Narrative Based Fear Appeals: Manipulating Grammatical Person and Message Frame to Promote HPV Awareness and Responsible Sexual Conduct

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Abstract

Although many studies have noted the effectiveness of narrative-based persuasion, conceptual inconsistencies have made it difficult to determine what characteristics of narrative messages lead to effective persuasive outcomes. In this study 145 female college students received prevention messages about the human papillomavirus (HPV). Two elements of the narrative message structure were manipulated: message frame (gain framed vs. loss framed), and the grammatical person of the text (first-person vs. third-person). After reading a narrative in the form of an online blog, participants responded to a brief questionnaire designed to measure perceptions of threat regarding contraction of HPV, perceptions of efficacy regarding HPV prevention, and intentions to get the Gardasil vaccine. Participants exposed to loss framed messages reported higher levels of perceived susceptibility and severity than participants exposed to gain framed messages; participants in the gain framed message conditions reported higher levels of self-efficacy. No effects were found for grammatical person.
A multitude of studies comparing the persuasive ability of narrative versus non-narrative forms have demonstrated that narrative is oftentimes equally if not more persuasive than non-narrative (for reviews see Taylor & Thompson, 1982; Baesler & Burgoon, 1994; Allen & Preiss, 1997). For instance, narrative evidence has been shown to be more persuasive than statistical evidence with respect to decreasing tanning bed use (Greene & Brinn, 2003), promoting blood donation (Kopfman, Smith, Yun, & Hodges, 1998), promoting organ donation (Weber, Martin, & Corrigan, 2006), increasing fruit and vegetable consumption (Slater, Buller, Waters, Archibeque, & LeBlanc, 2003), and discouraging drunk driving (Stitt & Nabi, 2005). However, it is still not clear exactly what particular features of this message type lead to intention to engage in adaptive behavior change (Green, 2008). This is a critical issue if narrative is to be effectively employed to promote behavior change. The present study represents an attempt to address that gap in knowledge by investigating how the manipulation of two elements of narrative message construction—message frame (gain vs. loss) and grammatical person (first-person vs. third-person)—influenced participants’ levels of perceived threat, efficacy, and behavioral intentions regarding getting the Gardasil vaccine for the human papilloma virus (HPV).

Literature Review

HPV is the most common sexually transmitted infection in the United States (Weinstock, Berman, & Cates, 2004; Dunne et al., 2007). According to the American Social Health Association (2010), approximately 70-85% of sexually active Americans will become infected with HPV during their lifetime. Incidence of HPV is highest among young adults age 15-24 with anywhere from 26.9% (Manhart et al., 2006) to 70% (Dunn et al., 2007) of individuals in that age range estimated to be infected with at least one type of HPV. In a systemic review of studies published between 1995 and 2005, Revzina and Diclemente (2005) identified college students as consistently having a higher prevalence of HPV infection than any other population. In addition to being associated with genital warts and infections, high risk strains of HPV are responsible for more than 70% of cervical cancer cases (Walboomers, 1999). Recent studies have shown that HPV is also responsible for about 85% of anal cancers, 70% of vaginal cancers, 40% of vulvar cancers, 40% of penile cancers, 25% of mouth cancers, and 35% of throat cancers (De Vuyst et al., 2009; Parkin & Bray, 2006; Kreimer, Clifford, Boyle, & Franceschi, 2005).

As a group at high risk for HPV infection, it is important for college students to be both aware of and knowledgeable about HPV. Historically, researchers have consistently found low levels of knowledge about HPV in college-aged groups (see Ramirez et al., 1997; Dell, Chen, Ahmad, & Stewart, 2000; Vail-Smith & White, 1992), but recently awareness of HPV has increased following the development and promotion of the Gardasil vaccine for HPV among adolescent girls. Gardasil protects against the initial infection of HPV types 16 and 18, which together are responsible for over 70% of cervical cancer cases. In 2006 Merck & Co. became the first pharmaceutical company to market an HPV prevention product specifically to young adult females and adolescent females via its One Less campaign (Grantham, Ahern, & Connolly-Ahern, 2010). In 2007, shortly after the introduction of the vaccine, an analysis of the National Immunization Survey revealed that 84.3% of women aged 18-49 years were aware of HPV and 78.9% were aware of the existence of a vaccine (Jain et al., 2009). Despite this increase in awareness, HPV prevalence rates remain high among college women and uptake of the Gardasil vaccine is by no means universal.

