EFFECTS OF HUMOROUS ANTI-TOBACCO VIDEOS IN SOCIAL MEDIA— THE MEDIUM DIFFERENCE AND THE INFLUENCE OF CONTEXT

BY

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To Eumin Chen and Rosie Liu
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Chair: Moon J. Lee
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This study was designed to examine the effect of humorous anti-tobacco videos in social media from the aspects of medium difference and the influence of context. A 2 (Facebook vs. YouTube) x 2 (humor-related context vs. health-related context) factorial design with a control group experiment was used in this study. The result found several medium differences between Facebook and YouTube. In general, individuals perceived more interactivity, more risk of smoking, and more negative attitude towards smokers on Facebook than those on YouTube. In terms of intention to avoid smoking, only individual who was in the health-related context revealed a significant medium difference. Consistent with the findings, Facebook generated more intention to avoid smoking than YouTube. Moreover, the results also suggested that, in general, the humor appeal is more effective in Facebook than YouTube. When comparing with the control group, Facebook could generate more risk perception about smoking and more negative attitude towards smokers than the control group.

In addition, this study proposed that the perceived interactivity was the cue to the medium difference. Correlations were found. The engaging and control factor was consistently correlated with three smoking related attitudes.
On the other hand, while comparing different contexts, no difference was found from counterargument, argument scrutiny, and message discounting. Implications for future social media research and suggestions for health practitioners are discussed.
CHAPTER 1
INTRODUCTION

With the emergence of the Internet, Web2.0, and social media, health communication begins to step into the new media world and increase its influence on the public, especially young adults (Eysenbach, 2008; 2011; Robinson, Patrick, & Eng, 1998). The characteristics of interactive communication and tailored messages on the Internet are powerful advantages compared to traditional health campaigns (Catford, 2011; Hawn, 2009). For example, studies show that health-directed social networking sites such as Inspire, PatientLikeMe, and CureTogether, which provide users concentrative discussion venues for their diseases and avenues to learn health information (Haynes, 2009) can improve communication quality via online interactions and users’ control over message content (Thackeray, Neiger, Hanson, & McKenzie, 2008).

Furthermore, recent studies show that more people are looking for health information or are joining health-related groups on not-health-directed social networking sites such as Facebook and YouTube (Fox, 2011a; The Nielsen Company, 2011c). However, the effectiveness of health communication on not-health-directed social networking sites has not been fully studied yet.

Facebook and YouTube are two of the top five web brands in the United States (The Nielsen Company, 2011a). Online users are spending an increasing time on social networks, and the prevalence of social media has contributed to raising online video consumption (Purcell, 2010). Approximately 164.4 million unique viewers watched online video in September 2011, and the majority of them were watching clips on YouTube (The Nielsen Company, 2011b). Furthermore, a study shows that more than 50% of online users are watching comedy or humorous videos (Purcell, 2010). Media uses for entertainment purposes such as social
networking, online games, and funny videos occupy most of the time users spend online. Using humor as a tool to reach the public on the Internet could be a new approach for health promotion.

Humorous messages are not only popular on the Internet, but are also used as effective tools in the advertising and marketing industries. In advertising, humor can enhance audiences’ attention and lessen counterargument (Sternthal & Craig, 1973); furthermore, humor triggers people to be more willing to disseminate the message compared to other emotional appeals (Dobele, Lindgreen, Beverland, Vanhamme, & van Wijk, 2007; Eisend, 2009). Since humor has become a popular message type on the Internet (Purcell, 2010) and social media provide a user-friendly environment for users to share the video links quickly and easily, online humorous health messages seem to have the potential to become effective viral tools to promote health information via social networks.

In addition to the effectiveness of humorous messages and their viral effects through social media, there is another facet this study will explore— the different health attitudes and viral effects generated by different medium contexts in Facebook and YouTube. According to the concept of “the medium is the message” by McLuhan (1964), media context and characteristics should be considered as variables to determine the effectiveness of the message. Though Facebook and YouTube are both categorized as social media because they provide different online interaction features for users, their interactive functions are distinct from each other (e.g. the layout of their video content, the way users share the videos [links].) Whether Facebook and YouTube can generate different persuasive and viral effects still remains unknown. Although some studies found that the level of perceived interactivity has a positive influence on the audience’s attitude towards ads and products in the advertising field (Sundar and Kim, 2005),
few studies have focused on comparing different social media’s perceived interactivity and other medium effects.

Though perceived interactivity might affect an individual’s attitude, another trait of social media is the way it presents the message. On social networking sites, the humorous health message is comprised by the whole context presented by different media layout and features (for example, commenting), which might generate unintended effects on the original health message. Moreover, humorous messages could create distractions and lose the focus of the original message (Fugate, 1998). In social media, humor might create an issue-irrelevant discussion stream under the original health message, which can possibly interfere with the intended persuasion process. Whether an unintended (humor-related) context of humorous health messages can influence health persuasion awaits investigation.

Therefore, in this study, the effects of online humorous health messages are examined by using a tobacco control message as a means of testing its viral marketing effects and persuasiveness. Humorous anti-tobacco campaign messages are chosen because tobacco is still the “leading killer” of individuals in the United States and worldwide (Centers for Disease Control and Prevention, 2011; World Health Organization, 2011). While social networking sites lead Internet communications today, understanding media differences in terms of interactivity and also the influence of using humor in social networking context is crucial in order to design effective health messages. In addition, understanding the unintended effect while applying humorous health messages in social media is important to health practitioners as well.
CHAPTER 2
LITERATURE REVIEW

Health Communication on Web2.0 and Social Media

Researchers have studied the potential benefit of health communication in the new media world (Eysenbach, 2008; Ratzan, 2011; Robinson et al., 1998). The technology of Web 2.0 provides users the opportunity to produce and absorb multiple sources of online information at the same time, and this experience-sharing could be very promising concerning health care issues (Kamel, Boulos & Wheeler, 2007). This many-to-many communication system could be a powerful communication tool for health care professions because it not only allows participants to discuss syndromes and solutions more freely but also improves the quality of communication (Hawn, 2009). Through these tailored messages, users are able to interact with others about health topics that are crucial to them (Catford, 2011). In addition, users are taking control over the content online, and they are actively engaging in the creative process (Thackeray et al., 2008).

