoption HPV vaccine. Schneider et al.'s (2001)' measurement was revised and two coders developed additional items to measure message framing. In total, message framing was measured using the 8-item. Cronbach's alpha of message framing was .74.

Media Channel: This study chose two different media channels to post the HPV vaccine campaign message; Facebook, which is most popular social network sites (National Research Corporation, 2011), and *New York Times* (average circulation of 896,352), which is the U.S. daily newspaper with the top digital circulation (Audit Bureau of Circulations, 2012).

Mediate Variable

HBM Factors: HBM factors were measured using the 40-item developed by Champion (1984) and Schwarzer & Jerusalem (1995). These variables included 1) benefits, specifically the effectiveness of the vaccine; 2) barriers, including cost, safety, and time consuming; 3) susceptibility, or likelihood of contracting HPV; 4) severity, or whether people perceive cervical cancer or genital warts that is serious; 5) self-efficacy, or belief one's ability to solve the health problem. Cronbach's alpha of susceptibility was .91. Cronbach's alpha of severity was .89. Cronbach's alpha of benefit was .85. Cronbach's alpha of barrier was .89. Cronbach's alpha of self-efficacy was .89.

Dependent Variables

Behavioral Intention: Behavioral intention was operationally defined as the extent to which the participants intend to receive the HPV vaccine. To measure behavioral intention, this study employed and modified items from Fishbein and Ajzen (2010) scale of behavioral intention and a 7-point Likert-type scale ranging from 1 (strongly disagree) to 7 (strongly agree). Behavior intention was measured using the 4-item (e.g., I intend to get the HPV vaccine; I intend to search for the HPV vaccine information; I intend to counsel with a doctor about HPV vaccine; I intend to recommend the HPV vaccine to my friends and family). Cronbach's alpha of behavioral intention was .89.

CHAPTER 4 RESULTS

Hypotheses Tests

Hypothesis 1 predicted that individuals would exhibit a higher level of behavioral intention to use the HPV vaccine when they are exposed to a gain-framed message than when exposed to a loss-framed message. To examine this, the researcher conducted an independent samples t-test to examine which message framing had greater effect on behavioral intention. The results showed that participants who viewed the loss-framed message ($M=4.68$, $SD=1.45$) had more positive behavioral intention than those who saw the gain-framed message ($M=4.19$, $SD=1.41$), $t(145)=-2.07$, $p<.05$. Therefore, the result was the opposite what hypothesis expected. Table 4-2 for statistical test results.

Hypothesis 2 proposed that individuals would exhibit a higher level of perceived severity of cervical cancer and genital warts when they are exposed to a loss-framed message than when exposed to a gain-framed message. The result showed no significant difference in the level of perceived severity of cervical cancer and genital warts between participants who viewed the gain-framed message ($M=4.20$, $SD=1.04$) versus the loss-framed message ($M=4.34$, $SD=1.19$), $t(145)=-.79$, $p=.43$. Thus, Hypothesis 2 was not supported.

Hypothesis 3 anticipated that individuals would demonstrate a higher level of perceived benefit of using the HPV vaccine when they are exposed to a gain-framed message than when exposed to a loss-framed message. The independent samples t-test result showed no significant difference in the level of perceived benefit of the HPV vaccine to cervical cancer and genital warts among participants who saw the gain-

framed message ($M=5.27$, $SD=.99$) and those who viewed the loss-framed message ($M=5.33$, $SD=1.06$), $t(145)=-.358$, $p=.72$. Therefore, Hypothesis 3 was not supported.

Research Questions Tests

Research question 1 was designed to determine whether differences exist in the level of perceived susceptibility to cervical cancer and genital warts based on message framing exposure. The result indicated no significant difference in the level of perceived susceptibility to cervical cancer and genital warts between participants who viewed the gain-framed message ($M=2.39$, $SD=1.14$) and those who saw the loss-framed message ($M=2.50$, $SD=1.20$), $t(145)=-.616$, $p=.54$.