In this study we investigated the effectiveness of promoting the Gardasil vaccine among female students at a large Southeastern university by means of narrative. Narrative has been
defined as “any cohesive and coherent story with an identifiable beginning, middle, and end that provides information about scene, characters, and conflict; raises unanswered questions or unresolved conflict; and provides resolution” (Hinyard & Kreuter, 2007, p. 778). The utility of narrative as a persuasive mechanism has been increasingly investigated in recent years. Multiple studies demonstrate that narratives can influence beliefs (e.g., Appel & Richter, 2007), attitudes (e.g., Lee & Leets, 2004), and behavioral intentions (e.g., Slater, Rouner, & Long, 2006). Several explanations have been developed in an attempt to explain the persuasive effects of narrative in individuals (Green & Brock, 2000; Busselle & Bilandzic, 2008), with much theoretical effort focused on studying transportation, or absorption into the narrative world (Green & Brock, 2000), and identification with story characters (Cohen, 2001). It remains unclear, however, exactly what elements of a narrative messages themselves prompt these mediating effects and make it an effective persuasive tool.

Message Framing

One theory regarding message content that has been applied extensively to health messages more generally is prospect theory. Prospect theory contends that message framing (i.e., gain frame vs. loss frame) influences behavioral decisions (Tversky & Kahneman, 1981; Rothman, Bartels, Wlaschin, & Salovey, 2006). Typically, gain framed messages emphasize what one stands to gain by engaging in recommended behaviors and loss framed messages emphasize what one stands to lose by not engaging in recommended behaviors. Traditionally, applications of prospect theory have shown that people are more likely to avoid risks when the potential gains or benefits of engaging in a certain behavior are emphasized and more likely to take risks when potential losses or negative consequences are emphasized (Tversky & Kahneman, 1981; Rothman et al., 2006; Yu et al., 2010). Because disease detection behaviors carry the risk of discovering negative information about one’s health, loss framed messages should be more effective for motivating disease detection behaviors. In contrast, gain framed messages should be more effective for motivating disease prevention behaviors, because such behaviors entail avoidance of health risks. We might expect, therefore, that messages about vaccinations such as Gardasil should be more effective if they were gain framed as opposed to loss framed.

Indeed, loss framed messages have been shown to be more effective than gain framed messages for promoting a variety of detection behaviors including getting mammograms (Schneider et al., 2001), performing breast self-examinations (Meyerowitz & Chaiken, 1987), receiving skin cancer examinations (Block & Keller, 1995), getting tested for HIV (Kalichman & Coley, 1995), using plaque-detecting rinse (Rothman et al., 1999), and getting blood-cholesterol screenings (Maheswaran & Meyers-Levy, 1990). Evidence also suggests that gain framed messages should be more effective for promoting prevention behaviors such as the use of sunscreen to prevent skin cancer (Rothman et al., 1993), condom use (Kiene, Barta, Zelenski, & Cothran, 2005), and smoking cessation (Wong & McMurray, 2002). It is important to note, however, that some research has found no framing effect at all (Lalor & Hailey, 1990). Of particular interest to this study is O’Keefe and Jensen’s (2006) finding that no significant difference emerged in the persuasiveness of gain versus loss framed messages for preventing STIs.