Because utilizing social media could contribute to health promotion, practitioners have already started to use social media to conduct health intervention and provide health information. Online social media are categorized into two different dimensions—health-directed and not-health-directed. Health-directed social media sites such as Inspire, PatientLikeMe, CureTogether, and WiserTogether provide a discussion venue for online users to share experiences while sitting in front of their screens instead of in the hospital waiting room (Haynes, 2009). Not-health-directed social networking sites such as Twitter, YouTube and Facebook, were not established for exchanging health information but to interact with friends, share videos, and create relationships. Despite that, not-health-directed social networks have gradually become a platform for users to seek health information (Dolan, 2011).
These social networking sites not only have become a source of health information, but also a platform for users to connect with those who share the same disease or symptom. Studies show that 23% of not-health-directed social media users have followed their friends’ health-related posts (Fox, 2011a, 2011b). Concerning the high portion (80%) of general online users who search health information (Fox, 2011b), the percentage of following/searching health information on not-health-directed social networking sites is relatively low. However, health organizations, such as the World Health Organization and the Center for Disease Control and Prevention, are setting up Facebook pages and YouTube channels to disseminate health messages to the public. Though the statistic shows that not much (9% of not-health-directed social media users) have joined health-related groups (Fox, 2011b), this statistic implies that this trend is just the beginning of tapping into social networking sites. Therefore, it is important for researchers to study ahead in order to learn the effectiveness of using not-health-directed social networking sites as a tool for health promotion.

**Humorous Messages**

Studies show that American online users are increasingly using the Internet for entertainment (Madden, 2003). They watch online videos, surf the Internet for fun, play video games etc. Driven by these entertainment purposes, the viewership of online video has increased year after year. Now, 71% of online users have viewed video sharing websites such as YouTube (Moore, 2011). Moreover, funny video consumption has increased in the past three years. According to a Pew Research Center’s report, “The State of Online Video” in 2010, the percentage of comedy or humorous video viewer ship has risen from 31% to 50% (Purcell, 2010). These statistics indicate that viewing funny videos has become a prevalent entertainment purpose while surfing online.
The humorous message not only serves a major online entertainment purpose, but is also a crucial factor in facilitating the viral marketing effect. Viral marketing is defined as “the process of encouraging individuals to pass along favourable or compelling marketing information they receive in a hypermedia environment: information that is favourable or compelling either by design or by accident” (Dobele, Toleman, & Beverland, 2005, p. 144), and it is an emerging tool for contemporary marketers. Viral marketing uses an “unpaid peer-to-peer communication” to disseminate messages on the Internet (Porter, 2006, p. 33). Marketers encourage consumers to pass on information about the product at a comparatively low marketing cost (Dobele, Beverland, van Wijk, & Lindgreen, 2006; Leskovec, 2007).

In order to distribute viral messages efficiently and widely, researchers have been studying the relationships between emotional appeals and the viral marketing effect. Dobele and her colleagues (2006) argued that “viral marketing messages must build an emotional connection between the campaign and the recipient” to facilitate viral distribution (p. 292), and they identified six major emotions which triggered message forwarding behavior: “surprise, joy, sadness, anger, fear, and disgust.” Later, they investigated audiences’ responses to several selected marketing campaigns and found that “surprise, joy, and sadness” are most likely to lead to forwarding messages (Dobele et al., 2007).

Highlighting surprise, according to Lefcourt and Martin (1986), humor is a communication process that “brings together two disparate ideas, concepts or situations in a surprising or unexpected manner” (p. 9). Shurcliff (1968) also sees “surprise” as a crucial element in humor from the perspective of the incongruity theory. This definition infers that a humorous message can generate surprise, which is one of the major emotions enhancing the viral marketing effect.
It is assumed that online campaign messages containing humor appeals will achieve a greater viral marketing effect.

While humor is now such a popular entertainment group on the Internet, the advertising industry has already been applying it as an essential element for advertisement (Beard, 2005; Weinberger & Spotts, 1989; Weingarten, 1967). Researchers in advertising and persuasion have been studying the effectiveness of humorous messages for decades (Markiewicz, 1974; Sternthal & Craig, 1973). Sternthal and Craig (1973) contended that the “humorous messages can attract attention, distract the audience to reduce counterargumentation and increase persuasion effect, create positive mood to increase persuasion effect, and be treated as a positive reinforcer in a communication context.” Meyer (2000) identified the four roles of humor in message: “Identification, Clarification, Enforcement, and Differentiation.” According to Meyer, with the identification function, humor decreases the tension in the communication, and thus, builds up the group identity between the message provider and receivers. Second, while the message is comprised of humorous phrases or anecdotes, it makes the concept of the message clearer to the audience. In addition, humor increases recall ability and tends to generate more exposure in the mass media. Third, social norms can be enforced and instructed through humorous messages; hence, generating the “need for correction” in order to avoid being laughed at by others. The last function of humor in messages is differentiation, which is utilized to distinguish the desired message from opposite opinions, attitudes, and behaviors; in other words, by using humor, the message disseminator forms its own social group which is distinct from others (Meyer, 2000).

However, some researchers question the methodology of analyzing the effectiveness of humorous messages on attitude change and, consequently, have objected to the influence of humor on persuasion (Markiewicz, 1974). It is true that humorous messages do not always “sell”
in the advertising industry. Beard (2005) conducted a qualitative content analysis to present the historical evolution of humor in the advertising industry for the past hundred years in the United States. He found that in the 1900s-1910s, the public was most interested in serious information and that using humor in advertisements diminished the “taste and dignity” of the advertisement (p. 62). However, Beard also pointed out that since 1990, advertising has become more entertaining. The laughter and the mirth catch attention, which is what the advertiser desires (Valencia, 2001). Another scholar’s finding supports this argument. Eisend (2009) conducted a meta-analysis of humorous versus non-humorous advertising studies. After reviewing and analyzing related literature from 1960 to 2006, he concludes that using humor appeals in advertising positively “enhance positive attitude to the advertisement, brand attitude, and purchase intention” (Eisend, 2009, p. 198).

In addition to utilizing humor as an effective tool in viral marketing and advertising, humor is also a vital element in the field of health care—such as the communication between health care provider and patients, families of patients, and health care providers (Wanzer, Booth-Butterfield, & Booth-Butterfield, 2005). Studies show that physicians more easily build rapport with patients by applying humor in their interactions with patients (Levinson, Roter, Mullooly, Dull, & Frankel, 1997). Humor also facilitates the relationship between patients and health care providers, assisting both sides to “achieve greater immediacy, cooperation, and positive affect” (Scholl, 2007, p. 169). Meanwhile, researchers are seeking positive emotional appeals other than fear appeal in health messages. Lewis and her colleagues (2007) conducted a qualitative research to look for potential effective positive emotion appeals in road safety advertising. They suggest that implementing positive emotions such as humor in the road safety advertising can be effective, especially in young drivers.
Scholars also seek positive emotions to promote health messages among rebellious young adults. Lee and Ferguson’s study (2002) found that young risk takers do not yield to fear appeal messages easily, thus suggesting that humor, as an alternative emotional appeal, might decrease these young rebels’ defensive reactions to the intended health message. A further study done by Lee and Shin (2011) shows that although fear appeal anti-alcohol abuse messages are reported more effective between participants than humor appeal messages in general, high sensation seekers are more interested in humor appeal messages than fear appeal messages. While humor might decrease counterargumentation, its persuasive effect in online health promotion still remains unknown.