Research question 2 investigated whether there are differences in the level of perceived barriers to using the HPV vaccine based on message framing exposure. The independent samples t-test revealed no significant difference in perceived barrier among participants who saw the gain-framed message ($M=2.85$, $SD=1.04$) versus the loss-framed message ($M=2.78$, $SD=1.24$), $t(145)=.38$, $p=.70$.

Research question 3 was intended to determine whether differences exist in the level of self-efficacy based on message framing exposure. The result showed no significant difference in self-efficacy among participants who saw the gain-framed message ($M=5.05$, $SD=.88$) and those who viewed the loss-framed message ($M=5.23$, $SD=.78$), $t(145)=-1.30$, $p=.20$.

Research question 4 examined whether there is a correlation between behavioral intention and HBM factors such as perceived susceptibility, perceived severity, perceived benefit, perceived barrier, and self-efficacy. The researcher conducted multiple regression analysis to investigate the relationship between HBM factors' effects and behavioral intention. Among HBM factors, benefit, severity, and barrier were

positively and significantly correlated with behavioral intention adjusted $R^2=.25$, $F(1, 147)=17.49$, $p<.01$. Table 4-3 for statistical test results.

Research question 5 investigated whether media channels affect HBM factors. The result indicated that media channels have a significant effect on perceived severity and perceived barrier. In the case of perceived severity, participants who viewed the newspaper ($M=4.47$, $SD=1.00$) perceived higher severity than those who saw the Facebook website ($M=4.09$, $SD=1.19$), $t(145)=2.06$, $p<.05$. In the case of perceived barrier, participants who viewed the Facebook website ($M=2.65$, $SD=1.04$) perceived lower barrier than those who saw the newspaper ($M=2.99$, $SD=1.24$), $t(145)=1.81$, $p<.05$. Table 4-4 for statistical test results.

Research question 6 examined the relationship between media channels and behavioral intention. The independent samples t-test result revealed no statistically significant effect between newspaper ($M=4.39$, $SD=1.49$) and Facebook ($M=4.47$, $SD=1.41$), $t(145)=-.326$, $p=.75$.

Research question 7 was intended to investigate the interaction effect between message framing and media channel using two-way analysis of variance (ANOVA). There was a near significant interaction effect between message framing and media channel, $F(1, 147)=2.84$, $p<.10$. The results indicated that participants who viewed the loss-framed message on Facebook mostly exhibited a high level of behavioral intention ($M=4.90$, $SD=1.33$) while participants who saw the gain-framed message on Facebook had the lowest level of behavioral intention ($M=4.03$, $SD=1.37$), $t(75)=-2.82$, $p<.01$. Figure 4-1 for graphical representation.

Also, this study examined whether there is significant behavioral intention differences among 4 groups such as loss-framed message on Facebook, loss-framed message in the newspaper, gain-framed message on Facebook, and gain-framed message in the newspaper. First, there is no statistically significant differences between participants who saw the loss-framed message on Facebook ($M=4.90$, $SD=1.33$) and those who viewed the loss-framed message in the newspaper ($M=4.43$, $SD=1.55$), $t(72)=-1.40$, $p=.17$. Second, the independent samples t-test result revealed no statistically significant differences between participants who saw gain-framed message on Facebook ($M=4.03$, $SD=1.37$) and those who viewed gain-framed message in the newspaper ($M=4.36$, $SD=1.45$), $t(71)=.982$, $p=.33$. Third, there is no statistically significant differences between participants who saw the gain-framed message on Facebook ($M=4.03$, $SD=1.37$) and those who viewed the loss-framed message in the newspaper ($M=4.43$, $SD=1.55$), $t(71)=-1.16$, $p=.25$. Lastly, there is a significant difference between participants who saw the loss-framed message on Facebook ($M=4.90$, $SD=1.33$) and those who viewed the gain-message in the newspaper ($M=4.36$, $SD=1.45$), $t(72)=1.67$, $p<.01$. Table 4-5 for statistical test results.