The distinct persuasive effects of gain and loss framed messages may be associated with different influences on audience perceptions of threat and efficacy. Fear appeal literature (Witte, 1992) suggests that sufficient levels of both threat and efficacy must be present for persuasion to occur. Perceived threat includes perceived severity (beliefs about the magnitude of the threat)
and perceived susceptibility (beliefs about the likelihood that the threat will occur). Perceived efficacy refers to persons’ beliefs about their ability to hinder or avert a threat and is a function of perceived response efficacy (an individual’s belief that the recommended response will effectively deter the threat) and perceived self-efficacy (an individual’s belief that he or she is capable of performing the recommended response). If both perceived threat and perceived efficacy are high, individuals are motivated to engage in adaptive strategies to control the threat. Because loss framed messages focus on what one stands to lose or the negative consequences of engaging in a behavior it seems plausible that loss framed messages should also arouse high levels of perceived threat severity and susceptibility. Both Yu et al. (2010) and Mitchell (1987) have reported that negatively framed messages resulted in higher levels of perceived threat severity and susceptibility than positively framed messages.

Evidence has been mixed regarding whether gain or loss frames more effectively promote feelings of efficacy regarding the performance of a prevention behavior. Yu et al. (2010) found that loss frames elicited higher levels of perceived response efficacy whereas gain frames elicited higher levels of perceived self-efficacy in regard to preventing fetal alcohol spectrum disorder. Hoeken and Geurtz (2005) also reported that participants exposed to gain framed messages experienced more positive self-efficacy perceptions regarding internet addiction than those exposed to loss framed messages. Finally, Maguire et al. (2010) reported no significant differences between gain and loss frames for perceived efficacy (self and response) in regard to preventing kidney disease.

Although prospect theory has been investigated with respect to a variety of health behaviors, it has only rarely been applied to narrative messages. We located only two studies that specifically investigated the effects of message framing within the context of a narrative message. A study conducted by Gray and Harrington (2009) examined the effects of message frame (gain vs. loss) and message style (narrative vs. statistical) with respect to intentions to exercise. The results supported the assertion of prospect theory finding that gain framed messages promote preventative behaviors (i.e., exercise) more effectively than loss framed messages. In another study geared towards preventing fetal alcohol spectrum disorder (FASD), Yu, Ahern, Connolly-Ahern, and Shen (2010) utilized the same 2 x 2 experimental design, (gain vs. loss) x (narrative vs. statistic). They found that participants in the gain framed conditions reported a higher level of intention to prevent FASD than participants in the loss framed conditions. Furthermore, they found that loss-narrative appeals elicited higher levels of fear, perceived severity, and perceived response efficacy whereas gain-statistic appeals resulted in higher levels of self-efficacy.

In keeping with previous research, we advanced the following hypotheses:

H1: Participants exposed to a loss framed message will evidence higher levels of a) perceived threat susceptibility and b) perceived threat severity than participants exposed to a gain framed message.

H2: Participants exposed to a gain framed message will evidence higher levels of a) perceived self-efficacy and b) perceived response efficacy than participants exposed to a loss framed message.

H3: Participants exposed to a gain framed message will be more likely to indicate that they intend to get the Gardasil vaccine than participants exposed to a loss framed message.
Grammatical Person

The effect of framing within a narrative may operate in conjunction with other factors related to the construction of the narrative. Research on transportation theory (Green & Brock, 2000), exemplification theory (Zillman, 2006), and character identification (Cohen, 2001) lend support to the notion that how readers relate to story characters may impact the persuasive ability of a story-based message. Grammatical person refers to how person information is presented within a text. There are three types of grammatical person in Standard English: first-person, second-person, and third-person with first-person and third-person being the most commonly used in narrative writing (Graesser, Bowers, Olde, & Pomeroy, 1999). The role of grammatical person within a narrative has to do with the relationships between narrator, character, and reader (Cohn, 1968; Prince, 1987).