**Medium Differences Generate Distinct Effects**

In 1964, Marshall McLuhan proposed the idea of “the medium is the message.” At that time, he proposed that the importance of the medium’s character was just as vital as an element in the communication process as the content itself. Indeed, when speaking of health communication, the medium plays an influential role in persuading audiences. Leventhal and Cameron (1994) claimed that the characteristics of the medium are as important as message content regarding health persuasion. They contended that the one-to-one interaction is more effective than mass media communication in “changing attitudes and behaviors because it provides the opportunity to translate abstract, population based data into personal realities” (p. 237). However, Leventhal and Cameron (1994) argued that individuals are more likely to miss other important health messages once they are too immersed in this one-to-one communication, and thus be concerned only with their own health issues and neglect other important information.

Traditional mass media may be able to fill in the gap of one-to-one health communications to bring up particular health awareness or health risks which need public attention (Leventhal & Cameron, 1994). However, today’s health promoters do not have to choose one of two media.
The Internet, which is a “hybrid channel,” serves as an effective medium for health communication, integrating the characteristics from both mass media and interpersonal communication (Cassell, Jackson, & Cheuvront, 1998, p. 74). They argued that on the Internet, health interventions are highly persuasive because of the “mimic” one-to-one interactions of the instant feedback, tailored and continuous responses, as well as the broad reach of the World Wide Web. Following this speculation, traditional media are restrained by their natural format, which fails to disseminate tailored messages and distribute the message widely at the same time (McQuail, 1987). Thus, the Internet serves as a more effective channel to health interventions compared to traditional media. However, because medium differences may generate different persuasive effects, there are more details that need to be distinguished on the “Internet” platform.

Studies which relate to medium differences on the Internet are still in the beginning stage. Schultz and her colleagues (2011) conducted experimental research to compare the crisis communications among twitter, blogs, and traditional media and found that the medium effect on reputation, secondary crisis communication, and reactions is significant. The result shows that twitter users are more likely to share comments than people who use blog and also more tend to comment than blog users (Schultz et al., 2011). Their study indicates the possibility of different media being able to generate different users’ responses, even though twitter and blog are both in the regime of the Internet or social media.

**Interactivity**

Due to the growth and popularity of the Internet, there are many studies that probe into the “new interactive media” (Fortin & Dholakia, 2005). Researchers argue that the interactivity plays a dominant role in distinguishing the Internet from other traditional media (Ha & James, 1998). However, a systematic definition and conceptualization of interactivity is still lacking (Fortin & Dholakia, 2005; Heeter, 1989). According to Williams, Rice, and Rogers (1988), interactivity
includes “control, exchange of roles, and mutual discourse.” Based on their interpretation, “control” means the content, timing, and sequence of communication; “exchange” refers to the role of receiver and sender being exchangeable; and “mutual discourse” implies that conversations are responding to each other.

A brief glance at the Internet medium, shows that it seems to acquire the interactive ability of immediate exchangeable feedback and response (Cassell et al., 1998). However, Heeter (1989) suggest that one medium can present many functions with different levels of interactivity and thus presents varying interactivity. Rafaeli (1990) also support this notion that different levels of interactivity could possibly occur due to varying quality of communication context within a single medium. That is, even though web pages and social media are presented on the same medium of the Internet, the interactivity could vary under different website settings. However, not many studies examine the varying interactivity of different social media; therefore, this study will investigate possible differing levels of interactivity, and then look into potential effects generated by varying levels of interactivity.

**Interactivity and Attitudes**

Scholars argue that “interactivity” can be a “cue” to influence user attitudes in the persuasion process. The Elaboration Likelihood Model (ELM) proposes that the persuasive effect is processed via two routes, the “central route” and the “peripheral route” (Petty and Priester, 1994). When the message is relevant to the audience, it will process through the “central route” to scrutinize the information cognitively and the audience will respond to the message actively. On the other hand, when the information presented is not issue-relevant to the audience, message receivers are passive. The persuasive effect can be induced by “peripheral cues” (such as the source of the message) and further influence the audience’s attitude. Some scholars bring up the notion that “interactivity” serves as a “peripheral cue” in the persuasion process.
Based on the ELM, Sundar and Kim (2005) conducted an experiment to examine the interactivity level of online advertisements and the relationship between the user attitude and the advertisement. The result was significant. They found that with a higher level of interactivity, the attitude toward the advertisement and the product were more positive, suggesting that the interactivity might be a potential cue to increase the persuasive effect in an Internet environment.

Some scholars conceptualize interactivity as a function (Heeter, 1989; Jensen, 1998) and some scholars see interactivity as depending on the perceptions of message receivers (Wu, 1999; McMillan and Downes, 2000). While YouTube obtains more interactive video viewing functions than Facebook, the perceived interactive level of these two media has not been identified yet. McMillan (2000) examined websites with different levels of interactivity and found that perceived interactivity has positive correlation to individuals’ attitudes toward the website. The result also shows that there is no positive correlation between actual interactive features and the perceived interactivity, nor do actual interactive features correlate to the attitude towards the website. This result shows that despite the website having more interactive functions, if the message receiver perceives little interactivity, the website will still remain in low interactivity, and thus may not produce a positive attitude towards the website.

This current study will examine two popular social media sites, Facebook and YouTube, which provide video viewing and other interactive features online. The reason for choosing video as a health message channel is because studies show that video is the most preferred medium in the persuasion task (Schliemann, Asting, Følstad, & Heim, 2002); moreover, online video viewership is significantly high nowadays (Purcell, 2010). Comparing the effectiveness of message on Facebook and YouTube, which are in the Top 5 U.S. web brands (The Nielsen Company, 2011a), is even more significant for researchers to understand the influence driven by
these prevalent media. Though Facebook and YouTube are both categorized as online social media, their characteristics still vary in their interactive features and sharing abilities. These specific characteristics of social media increase users’ participation, thus, enhancing the interaction of online advertising and marketing (Kaplan & Haenlein, 2010; Trusov, Bucklin, & Pauwels, 2009).