Furthermore, this study investigated whether the message framing affected the behavioral intention of participants who saw the message in the newspaper. The results indicated that there is no significant effects between participants who viewed the loss-framed message in the newspaper ($M=4.43$, $SD=1.55$) and those who saw the gain-framed message in the newspaper ($M=4.36$, $SD=1.45$), $t(68)=-.20$, $p=.84$.

Table 4-1. Manipulation check of message framing

			Mean	Std. Deviation	Sig.
Message Framing	Gain	Perceived gain	5.71	.87	.001
		Perceived loss	4.80	1.53	
	Loss	Perceived gain	3.74	1.53	.001
		Perceived loss	5.44	1.27	

Table 4-2. Effect of message framing on behavior intention

		Message Framing	Mean	Std. Deviation	Sig.
Behavior intention	Gain		4.19	1.41	.020
	Loss		4.68	1.45	

Table 4-3. Effect of the correlation between behavioral intention and HBM factors

Model		Adjusted R Square	F	Sig.	Tolerance	VIF
1	Benefit	.192	35.69	.000	1.000	1.000
2	Benefit	.226	22.36	.000	.963	1.039
	Severity				.963	1.039
3	Benefit	.253	17.49	.000	.843	1.186
	Severity				.905	1.105
	Barrier				.851	1.175

Table 4-4. Effect of the media channels on HBM factors

		Mean	Std. Deviation	df	Sig.
Severity	Newspaper	4.47	1.01	145	.021
	Facebook	4.09	1.19		
Barrier	Newspaper	2.99	1.24	145	.036
	Facebook	2.65	1.04		

Table 4-5. Effect of the loss-framed message on Facebook and the gain-framed message in the newspaper

		Mean	Std. Deviation	df	Sig.
Facebook	Loss-framed message	4.90	1.33	72	.05
Newspaper	Gain-framed message	4.36	1.45		