Although research examining the role of grammatical person as it relates to the effectiveness of persuasive narrative is not at all evident within the health communication literature, findings within the fields of literature and psychology lends support to the idea that manipulating grammatical person can influence how readers relate to story characters and events. Percy Lubbock, a renowned reviewer for the Times Literary Supplement in the early 1900s, stated: “This, then is the readiest means of dramatically heightening a reported impression, this device of telling the story in the first person, in the person of somebody in the book” (Lubbock, 1921, p. 127). With this comment Lubbock touched on what many have contended – stories written in the first-person just “feel” different. Hamburger and Rose (1973) termed stories written in the first-person “feigned reality statements” explaining that when readers encounter a first-person narrative it is comparable to having a real life person directly relate events they have actually experienced. Further, in first-person narratives the narrator/protagonist’s view is often the most salient, if not the only, point-of-view to adopt; the reader essentially experiences the narrative through the “eyes” of the narrator (Stanzel, 1986). In third-person narratives there is a separation of narrator and protagonist. The reader is not guided to take on a certain point-of-view but is rather reminded that there is more than one point-of-view to adopt. Thomte (2009) reported that third-person texts are perceived as emotionally cooler and more distant in comparison to first-person texts, which are perceived as more personal and as having the ability to make readers feel more like a participant in the story world. Texts written in the first-person serve to lessen the “psychic distance” between the reader and the protagonist whereas texts written in the third-person increase the distance (Forche & Gerard, 2001, p. 54).

A reader who adopts a first-person orientation towards a story will likely experience a more vivid imagined perspective than a reader who adopts an external third-person orientation. Baesler and Burgoon (1994) speculated that because anecdotal evidence is more easily imagined than statistical evidence and a vivid argument should be more convincing than a more pallid one, anecdotal evidence should be more convincing than statistical evidence (Hoeken, 2001). They tested this explanation by manipulating message type and message vividness simultaneously. They found that when controlling for vividness statistical information was more convincing than anecdotal information. Hoeken and Van Wijk (2007) found a similar pattern concluding that “the normatively weaker but more vivid anecdotal evidence is more convincing than the normatively stronger but less vivid statistical evidence” (Hoeken, 2001, p. 428).

Thus, grammatical person may be one way to encourage the reader to adopt a certain perspective as opposed to another. Thompte (2009) tested the notion that the grammatical person of a narrative affects how readers conceptualize, view, or experience a story world in a series of experiments. She presented participants with two versions of the same story about a person
waiting in line at a coffee shop. The stories were identical except for the personal pronouns used (i.e., first-person or third-person). She then asked participants to describe the line. She found that those who read the prompt which utilized first-person described the line as extending out in front of them as if they were in it whereas those who read the prompt which utilized third-person described the line from the side as if they were not in it but looking at it from the side. Thus, reading a first- or third-person account of an otherwise identical scene caused readers to render different imagined perspectives.

When considered in conjunction with evidence about the persuasive power of character identification (Cohen 2001) and message vividness (Baesler & Burgoon, 1994; Hoeken, 2001), Thompte’s (2009) findings led us to predict effects of grammatical person on health persuasion. We anticipated that utilizing first-person within a loss-framed message should increase perceptions of threat to even higher levels because readers would not only perceive that a threat existed but that it was likely to happen to them. Because people tend to consider imminent threats to be more severe than distant threats, perceptions of severity should also increase. Furthermore, perceiving a similar other successfully performing recommended actions should increase participant’s perceived self-efficacy and response efficacy. Thus, utilizing first-person should increase perceptions of efficacy to higher levels than utilizing third-person. Therefore we advanced the following hypotheses:

H4: Participants exposed to a first-person loss framed message will evidence higher levels of a) perceived susceptibility and b) perceived severity than participants exposed to a third-person loss framed message, first-person gain framed message, and third-person gain framed message.

H5: Participants exposed to a first-person gain framed message will evidence higher levels of a) perceived response efficacy and b) self-efficacy than participants exposed to a third-person loss framed message, first-person gain framed message, and third-person gain framed message.

Finally, we sought to determine what combination of framing and grammatical person would have the greatest effect on behavioral intentions. We posed a research question:

RQ1: Will there be an interaction between grammatical person (first vs. third) and message frame (gain vs. loss) with respect to a) perceived self-efficacy and b) perceived response efficacy?