YouTube provides not only a video-sharing stage but also obtains social extent (Cheng, Liu, & Dale, 2009; Paek, Kim, & Hove, 2010). Scholars identified several special characteristics of YouTube that are distinct from other media such as: categorizing ability, short video length, number of views, user ratings, commenting, liking and so on (Cheng et al., 2009). Today, YouTube offers even more interactive features such as sharing videos via a quick link, disliking, adding to personal playlist or favorite playlist. Similarly, Facebook, another leading social media in the United States, also provides video viewing and sharing function. However, though Facebook’s main function is not sharing videos, it still allows users to upload videos, share video links from other video sharing websites, and share the Facebook interior video links to ones’ personal page. Furthermore, Facebook also provides some similar functions to comment, like, and share video clips as YouTube does. However, the level of interactivity of Facebook and YouTube needs to be further identified in order to investigate the different media effects on persuasion.

Measurements of perceived interactivity have been used in many empirical studies; however, the existing measurements haven’t reached a consensus. McMillan and Hwang (2002) developed a scale to measure the perceived interactivity (MPI) including three dimensions: “real-time conversation, no delay, and engaging.” Liu (2003) also develops an interactivity measurement of websites including three dimensions: “active control, two-way communication,
Another recent study which measures the perceived interactivity of mobile advertisement constructs six factors: “user control, two-way communication, synchronicity, connectedness, playfulness, and interpersonal communication” (Gao, Rau, & Salvendy, 2010). The above measurements are limited in two aspects in this study. First, these measures focus on examining the entire website while this study only concentrates on the video page on Facebook and YouTube. Moreover, this study attempts to measure how different functions (e.g. like, comment, share, rate) have impacts on user’s perceived interactivity. Hence, some wordings in these existing scales must be adjusted to fit in this study. Items such as “The website is effective in gathering visitors’ feedback” (Liu, 2003) will be modified to “The features of this website (e.g. like, comment, and share) are effective in gathering visitors’ feedback.”

Second, due to technical limitations, “no delay” and “synchronicity” factors cannot be measured in this study. This study used artificial webpages to imitate Facebook and YouTube pages; hence viewers are watching the video on another server instead of the real Facebook and YouTube servers. The processing time of these fake websites does not represent the same Facebook and YouTube’s streaming speed. So items regarding loading speed (McMillan and Hwang, 2002) and processing time (Liu, 2003) are discarded in this study. Therefore, three dimensions were adopted in this study: (1) Engaging and control, (2) Attention, and (3) Two-way communication and interpersonal communication. Detailed items are discussed in Chapter 3.

Since Facebook and YouTube each have their own interactive features, how do these features affect the perceived interactivity of these two media? Understanding the perceived interactivity of both media can help health promoters to develop social media campaign. Because Facebook and YouTube are used for health promotion today (Paek et al., 2010; Park, 2011), utilizing social networking sites to promote public health messages has been successful, as in the
case of the promotion of condom use in Turkey (Purdy, 2011), and raising awareness of overcrowded emergency rooms in Taiwan (Syed-Abdul et al., 2011). However, the effectiveness of using online social media for health promotion is still at preliminary stage, and the comparison of Facebook and YouTube has received little attention to date. Though the perceived interactivity and persuasive effects have proven to be positively related in advertising, the correlation between perceived interactivity and the effectiveness of health messages need to be identified. The current study will investigate attitudes toward the humorous health related video, and attitudes toward health messages (attitude towards smoking).

Thus, eight research questions are proposed. First, this study examines whether Facebook and YouTube obtain different levels of perceived interactivity.

R1: Are there any medium effects (Facebook vs. YouTube) on participant’s perceived interactivity?

Second, medium effects on viral marketing actions, the attitude toward humorous health promotion video, and attitude toward smoking are tested.

R2: Are there any medium effects (Facebook vs. YouTube) on individual’s attitude towards the health promotion video?

R3.1: Are there any medium effects (Facebook vs. YouTube) on individual’s risk perception towards smoking?

R3.2: Are there any medium effects (Facebook vs. YouTube) on individual’s positive attitude towards smokers?

R3.3: Are there any medium effects (Facebook vs. YouTube) on individual’s intention to avoid smoking in the future?
R4: Are there any medium effects (Facebook vs. YouTube) on individual’s attitude towards viral marketing actions?

In addition to medium effects, this study also explored how different levels of perceived interactivity impact upon the attitude towards humorous health promotion video, the attitude towards smoking, and viral marketing actions.

R5: Does perceived interactivity relate to individual’s attitude towards humorous health related videos?

R6.1: Does perceived interactivity relate to individual’s risk perception towards smoking?

R6.2: Does perceived interactivity relate to individual’s positive attitude towards smokers?

R6.3: Does perceived interactivity relate to individual’s intention to avoid smoking in the future?

R7: Does perceived interactivity relate to individual’s viral marketing actions?

Last, this study examines the effect of humorous health promotion video on individual’s attitude toward the health message.

R8: What impact do humorous health promotion videos have on individual’s attitude towards the health message in social media environment (Facebook and YouTube)?

**Just a Joke? Humor Reduces the Argument Scrutiny and Counterargument.**

Sternthal & Craig (1973) indicate that humor in advertising may lessen individuals’ abilities to counterargue and increase the persuasive effects by distracting audiences from the original underlying messages. In addition to the positive effect humorous health messages might attribute to a successful persuasion practice, concerns of the negative effects of humorous messages still exist, such as the distraction humor may cause by transferring the focus of the communication idea to the joke itself (Fugate, 1998). Scholars in the education field have conducted studies to examine the positive and negative effects of humor in classrooms (Steele,
1998; DeNune, 2005). According to Steele (1998), humor can release the stress in the learning process but could also cause distractions in class as well (Sullivan, 1992). DeNune (2005) indicates that applying humor in class could lead to unwanted distractions. He pointed out that once students tasted the joy of humor, they started to request more jokes and class management became difficult.

Jones (2005) also examined the “masking” effect of humor. He tested whether humor would influence the audience’s perception of disorganized speech and the result was significant. Jones found that humor could interfere with the audience detection of disorganized messages. His finding implies that humor does distract audience attention, makes the audience neglect the original discourse, and focuses on other attractive elements in the conversation. Moreover, other researchers have argued that health messages distributed by applying humor appeals would possibly generate confusion as well. A qualitative study done by Campo, Akelson, Spies, and Losch (2010) used a humorous health promotion video with sarcasm and exaggerations as a stimuli, and they found that, though the majority of participants were able to recognize the main message in the health promotion video, some participants regarded the message as contradictory and confusing to them.