Estimated Marginal Means of BEHAVIORINTENTION

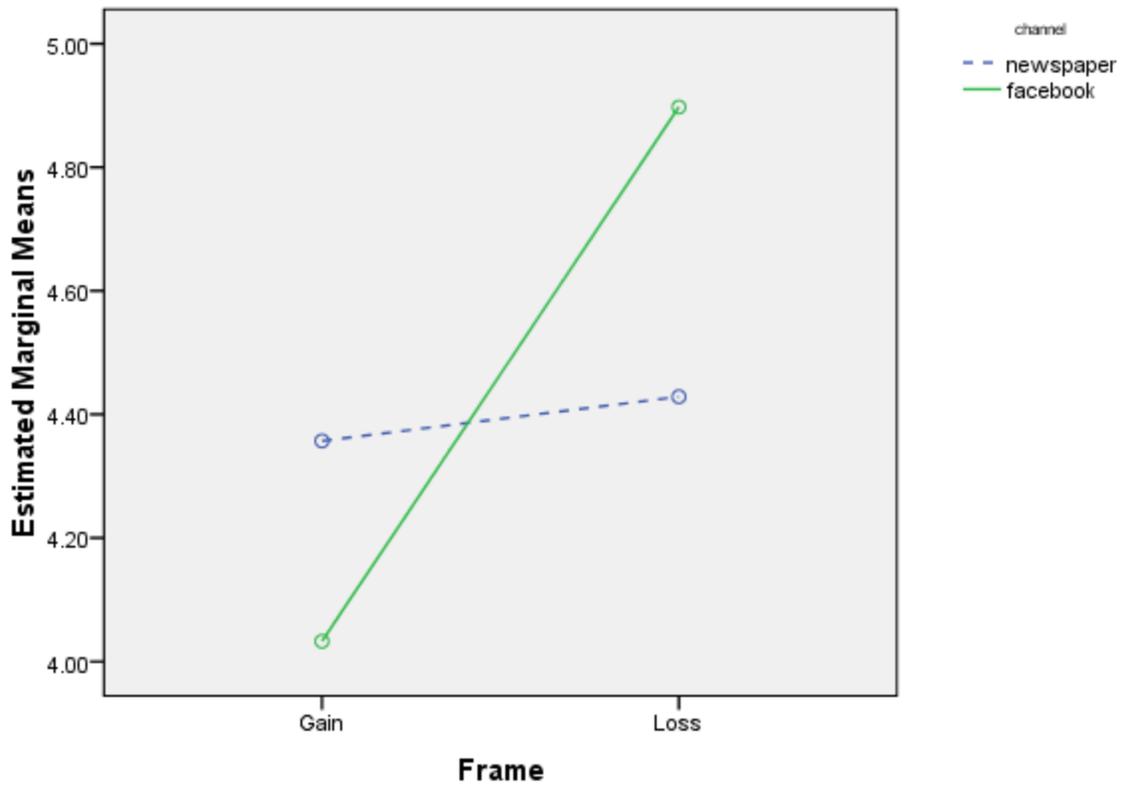


Figure 4-1. Interaction effect between message framing and media channel

CHAPTER 5 DISCUSSION AND CONCLUSION

This study investigated how HPV vaccine campaign messages (i.e., gain-framed messages vs. loss-framed messages) and media channel (i.e., Facebook vs. newspaper) affect university students' perception of health belief model factors and behavioral intention of getting HPV vaccine. To be specific, this study investigated which message framing was more effective in the HPV vaccine campaign. This study also examined the effect of media channel. Although the media channel is critical when distributing health campaigns (Kevin et al., 2008), most health campaigns have been conducted using traditional media such as television and newspaper. However, as the power of social media increase, many health organizations have begun to focus on social media (CDC, 2011). Therefore, this study compared the effect of newspaper versus social media to investigate which medium is more effective for an HPV vaccine campaign.

There are several notable findings. First, this study assumed that the gain-framed message had a more significant effect on behavioral intention than the loss-framed message in the HPV vaccine campaign. However, the results took a somewhat opposite direction from the expected hypothesis in that the loss-framed message was shown to be more effective in terms of behavioral intention. In general, many researchers have argued that the gain-framed message might be more effective in preventive health behaviors, while the loss-framed message is more effective in disease-detection behaviors. However, this study's result conflicts with previous predictors. According to Gerend et al. (2008), frequency is a critical factor in determining the effect of message framing on behavioral intention (Gerend et al., 2008). Their study compared the effect of

the gain-framed versus the loss-framed message in a one-shot condition and a six-shot condition. The result indicated that the loss-framed message is more effective with regard to behavioral intention than the gain-framed message in a one-shot condition. In this sense, the authors argued that preventive behavior such as vaccination should be differentiated with other preventive behavior. This means that preventive health behavior, which is more influenced by the gain-framed message, should be constantly emphasized and is often a regular health behavior. (e.g., exercise behavior, sunscreen use, safe driving). Therefore, people perceive the behavior as familiar and safe. Also, people feel certainty about the health behavior results. However, most vaccinations require just one shot or a low frequency of shots. In terms of one-time behaviors such as vaccination, people perceive the behavior as risky because they do not engage in that kind of behavior every day. Also, people feel uncertainty about the result of one-time health behavior. Therefore, the effect of message framing can differ between a vaccination that requires low frequency and other preventive behavior that requires frequent repetition of health behavior. Also, Rothman and Salovey(1997) argued that frequency is the important factor in determining the effect of message framing on behavioral intention. They proposed that the loss-framed message might have more influence on one-time preventive behaviors than the gain-framed message. However, the results of the current study showed that the level of behavioral intention can differ based on the media channel, not only message framing. This study revealed the interaction effect between message framing and media channels for behavioral intention. The participants who viewed the online newspaper page demonstrated no statistically significant difference in behavioral intention due to message framing.

However, the participants who saw the Facebook page featuring a loss-framed message had a higher level of behavioral intention to get the HPV vaccine than those who viewed the gain-framed message on Facebook. Facebook is the most popular social network site in the world, and more than two-thirds of users log on to Facebook every day (Ellison, Steinfield, & Lampe, 2007). People use Facebook to post, share, and disseminate their personal information and communicate with their peers. In this situation, people's attitudes, beliefs, and behavior could be influenced by other people's opinions. Kiecker and Cowles (2002) referred to this phenomenon as personal influence, defined as "any change, whether deliberate or inadvertent, in an individual's beliefs, attitudes, and/or behaviors that occurs as the consequence of interpersonal communications" (p.312). This interpersonal communication and personal influence on Facebook seems to be more effective than newspapers within the health campaign to generate behavioral intention.