Method

Participants for the present study were 145 females recruited from communication, psychology, and sociology courses at a large Southeastern University. Participants ranged in age from 18 to 51 years (M = 21.6, SD= 5.11) with 80 describing themselves as White/Caucasian, 26 as Hispanic, 14 as Black, 14 as Asian/Pacific Islander, and 9 as other. Nine were freshman, 38 were sophomores, 48 were juniors, 38 were seniors, and 10 were non-degree seeking. The study was judged exempt from the requirement for written informed consent by the University IRB.

Procedure

This study employed a post-test only, 2 (loss frame vs. gain frame) x 2 (first-person vs. third-person), between-subjects experimental design in which participants read one of four narrative health messages about a female freshman college students experiences with HPV. The messages were presented via the medium of an online blog. Messages were created by the authors specifically for the purposes of this study. Loss framed messages described the negative experiences of a person who contracted HPV through four separate entries covering a period of just over one year. Gain framed messages emphasized the positive experiences of a person who
did not contract HPV, with the same number of entries and time frame. Messages written in the
first-person utilized first-person pronouns (i.e., I and me) and messages written in the third-
person utilized third-person pronouns (i.e., she and her). Participants were provided with a link to
a questionnaire via email or course website. After answering a few demographic questions
participants were randomly assigned to one of the four experimental conditions and instructed to
follow a link to an online blog, read the message, and then complete the questionnaire.

Instrument
Perceived severity and perceived susceptibility were measured using an adaptation of
Witte et al.’s (1998) 5-item scale. The reliability of the 2-item perceived severity portion of the
scale was found to be unacceptable at $\alpha = .505$ and was converted to a single item measure. The
reliability of the 3-item perceived susceptibility portion of the scale was found to be acceptable
at $\alpha = .83$. Participants were asked to indicate the degree to which they agreed or disagreed with
the statements “I believe HPV is a serious condition”, “I am at risk for HPV”, “It is likely that I
will contract HPV”, and “It is possible that I will contract HPV” on a 5-point Likert-type scale (1
= strongly agree to 5 = strongly disagree).

Self-efficacy and perceived response efficacy were measured using an adaptation of Yu
et al.’s (2010) 6-item scale. All items were presented in a 5-point Likert-type format, for
example: “Preventing HPV is easy for me,” and “Getting the Gardasil vaccine can prevent HPV
and related diseases.” Participants responded on a 5-point Likert-type scale (1 = strongly agree to
5 = strongly disagree). The reliability of the 3-item perceived self-efficacy portion of the scale
was initially low at $\alpha = .67$ but rose to an acceptable level of $\alpha = .71$ when one item was
removed. The reliability of the 3-item perceived response efficacy portion of the scale was
unacceptable even after removal on one item, therefore it was converted to a single item
measure.

Behavioral Intention was measured by asking participants if they had already gotten the
Gardasil vaccine, and if so whether they had gotten all three doses. Those who had not gotten the
vaccine were asked to indicate on a 5-point Likert-type scale (1 = very likely to 5 = very
unlikely) how likely they would be to get the Gardasil vaccine within the next 6 months.

The instrument was pre-tested with 15 individuals. Some items were rearranged in
response to concerns that items inquiring about similar things, or items belonging to the same
scales, should not be presented one right after the other.

Results
H1, H2, H4, and H5 were tested using two, two-way MANCOVAs with grammatical
person and message frame as independent variables, perceived threat (severity and susceptibility)
and perceived efficacy (self-efficacy and response efficacy) as dependent variables respectively,
and Gardasil vaccination status as a covariate. H3 and RQ1 were tested by splitting the file
according to Gardasil vaccination status and using a two-way ANOVA with grammatical person
and message frame as independent variables and behavioral intention as a dependent variable
respectively.