Scholars have also been studying how humorous messages are processed cognitively. Young (2008) found that a significant argument scrutiny reduction occurs when humor is applied in the political context. She indicates that humor can decrease the argument scrutiny, thus “reducing the individual’s ability of critically processing the original intended message cognitively.” Nabi, Moyer-Guse, & Byrne (2007) designed a study to examine the counterargument distraction and message discounting in the context of political humor. Nabi and her colleagues (2007) hypothesized that humor could “dismiss the message as not containing
information relevant to serious judgments” (p. 36). That is, individuals regard humorous information as “just a joke” so critical thoughts are not needed. Nabi’s hypotheses were supported. The more the individual perceive the humor, the more message discounting occurs, and the less counterarguing processed by the individual.

Could the backlash of using humor in health promotion happen in the social media context as well? On Facebook and YouTube, a video message includes the original message and users’ interactions on the same web page. Especially for humorous messages, not only can the humor distract from the intended message, thus losing the original persuasion purpose (Fugate, 1998), but also the related comments view, rating scores, numbers of liking, numbers of disliking assemble together as a whole message which might influence the message effect.

Moreover, in the aspect of viral marketing, the communication context also plays an important role in persuasion. Subramani and Rajagopalan’s (2003) research suggests that understanding the context of where the viral marketing takes place is important because inappropriate use of viral marketing can generate negative attitudes toward the product, or in this current study, the change of health attitudes or encouraging a healthier behavior. They argue that the recipient’s attitude toward the viral marketing message will be affected by the senders’ attitude to maintain their relationships and/or tend to incline to the referent group’s opinion in order to fit in the group (Subramani and Rajagopalan, 2003). While users are posting, reposting, and commenting on humorous videos on Facebook and YouTube, unintended messages may occur in the context of social networking sites. Users might follow the comment stream’s attitude instead of the original message. For instance, if a health message containing humor appeal is posted on YouTube or Facebook, the comments underneath the video may show viewers’ comments on the joke in the video instead of discussing the underlying health information.
Therefore, based on Nabi’s (2007) and Young’s (2008) research findings, humor could decrease the counterarguing, argument scrutiny, and increase message discounting. I propose:

H1: Individuals who view humorous health messages presented in the humor-related context will be associated with less counterargument and less argument scrutiny than those who view the same messages in the health-related context.

H2: Individuals who view the humorous health messages presented in a humor-related context are more likely to exhibit greater message discounting than those who view the same messages in the health-related context.

In this study, anti-tobacco videos were used. The reason for choosing tobacco as an important health issue in the United States is because 20.6% of adults are smoking currently and over 3,000 young adults aged 12-17 are lighting their first cigarette every day (Centers for Disease Control and Prevention, 2011). According to the global status report on noncommunicable diseases, approximately “71% of lung cancer, 42% of chronic respiratory disease and nearly 10% of cardiovascular disease” are caused by consuming tobacco (World Health Organization, 2011). Therefore, controlling tobacco consumption is a major prevention to enhance public health nationally and internationally.

Anti-smoking advertising has long been used as a major approach to promote smoking cessation (Flay, 1987; Wakefield, Flay, Nichter, & Giovino, 2003). Studies show that at early adolescence ages, anti-smoking advertising seems to produce more positive effects on inhibiting smoking (Flynn et al., 1997; Siegel & Biener, 2000; Vartiainen, Paavola, McAlister, & Puska, 1998; Wakefield et al., 2003). Hence, it is important to start smoking prevention as well as intervention at an early age. The Pew Research Center shows the demographic information in May 2011 that 95% of people aged 18-29 are using the Internet; thus, the Internet is a suitable
medium to reach this group of young adults. In this current study, the anti-tobacco campaign is applied to test message effectiveness to young adults on different medium.
CHAPTER 3
METHODOLOGY

Overview

A 2 x 2 factorial design is used in this study. The independent variables are two different media (YouTube and Facebook) and two different settings of social media context (health-related context and humor-related context). This experiment includes four conditions: (1) a health related context on YouTube, (2) a humor related context on YouTube, (3) a health related context on Facebook, and (4) a humor related context on Facebook. A control group was also included. This study examined six dependent variables: (1) perceived interactivity, (2) attitude towards health promotion videos, (3) attitude towards the health message, (4) counterarguing and argument scrutiny, (5) message discounting, and (6) potential of viral marking effects. Details are further deployed in the latter part of this chapter.

Stimuli

In this study, the stimuli were three humorous online anti-smoking videos posted on Facebook and YouTube. A pilot test was employed to select videos with the most moderate degree of humor which had no significant relationship with gender. Participants were recruited from a graduate level class (n=22) including 5 males and 17 females, mean age 26.18. A set of items was asked to test the degree of humor (Lee and Ferguson, 2000). The items are “I think the video I just saw is very funny, I found myself laughing when I watched the video, one of the things I liked about the video was how funny it was, I enjoyed the humor used in the video, the video is not all amusing, and I found myself feeling very good after I watched the video” (p.952).

After the analysis, two videos were selected for showing the most moderate perceived humor and no gender differences. For perceived humor, video 1 showed a mean of 4.25 and video 2 showed a mean of 4.38 in a scale of 7. An independent samples t-test was employed to
examine the gender differences. Video1 showed a 
$p$ value of $0.80$ ($t[20] = -0.25$) and video 2 showed a 
$p$ value of $0.24$ ($t[20] = -1.2$), $n = 22$. However, in order to reach a certain amount of 
stimulus to have an effect on individual’s attitude, another video was added. The third video was 
also a humorous anti-tobacco video circulated online with a similar sarcastic tone as the chosen 
videos. All of the videos were not produced in the United States (two in Europe, one in South 
Africa), and all of the videos were used in a real health campaign uploaded after 2000. These 
three humorous anti-smoking promotion videos were used during the experiment consistently. 
The length of each video did not exceed 1 minute.

The web pages of Facebook and YouTube were artificial ones. Websites were carefully 
designed to imitate the layouts of Facebook and YouTube. The same features on Facebook and 
YouTube were controlled to be the same (e.g. amount of like responses, comments). The 
accumulated viewing numbers showed the average number of the real online videos. Participants 
were able to recognize their name on the artificial pages and view comments posted by other 
users; however, these IDs and profile pictures were artificial so participants were not able to 
identify commenters. Due to technical limitation, participants could not execute any functions on 
either site. They could only report their intentions based on the functions they had viewed.