Based on the interaction effect, this study indicated that the HPV vaccine campaign on Facebook using a loss-framed message is the most effective campaign to increase distribution of the HPV vaccine.

Third, this study established hypotheses and research questions related to how message framing affects HBM factors. The results indicated that no significant difference exists in the level of HBM factors when participants are exposed to both gain- and loss-framed messages. However, the results suggested that perceived benefit, perceived severity, and perceived barrier do affect behavioral intention. Therefore, people who perceive benefits when they get the HPV vaccine (e.g., prevention of cervical cancer and genital warts), severity of cervical cancer and genital warts, and

lowered barrier of getting the HPV vaccine (e.g., time consuming, painful, cost) have more persuasive effects on behavioral intention. In other words, when healthcare professionals conduct an HPV vaccine campaign, a message that it can increase benefits, severity, and decrease barriers should be included to increase getting the HPV vaccine.

Lastly, this study examined how the media channel affects HBM factors. The results showed that participants who viewed newspapers perceived more severity of cervical cancer and genital warts whereas participants who viewed Facebook messages perceived a lower barrier to getting the HPV vaccine. Mass media has been a critical channel for health campaigns, and most health campaigns to date have been conducted using mass media (Noar, 2006). However, nowadays, thanks to the emergence of social networking sites, a number of health organizations focus on social network sites and perceive social network sites as important channels for health campaigns (CDC, 2011). According to the current study, newspapers should be used to inform readers about the severity of cervical cancer and genital warts whereas Facebook should be used to decrease perceptions about barriers, such as cost and time required. In other words, the HPV vaccine campaign should be conducted not only through traditional media but also through social media actively.

Theoretical and Practical Implications

These results have important theoretical and practical implications. First, this study contributes to the literature by clearly highlighting the importance of media channels. A number of health organizations focused on the importance of social networks sites to conduct the health campaign because there are growing fast and many users are a part of social networks sites. However, few studies demonstrated the

effect of social networks sites empirically. This study enlarged the media channel effect research and compared the effects between social network sites and newspaper whereas most previously studies have focused exclusively on mass media. The results indicated that the Facebook page that posted the loss-framed message had the largest effect on participants getting the HPV vaccine. These results could serve as a guideline for health campaigners when they conduct HPV vaccine campaigns.

Second, this study contributes to health campaign research by providing empirical evidence on the impact of health campaign messages on behavioral intention. Although researchers are increasingly examining health campaigns in this field, few studies about HPV vaccine campaigns have been conducted. This study determined which message is more effective in terms of the behavioral intention for HPV vaccine campaigns. In general, gain-framed messages offer more positive effects on behavioral intention in terms of preventive behavior. However, this study explained that loss-framed messages have more significant effects on the behavioral intention, especially in HPV vaccine campaigns. Therefore, this study contributed to expanding the message framing study in terms of various preventive behaviors and suggested guidelines for health campaigners.

Third, this study adopted HBM in the HPV vaccine campaign and identified which HBM factors lead to behavioral intentions. This study demonstrated that perceived benefit, perceived severity, and perceived barriers greatly influence behavioral intentions among HBM factors. Thus, health campaigners must include messages about the severity of cervical cancer and genital warts, the benefits of getting the HPV vaccine, and information to reduce people's perceptions of barriers. The result of this

study can help health campaigners decide which content should be included to increase health behavior in the HPV vaccine campaign more effectively.

Limitations and Future Research

This study has several limitations. First, this study emphasized that the HPV vaccine is effective not only for women, but also for men. However, most participants were women, so the results might not reflect the perceptions and behavioral intentions of men. Therefore, future studies should include more men as participants to acquire more generalizable results.