Descriptive statistics are presented in Table 1 below. Prior to running MANCOVAs
outliers were identified by means of studentized residuals. Three cases with residuals higher than
2.0 were removed from the threat MANCOVA and 5 from the efficacy MANCOVA. Box’s $M$’s
test for homogeneity of variance (threat: $M = 17.33, p = .051$; efficacy: $M = 5.98, p = .76$)
depicted homogeneity of the covariance matrices could be assumed for both analyses. No
outliers were identified in the ANOVA and Levene’s test indicated homogeneity of variance
could be assumed ($F = .19, p = .904$).
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H1 stated that participants exposed to a loss framed message would evidence higher levels of a) perceived threat susceptibility and b) perceived threat severity than participants exposed to a gain framed message. A multivariate main effect was found for message frame (Wilk’s Λ = .954, $F(2, 124) = 3.504, p = .03, n^2 = .05$). The hypothesis was therefore supported.

H2 predicted that participants exposed to a gain framed message would evidence higher levels of a) perceived self-efficacy and b) perceived response efficacy than participants exposed to a loss framed message. Results revealed no multivariate main effects with respect to message frame (Wilk’s Λ = .96, $F(2, 126) = 2.77, p = .067, n^2 = .04$). However, tests of between subjects effects indicated a significant difference for the dependent variable of self-efficacy ($F(1, 127) = 4.36, p = .039, n^2 = .03$). Gain frame messages promoted higher levels of perceived self-efficacy than loss frame messages. The hypothesis was therefore partially supported.

H3 asserted that individuals exposed to a gain framed message would be more likely to indicate that they intended to get the Gardasil vaccine than participants exposed to a loss framed message. No main effect with respect to intentions to get the Gardasil vaccine was found for message frame ($F(1, 57) = .00, p = .96, n^2 = .00$). The hypothesis was therefore not supported.

H4 stated that individuals exposed to a first-person loss framed message would evidence higher levels of a) perceived severity and b) perceived susceptibility than individuals exposed to a third-person loss framed message, first-person gain framed message, or third-person gain framed message. No multivariate interaction effect was found for grammatical person and frame.
H5 predicted that participants exposed to a first-person gain framed message would evidence higher levels of a) perceived response efficacy and b) self-efficacy than participants exposed to a third-person loss framed message, first-person gain framed message, and third-person gain framed message. No multivariate interaction effect with respect to perceived efficacy was found for grammatical person and frame (Wilk’s $\Lambda = .98$, $F (2, 126) = .150$, $p = .23$, $n^2 = .02$). Tests for simple effects also revealed no statistically significant relationships. H5 was not supported.

With respect to RQ1, no interaction effect with respect to intentions to get the Gardasil vaccine was found for grammatical person and frame ($F (1, 57) = .044$, $p = .83$, $n^2 = .00$).

Discussion

This study provides additional support for aspects of prospect theory, but does so with a new health issue and a new message format than previous studies. Reading a blog about the experiences of a person who did not get the Gardasil vaccine and subsequently contracted HPV triggered stronger perceptions of threat susceptibility regarding HPV contraction and threat severity regarding HPV infection than reading a blog about a person who got the Gardasil vaccine and successfully avoided contracting HPV. This finding further establishes the assertions of past research regarding framing effects and fear appeals (see Rothman et al., 2006; Witte, 1992, 1998).

Participants exposed to a gain framed message evidenced higher levels of self-efficacy than participants exposed to a loss framed message. Thus, reading a blog about a person who got the Gardasil vaccine and successfully avoided contracting HPV instilled readers with a stronger sense of self-efficacy than reading a blog about a person who did not get the Gardasil vaccine and contracted HPV. It is difficult to say why message framing affected self-efficacy but no association was found between message frame and response efficacy. Perhaps the testimonial nature of the messages employed in this study did not provide sufficient evidence to convince readers of Gardasil’s effectiveness. It may be necessary to provide both case evidence and statistical evidence in order to achieve increased perceptions of both self-efficacy and response efficacy in regard to getting the Gardasil vaccine.

In contrast, no support was found for any of the hypotheses regarding grammatical person. In retrospect, this may be due to difficulties with operationalizing the variable. Although manipulating grammatical person may seem like a relatively simple endeavor, it was difficult to generate identical texts without one or the other sounding somewhat forced. Also, because blogs are typically written from a first-person perspective (Della, Eroglu, Bernhardt, Edgerton, & Nall, 2008) the third-person conditions may have seemed inauthentic. It is also possible that any effects grammatical person does have are slight and not influential in terms of the overall persuasiveness of a message.