As for context design, two types of comments were employed in this study. One is health-
related comments and the other is humor-related comments. Health-related context was the 
intended message which was designed to reflect a serious, issue-relevant discourse. For instance: 
“smoking makes my pores bigger,” “reducing the level of smoking can certainly reduce the level 
of cancer,” and “that’s sick, but so is smoking.” On the other hand, humor-related context was 
the un-intended message which was designed to depict a humorous, issue-irrelevant discourse.
For examples: “I love tobacco ass,” “Does... this, come in a weed flavor?” “Who is that dime piece at the beginning? Is she single?”

**Sample and Procedure**

This study recruited over 300 college students to participate. All participants voluntarily joined this experiment. Students who participated in this study obtained extra credit for their final grade as compensation. First, students who were willing to participate in this experiment provided their email addresses, and these email addresses were randomly assigned to specific experiment conditions. Participants received an email with a link redirecting to the webpage of this experiment, and a login ID and password in order to login to the designated social media. Different condition groups received different links.

This study applied online software called Qualtrics to execute the experiment. Participants received an email with a link to the Qualtrics software. They were randomly assigned to 4 experiment conditions (see Table 3-1) and a control group. Before the experiment began, participants signed the informed consent online. Afterwards, all participants viewed the same videos. They temporarily left the Qualtrics page and entered the simulated Facebook or YouTube pages. The simulated pages were pop-out pages and did not interfere with participants going back to answer the questions.

After being exposed to the humorous health promotion videos and the designated comments, participants were asked to answer a series of manipulation questions to ensure the intended experiment condition was received by them. After answering the entire questionnaire, participants answered basic demographic questions and their tobacco use last.

Before they submitted the answers, they were asked to provide their UFID number in order to obtain extra credits. The data were used only for course grading purposes and students’ identities remained anonymous.
Dependent Variables

Perceived Interactivity

Several items were adopted and refined from previous perceived interactivity scales (McMillan & Hwang, 2002; Liu, 2003; Gao et al., 2010), and three factors were revealed after computing the principle axis factor analysis. The three dimensions are: (1) Engaging and control, (2) Attention, and (3) Two-way communication and interpersonal communication. Table 3-4 shows factor loading.

Engaging and control

Cho & Leckenby (1999) argued that interactivity is the degree of how one person “actively engages” in the advertisement by “interacting with advertising messages and advertisers” (p.163). The original items adopted from McMillan & Hwang (2002), Liu (2003), and Gao’s study (2010) are shown in Table 3-2.

Several wordings regarding the entire website viewing experience have been modified to focus more on the interactive features (e.g. comment, share, like). Combination was also made to avoid repetitive items occurring. Moreover, items’ factor loading scores lower than .40 were excluded. The scale of “engaging and control” factor was created by calculating the average score of the following items: (1) I feel this webpage and its features (e.g. comment, share, like) provide a variety of choices; (2) This webpage and its features (e.g. comment, share, like) are easy to use; (3) While I was on the website, I could choose freely what I wanted to respond to; (4) I can easily find my way through the webpage; (5) While surfing this webpage, I had little control over what I can do on the site; (6) I felt I had a lot of control over my viewing experiences on this webpage; and (7) The website provides me the opportunity to respond in more than one way. This set of items revealed Cronbach’s α=.83.
Attention

In McMillan & Hwang’s scale (2002), attention was addressed to the engaging dimension. However, in the current study, these two items were extracted from the engaging factor and formed a single factor. The original items were “keeps attention” and “doesn't keep my attention.” In order to clarify the statement and make it consistent with the previous items, questions were refined as follows: (1) This webpage and its features (e.g. comment, share, like) keep my attention; (2) This webpage and its features (e.g. comment, share, like) do not keep my attention at all. Because only two items were in this factor, Pearson correlation was used to calculate the correlation. The result revealed $r = -0.54$, $n = 24$, $p < .001$.

Two-way and simulated interpersonal communication

Heeter (1989) argued that the interactivity level could be higher if the mediated communication well imitates interpersonal communication. Liu (2003), Gao and his colleagues (2010) both cover a two-way communication factor in their scales. The interpersonal factor was also covered in Gao’s study. The original items are shown in Table 3-3.

In this set of items, several modifications were made. First, “advertisement” and “website” were replaced by “features (e.g. comment, like, share) on this website.” Second, items related to conversation between “advertisement and consumer” or “visitor and the site” were altered to “me and other users.” After excluding, the items scored lower than .40 in the factor analysis. The scale of “two-way and simulated interpersonal communication” factor was created by calculating the average score of the following items: (1) I think I was having an interpersonal communication with other users when receiving feedbacks from the webpage; (2) I can respond to these videos and get reply like I am communicating with a real person; (3) I think I can have an interpersonal communication if I use these features (e.g. comment, like, share) on this website; (4) The features of this website (e.g. like, comment, and share) are effective in gathering my
feedback; (5) The features of this website (e.g. like, comment, and share) facilitate two-way communication between me and other users; and (6) The website makes me feel it wants to listen to its visitors. This set of items reveals Cronbach’s α=.83.

**Attitude towards the Health Promotion Videos**

Olney, Holbrook and Bartra (1991) developed a scale to measure the attitude towards the ads. They categorized attitudinal components into three aspects: “hedonism, utilitarian, and interestingness.” The following items were adopted in this study: unpleasant/pleasant, not entertaining/entertaining, enjoyable/not enjoyable; important/not important, informative/uninformative, helpful/not helpful, useful/not useful; makes me curious/does not make me curious, not boring/boring, interesting/not interesting, keeps my attention/does not keep my attention (α=.89). One item (fun to watch) was excluded from further analysis because of its low factor loading score (> .40). The final items were used to create a semantic differential seven-point scale by adding the score of all the items and calculating an average score to represent the attitude towards the health promotion videos.

**Attitudes toward Smoking**

This study adopted Lee and Ferguson’s (2002) and Farrelly, Davis, Duke, and Messeri’s instruments (2009) which were developed to examine individuals’ beliefs, intentions, and attitudes toward smoking. Farrelly and his colleagues’ questions were especially used to evaluate the intention to smoke in the future. The adopted questions are:

- **Risk perceptions about smoking:** “Cigarette smoking is harmful to my health,” “Smoking increases the risk of lung cancer,” Smoking makes people smell bad,” and “Smoking increases the risk of heart diseases” (α=.82).

- **Positive attitude towards smokers:** “I don’t like to be around smokers” (reverse coded), “I like the kind of people who smoke,” “People who smoke are fun to be around,” “Most of the
smokers that I know are successful people,” “Smokers makes people your age look cool or fit in,” and “Smokers are relaxed, easy-going people” (α=.80).