Second, only undergraduate students participated in this study. The HPV vaccine is available for females and males from 9 to 26 years of age, so various age groups should be included to examine the effects of health campaigns more accurately. Middle or high school students as well as parents should be included in future study to address this issue.

Third, the current study's results indicated that message framing does not have a significant influence on HBM factors. This study measured participants' perceptions of HBM factors using the survey method. However, any statistical analysis of participants' perception has inherent limitations. In this regard, future research should take a qualitative approach to provide a more in-depth analysis of the effect of message framing on HBM factors.

Fourth, other factors might affect the HBM factors and behavioral intention. This study checked the manipulation at the beginning of the main survey. Therefore manipulation check items might have influenced the HBM factors and behavioral intention. Furthermore, involvement and previous information about cervical cancer or genital warts could affect the HBM factors and behavioral intention. If participants have

a high involvement of cervical cancer or genital warts, their perceived susceptibility, perceived severity, and behavioral intention might be higher than those who have a low involvement. This means that level of involvement could affect HBM factors and behavioral intention. Along the same line, level of previous information about cervical cancer or genital warts might affect HBM factors and behavioral intention. Therefore, involvement and previous information about cervical cancer or genital warts should be contained in the future study.

Finally, this study compared the effect of media channel by focusing on newspapers and Facebook to examine the difference of the effect in terms of the perception of HBM and behavioral intention. However, health campaigns are conducted via television, radio, and printed materials in reality. Therefore, future studies might compare the effect of various media channels on health campaigns.

For future study, preventive behavior should be divided more specifically. This study indicated that a loss-framed message is more effective on behavioral intention even though getting the HPV vaccine is preventive behavior. As Gerend et al. (2008), and Rothman and Salovey (1997) argued, preventive behavior should be divided according to low frequency (e.g., vaccination) behavior or high frequency (e.g., exercise) behavior. Therefore, future studies can divide health topics in terms of frequency and examine how message framing influences behavioral intention.

In sum, this research sheds light on the media effect differences and message framing effect in the HPV vaccine campaign. This research revealed that a loss-framed message on Facebook is the most persuasive strategy to promote the HPV vaccine. This result can be an effective guideline for health campaign practitioners designing the

HPV vaccine campaign. Furthermore, many health organizations should try to use Facebook to disseminate useful HPV vaccine information.

APPENDIX A
STATEMENT OF INFORMED CONSENT

Dear participants:

I am conducting an experimental study to explore your reactions to some health campaign messages. You will be asked your thoughts and feelings about the health campaign message in a confidential questionnaire.

This survey consists of 5 pages and will take about 15 minutes. Your answers will be kept confidential by law and will use for statistical purposes only. Your responses are extremely valuable and important to this study. Please take at least 5 minutes to read health message, after then please read all of questions carefully.

If you have any question about this survey, please contact the researcher at enchant31@ufl.com.

Thank you for your time and help.

Jieun Chung
Master Candidate
College of Journalism and Communications
University of Florida
enchant31@ufl.com

APPENDIX B
EXPERIMENTAL STIMULI

- Gain-framed message

**If you get the HPV vaccine,
You can live **healthy life** without cer-
vical cancer or genital warts**

HPV vaccine is **effective for both men and women**

Why the HPV vaccine is so important

■ **By getting the HPV vaccine, both males and females **get a chance to prevent** cervical cancer and genital warts. HPV vaccine is 100% effective in preventing cervical cancer for women and 90% effective in preventing genital warts for both men and women. With the HPV vaccine, you can **gain** numerous health benefits.**

Get the HPV vaccine today!



- Loss-framed message

**If you do not get the HPV vaccine,
You can suffer from cervical cancer
or genital warts**

**Both men and women can suffer from the disease
without HPV vaccine**

Why the HPV vaccine is so important

■ **By not getting the HPV vaccine, both males and females **lose a chance** to prevent cervical cancer and genital warts. Cervical cancer ranks second among women's cancer and one person dies every 2 minutes because of cervical cancer. Also, many men and women have genital warts. Without the HPV vaccine, you can **lose** health benefits.**

Get the HPV vaccine today!