Despite the lack of findings in the present study, however, past research does indicate that the grammatical person of a text affects how readers conceptualize story worlds (e.g., Thomte, 2009). More investigation is necessary in order to determine the utility of manipulating grammatical person in narrative persuasive messages. Perhaps because the messages employed in the present study did not depict any one specific scene or event but rather a series of events over time readers experienced difficulty relating to a continually evolving story world. Future studies should focus on creating narrative messages that depict a single influential event in an
effort to increase readers’ ability to take on character points-of-view. Maintaining a consistent story setting may also increase the likelihood that readers will take on character perspectives.

This reasoning may also help explain why none of the hypotheses regarding behavioral intention were supported. The fact that participants reported increased levels of perceived threat and self-efficacy in some conditions but still indicated they did not intend to engage in the recommended behavior contradicts established theory (see Rothman et al., 2006; Witte, 1992, 1998) and research regarding message framing and fear appeals (e.g., Yu et al., 2010; Hoeken & Geurts, 2005). The gain framed message indicated that getting the Gardasil vaccine prevented the character from contracting HPV; however, it also pointed out that there was really no way to tell for sure. Although the character went to the doctor several times and test results always indicated no signs of cervical abnormalities, it is possible that the virus had yet to present itself or was lying dormant at the time of each doctor visit. We suspect that the nature of the recommended behavior itself may be the biggest factor in participants’ behavioral intentions. It is also possible that participants were unwilling to get the vaccine because going in for three doses was too time consuming and expensive, or they were apprehensive about getting a vaccine that is fairly new and for which the utility has not been definitively established. It could also be that because getting Gardasil is meant to protect against a virus that is sexually transmitted there may be some level of embarrassment or shame involved in getting it.

The lack of support for the hypotheses regarding behavioral intention may also be due in part to the small sample size. Nearly half of the sample of women in this study had already gotten the Gardasil vaccine. Using Gardasil vaccination status as a covariate enabled the majority of statistical analyses to be run with the desired 30 subjects per condition. However, a sample containing only subjects who had not gotten the Gardasil vaccine was necessary in order to assess behavioral intention. This cut the sample size in half. Ideally additional data would have been collected from other women who had not received the vaccine, but given that data were collected during a summer semester participant availability was limited.

Using blogs also presented some challenges. We selected blogs as a vehicle for our messages because we believed online blogs are a more natural medium for expressing this type of experiential, story-based evidence than, say, a piece of paper with the same material handed to the student by a researcher in a classroom. However, blogs typically appear in order from most recent to most distant, and in order to be sure participants read the story chronologically we had to use the opposite order. Our creation may have seemed inauthentic. Manipulating message frame effectively also proved to be challenging. Although the ultimate intention of each message was the same – persuade the reader to get the Gardasil vaccine – it was difficult to create stories that were comparable in terms of length, character development, and emotional appeal but divergent in terms of the actual events taking place. The narrative messages were amended based on pretest responses. The amount of technical information was reduced and the amount of information about the character (i.e., activities, thoughts, feelings) was increased in an effort to make the narratives more relatable and realistic. However, it is possible that manipulation was still not fully adequate.

Finally, at the time this study was conceptualized, the utility of giving Gardasil to males had not yet been established. The vaccine was approved for use in females in June of 2006 but it was not until October of 2009 that the U.S. Food and Drug Administration approved the Gardasil vaccine for use in males between ages 9 and 26 (CDC, 2010). Since then, a study published in the New England Journal of Medicine (NEJM) indicated that getting the vaccine decreased the risk of developing HPV related genital warts and precancerous lesions by 90 percent in a sample
of 4,065 males who did not have an HPV infection prior to vaccination (Giuliano et al., 2011). There is certainly still merit in trying to convince additional women to get vaccinated; however, a larger effect may be seen in a persuasive attempt geared towards men. Future studies regarding intentions to get the Gardasil vaccine should consider including men as participants.
References


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