Intentions to avoid smoking (only for participants who are not current smokers): “I can picture myself smoking at a future point in my life” (reverse coded), “Definitely will not or probably will not smoke a cigarette at any time during next year” (Lee & Ferguson, 2002, p.952; Farrelly et al., 2009), “I would like to smoke a cigarette now” (reverse coded), “I will never smoke” (α=.81).

Questions used the five-point Likert-type scale from strongly agree to strongly disagree.

**Counterarguing and Argument Scrutiny**

Counterarguing is measured with five-point Likert-type items adapted from Nabi and her colleagues’ study (2007). Items are designed to examine whether the audience critically agrees or disagrees with the underlying health information in these videos. The following items are adopted: “I found myself actively agreeing with the author’s points,” “I found myself actively disagreeing with the author,” “It was easy to agree with the arguments made in the message.” The author in these statements refers to the one who posts these videos. This set of items reveals Cronbach’s α=.77.

In addition to examining how critically the audience could respond to health messages, this study also assesses the argument quality. Items are designed to assess audience’s opinions and the degree of their comprehension of the underlying health messages in these videos. These items included: “I have no opinion,” “I don't understand what these videos are talking about,” “These videos were telling people that they should not smoke,” “I understand some negative effects of smoking,” “I clearly understand the sarcasm used in these videos,” “These videos use a ironic tone to present the negative effects of tobacco.” Items are designed based on Polk, Young, & Holbert’s coding scheme of argument quality (2009) and reveal Cronbach’s α=.76.
Message Discounting

The discounting cue will be assessed by four items designed by Nabi and her colleagues (2007). These items are designed to examine whether the audience regards a video as “just a joke” thus easily dismiss it. The adopted items are: “The author of these messages was just joking,” “The messages were intended more to entertain than to persuade,” “The author was serious about advancing his views in these messages,” “It would be easy to dismiss these messages as simply a joke.” This set of items reveals Cronbach’s α=.71.

Potential of Viral Marketing Effects

Several questions were asked to evaluate the participant’s intent to spread the humorous health video. With different experiment conditions (Facebook or YouTube), participants will receive different choices regarding the specific functions on the medium. Both condition groups received questions: “I would very much like to share this video with others,” “I would very much like to comment on this video,” “I would love to click the like button on this video,” “I am going to share this video right away via social networks,” and “I don’t plan to share this video by any means.” For those who view the video on YouTube, they will answer additional questions because YouTube has more functions: “I would definitely click the dislike button on this video,” “I would very much like to rate this video,” “I would very much like to add this video to one of my playlists,” and “I would very much like to add this video to one of my favorite videos.” These questions will be measured by the five-point Likert scale. This set of items reveals Cronbach’s α=.88.
<table>
<thead>
<tr>
<th>Table 3-1. Experiment conditions.</th>
<th>Humorous health promotion videos on Facebook</th>
<th>Humorous health promotion videos on YouTube</th>
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<tbody>
<tr>
<td>Health-related comments</td>
<td>Condition 1</td>
<td>Condition 3</td>
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<tr>
<td>Humor-related comments</td>
<td>Condition 2</td>
<td>Condition 4</td>
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<tr>
<td>Control group</td>
<td>Condition 5</td>
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<tbody>
<tr>
<td>1 Variety of content</td>
<td>I felt that I had a lot of control over my visiting experience at this website.</td>
<td></td>
<td>I felt that I had a lot of control over my advertisement viewing experiences.</td>
</tr>
<tr>
<td>2 Easy to find my way through the site.</td>
<td>While I was on the website, I could choose freely what I wanted to see.</td>
<td></td>
<td>I can choose freely what I want to see.</td>
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<tr>
<td>3 Unmanageable.</td>
<td>While surfing the website, I had absolutely no control over what I can do on the site.</td>
<td></td>
<td>My actions decided the kind of experiences I get when viewing the advertisement.</td>
</tr>
<tr>
<td>4 Passive.</td>
<td>While surfing the website, my actions decided the kind of experiences I got.</td>
<td></td>
<td>The advertisement gives me the opportunity to respond in more than one way</td>
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<td>5 Immediate answers to questions.</td>
<td></td>
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<td>6 Lacks content.</td>
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<tr>
<td>1 The website is effective in gathering visitors' feedback.</td>
<td>The advertisement makes me feel the company wants to listen to its customers.</td>
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<tr>
<td>2 This website facilitates two-way communication between the visitors and the site.</td>
<td>The advertisement provides me an opportunity to give my feedback.</td>
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<td>3 It is difficult to offer feedback to the website.</td>
<td>The advertisement can create a conversation between the company and the customer.</td>
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<td>4 The website makes me feel it wants to listen to its visitors.</td>
<td>The advertisement information seems not interpersonal.</td>
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<tr>
<td>5 The website does not at all encourage visitors to talk back.</td>
<td>I feel like having an interpersonal communication when receiving the advertisement.</td>
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<tr>
<td>6 The website gives visitors the opportunity to talk back.</td>
<td>I can respond to the advertisement and get a reply like I am communicating with a real person.</td>
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<td>Items</td>
<td>Factor Loading</td>
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<td>I felt I had a lot of control over my viewing experiences at this webpage</td>
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<tr>
<td>While I was on the website, I could choose freely what I wanted to respond.</td>
<td>.686</td>
<td></td>
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<tr>
<td>I feel this webpage and its features (e.g. comment, share, like) provide a variety of choices.</td>
<td>.677</td>
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<td>This webpage and its features (e.g. comment, share, like) are easy to use.</td>
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<td>The website provides me the opportunity to respond in more than one way.</td>
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</tr>
<tr>
<td>While surfing this webpage, I had little control over what I can do on the site. (reversed coded)</td>
<td>-.490</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I can easily find my way through the webpage</td>
<td>.402</td>
<td></td>
<td></td>
</tr>
<tr>
<td>This webpage and its features (e.g. comment, share, like) keep my attention.</td>
<td>.648</td>
<td></td>
<td></td>
</tr>
<tr>
<td>This webpage and its features (e.g. comment, share, like) do not keep my attention at all. (reversed coded)</td>
<td>-.421</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The features of this website (e.g. like, comment, and share) are effective in gathering my feedback</td>
<td>.696</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I think I can have an interpersonal communication if I use these features (e.g. comment, like, share) on this website.</td>
<td>.679</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The features of this website (e.g. like, comment, and share) facilitate two-way communication between me and other users.</td>
<td>.674</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I can respond to these videos and get reply like I am communicate with a real person.</td>
<td>.623</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The website makes me feel it wants to listen to its visitors.</td>
<td>.566</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I think I was having an interpersonal communication with other users when receiving feedbacks from the webpage.</td>
<td>.491</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
CHAPTER 4
RESULTS

Analysis Summary

Among all 318 responses collected from Qualtrics software, only 285 participants successfully completed the questionnaire. SPSS 20.0 was employed for statistical analysis. An independent samples t-test was used to examine R1 (medium effect on perceived interactivity). The General Linear Model (GLM) was used to test R2 (medium effect on attitude towards video), R3.1 (medium effect on risk perception towards smoking), R3.2 (medium effect on positive attitude towards smokers), R3.3 (medium effect on intention to avoid smoking in the future), R4 (medium effect on viral marketing actions), H1 (context effect on argument scrutiny and counterarguing), and H2 (context effect on message discounting).