APPENDIX C
MANIPULATION QUESTIONNAIRE

I would like to know your perception about the message *itself*.

In general, the message _____

	Strongly disagree	disagree	Somewhat disagree	neutral	Somewhat agree	agree	Strongly agree
In general, the message emphasizes the positive consequences of getting HPV vaccine.	1	2	3	4	5	6	7
In general, the message emphasizes the gain of getting HPV vaccine.	1	2	3	4	5	6	7
In general, the message describes the advantages of getting HPV vaccine.	1	2	3	4	5	6	7
In general, the message shows what I would gain if I get the HPV vaccine.	1	2	3	4	5	6	7
In general, the message emphasizes the negative consequences of not getting HPV vaccine.	1	2	3	4	5	6	7
In general, the message emphasizes the loss of not getting HPV vaccine.	1	2	3	4	5	6	7
In general, the message describes the disadvantages of not getting HPV vaccine.	1	2	3	4	5	6	7
In general, the	1	2	3	4	5	6	7

message shows what I would lose if I don't get the HPV vaccine.							
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APPENDIX D
MAIN STUDY QUESTIONNAIRE

Section 1. Susceptibility

In this section, I'd like to ask your perceived susceptibility of cervical cancer and genital warts after reading the health campaign messages. Six statements are listed below. Please indicate your level of agreement or disagreement with each statement.

	Strongly disagree	disagree	Somewhat disagree	neutral	Somewhat agree	agree	Strongly agree
My chances of getting cervical cancer or genital warts are great.	1	2	3	4	5	6	7
My physical health makes it more likely that I will get cervical cancer or genital warts	1	2	3	4	5	6	7
I feel that my chances of getting cervical cancer or genital warts in the future are good.	1	2	3	4	5	6	7
There is a good possibility that I will get cervical cancer or genital warts	1	2	3	4	5	6	7
I worry a lot about getting cervical cancer or genital warts	1	2	3	4	5	6	7
Within the next year, I will get cervical cancer or genital warts.	1	2	3	4	5	6	7

Section 2. Seriousness

In this section, I'd like to ask your perceived seriousness of cervical cancer and genital warts after reading the health campaign messages. Twelve statements are listed below. Please indicate your level of agreement or disagreement with each statement.

	Strongly disagree	disagree	Somewhat disagree	neutral	Somewhat agree	agree	Strongly agree
The thought of cervical cancer or genital warts scare	1	2	3	4	5	6	7

me.							
When I think about cervical cancer or genital warts, I feel nauseous.	1	2	3	4	5	6	7
If I had cervical cancer or genital warts, my career would be endangered.	1	2	3	4	5	6	7
When I think about cervical cancer or genital warts, my heart beats faster.	1	2	3	4	5	6	7
Cervical cancer or genital warts would endanger my marriage (or a significant relationship).	1	2	3	4	5	6	7
Cervical cancer or genital warts are a hopeless disease.	1	2	3	4	5	6	7
My feelings about myself would change if I got cervical cancer or genital warts.	1	2	3	4	5	6	7
I am afraid to even think about cervical cancer or genital warts.	1	2	3	4	5	6	7
My financial security would be endangered if I got cervical cancer or genital warts.	1	2	3	4	5	6	7
Problems I would experience from cervical cancer or genital warts would last a long time.	1	2	3	4	5	6	7
If I got cervical cancer or genital warts, it would be more serious than other diseases.	1	2	3	4	5	6	7
If I had cervical cancer or genital warts, my whole life	1	2	3	4	5	6	7

would change.							
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Section 3. Benefits

In this section, I'd like to ask your perceived benefits of HPV vaccine after reading the health campaign messages. Four statements are listed below. Please indicate your level of agreement or disagreement with each statement.

	Strongly disagree	disagree	Somewhat disagree	neutral	Somewhat agree	agree	Strongly agree
Getting HPV vaccine prevents future problems for me.	1	2	3	4	5	6	7
I have a lot to gain by getting HPV vaccine.	1	2	3	4	5	6	7
Getting HPV vaccine can help me prevent cervical cancer or genital warts.	1	2	3	4	5	6	7
I would not be so anxious about cervical cancer or genital warts if I got HPV vaccine.	1	2	3	4	5	6	7

Section 4. Barriers

In this section, I'd like to ask your perceived barriers when you get the HPV vaccine after reading the health campaign messages. Eight statements are listed below. Please indicate your level of agreement or disagreement with each statement.

	Strongly disagree	disagree	Somewhat disagree	neutral	Somewhat agree	agree	Strongly agree
It is embarrassing for me to get the HPV vaccine.	1	2	3	4	5	6	7
In order to get the HPV vaccine, I have to give up quite a bit.	1	2	3	4	5	6	7
Getting the HPV vaccine can be painful.	1	2	3	4	5	6	7
Getting HPV vaccine is time consuming	1	2	3	4	5	6	7
My family would make fun of me if I got the HPV vaccine.	1	2	3	4	5	6	7
The practice of	1	2	3	4	5	6	7

getting HPV vaccine interferes with my activities							
I am afraid I would not be able to get the HPV vaccine.	1	2	3	4	5	6	7
Getting the HPV vaccine wastes of my money.	1	2	3	4	5	6	7

Section 5. Self-efficacy

In this section, I'd like to ask your self-efficacy after reading the health campaign messages. Ten statements are listed below. Please indicate your level of agreement or disagreement with each statement.

	Strongly disagree	disagree	Somewhat disagree	neutral	Somewhat agree	agree	Strongly agree
I can always manage to solve difficult health problems if I try hard enough.	1	2	3	4	5	6	7
If someone opposes me, I can find the means and ways to get what I want.	1	2	3	4	5	6	7
It is easy for me to stick to my aims and accomplish to be healthy.	1	2	3	4	5	6	7
I am confident that I can get the HPV vaccine.	1	2	3	4	5	6	7
Thanks to my resourcefulness, I know how to handle unforeseen situations.	1	2	3	4	5	6	7
I can solve most health problems if I invest the necessary effort.	1	2	3	4	5	6	7
I can solve most health problems if I invest the necessary effort.	1	2	3	4	5	6	7
When I am confronted with a health problem, I	1	2	3	4	5	6	7

can usually find several solutions.							
If I am in health problem, I can usually think of a solution.	1	2	3	4	5	6	7
I can usually handle whatever comes my way.	1	2	3	4	5	6	7

Section 6. Behavioral intention

In this section, I'd like to ask your behavioral intention after reading the health campaign messages. Four statements are listed below. Please indicate your level of agreement or disagreement with each statement.

	Strongly disagree	disagree	Somewhat disagree	neutral	Somewhat agree	agree	Strongly agree
I intend to get the HPV vaccine.	1	2	3	4	5	6	7
I intend to search for the HPV vaccine information.	1	2	3	4	5	6	7
I intend to counsel with a doctor about HPV vaccine.	1	2	3	4	5	6	7
I intend to recommend the HPV vaccine to my friends and family.	1	2	3	4	5	6	7

Section 7. Demographic Information

In this section, I'd like to ask your demographic information.

1. What is your age? _____
2. What is your gender? Male Female
3. How would you describe yourself? (Circle one)
 - Caucasian
 - African American
 - Hispanic
 - Asian
 - American Indian/Alaskan Native

- Native Hawaiian or other Pacific Islander

4. What is your education level? (Circle one)

- Working on undergraduate degree
- Working on graduate degree
- Completed graduate

Thank you so much for your participation!

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BIOGRAPHICAL SKETCH

Jieun Chung was born in Seoul, South Korea and graduate from Hankuk University of Foreign Studies, earning a B.A. and master's degree in communication and information. Her major was public relations and her research work has appeared in the *Korean Journal of Advertising* and a book from the Korea Press Foundation. While earning her master's degree in South Korea, she worked as a teaching and research assistant and received a fellowship.

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