Parson Correlation was used to test the relationship between perceived interactivity and attitude towards the videos (R5), risk perception toward smoking (R6.1), positive attitude towards smokers (R6.2), intention to avoid smoking in the future (R6.3), and viral marketing actions (R7).

The ANOVA test was conducted to examine the effectiveness of the humor appeal anti-tobacco message in a social media environment (R8).

Profile of Participants

A total 285 samples were collected at the University of Florida in 2012. Participants are comprised of 33% (n = 95) males and 67% (n = 190) females, age from 18 to 41 years old (M = 20.17). Among all the participants, 31.2% were freshman (n = 89), 30.2% were sophomore (n = 86), 21.1% were junior (n = 60), and 17.5% were senior or post baccalaureate (n = 50). In terms of their smoking habit, only 5.3% of the participants were current smokers (n = 12). Therefore, smokers were excluded from the examination of smoking attitude and beliefs.
The 285 participants were randomly assigned to four condition groups and one control group manually (Table 4-1). In terms of the group allocation, 53 of them were in the health-related context on Facebook site group, 55 of them were in the humor-related context on Facebook site group, 54 of them were in the health-related context on YouTube site group, 55 of them were in the humor-related context on YouTube site group, 68 of them were in the control group.

**Manipulation Checks**

Three questions were designed to check the success of the manipulation. In terms of the intended medium, question “Which website listed below was the website you just visited?” was asked. All participants but two answered correctly about what medium they just logged in. As for the intended context (health-related context vs. humor-related context) that participants were assigned to, 47 participants did not answer correctly to the question “Which one of the following statements best describes the overall comments on the webpage?” In addition, 9 of the participants answered the question “These videos are posted by who” wrong. After carefully examining the responses, 2 samples were excluded from the data set due to many identical answers in the questionnaire. Therefore, 60 sets of data were eliminated and excluded from the following analysis, leaving a total valid sample of 225.

Among the valid sample, 35 participants were in the context of intended health-related comments on Facebook site group, 42 were in the context of unintended and humor related comments on Facebook site group, 36 were in the context of intended health related comments on YouTube site group, 44 were in the context of unintended humor related comments on YouTube site group, and 68 were in the control group (Table 4-2).

In addition, to check whether humor was delivered successfully in the health promotion videos, a six-item perceived humor scale developed by Lee and Ferguson (2000) was used in this
study. The results of the 7 point scale showed the participants perceived these videos as humorous, $M = 4.06$, $SD = 1.37$. Reliability check revealed the Cronbach’s $\alpha = .92$. Gender influence was checked as well. The result of the independent samples t-test revealed $t(154) = -.97$, $p = .34$. Therefore, these videos did not show significant gender differences.

Moreover, to ensure a random distribution of gender, smokers, and age between the five condition groups a Chi-square test was employed. The results showed a successful random assignment of gender, $X^2 (4, N = 225) = 3.05$, $p = .55$, smokers, $X^2 (4, N = 225) = 3.33$, $p = .50$, and age, $X^2 (48, N = 224) = 52.51$, $p = .30$.

Research Questions and Hypothesis Testing

Effects of Medium Type on Perceived Interactivity, Attitude towards the Health Promotion Videos, Attitude towards the Health Message, and Viral Marketing Effects in Different Contexts

R1: Are there any medium effects (Facebook vs. YouTube) on participant’s perceived interactivity?

First, an independent samples t-test was employed to examine the difference of perceived interactivity between Facebook and YouTube. A significant difference was found, $t(148) = 1.98$, $p < .05$. Participants who were in the Facebook condition revealed a higher level of perceived interactivity, $M = 3.65$, $SD = .45$, than participants who were in the YouTube condition, $M = 3.47$, $SD = .65$.

Second, the different perceived interactivity between Facebook and YouTube was examined by factors. Only the first factor, engaging and control, revealed that Facebook participants perceived more interactivity ($M = 3.90$, $SD = .54$) than YouTube participants ($M = 3.66$, $SD = .64$), $t(152) = 2.48$, $p < .05$. The attention factor and the two-way and simulated interpersonal communication factor did not show any statistic significance difference between Facebook and YouTube.
R2: Are there any medium effects (Facebook vs. YouTube) on individual’s attitude towards the health promotion videos?

The General Linear Model (GLM) test was performed to examine the mean difference between context and medium. Neither interaction effect, $F(3, 147) = .004, p = .95$, nor condition effect was found regarding individual’s attitude towards the health promotion videos, medium—$F(3, 147) = 2.07, p = .15$; context—$F(3, 147) = .08, p = .78$ (Table 4-3).

R3.1: Are there any medium effects (Facebook vs. YouTube) on individual’s risk perception towards smoking?

The GLM test revealed a significant condition effect on participant’s risk perception about smoking (Table 4-4). First of all, a significant risk perception difference was found between medium, $F(3, 144) = 9.75, p < .005$. As shown in Table 4-5, participants who were in the Facebook condition revealed more risk perception toward smoking ($M = 4.76, SD = .40$) than those in the YouTube condition ($M = 4.50, SD = .64$). Secondly, a context difference was found as well, $F(3, 144) = 4.16, p < .05$. The result showed participants who were exposed to a humor-related context perceived more risk toward smoking ($M = 4.71, SD = .47$) than those who were in the health-related context ($M = 4.53, SD = .62$) (Table 4-6). No interaction was found, $F(3, 144) = .75, p = .39$.

R3.2: Are there any medium effects (Facebook vs. YouTube) on individual’s positive attitude towards smokers?

The GLM test was employed to examine the main effect and interaction effect. A medium effect was found, $F(3, 147) = 2.89, p < .05$ (Table 4-7). The results showed participants who were in the Facebook condition revealed a more negative attitude toward smokers ($M = 1.92, SD$
than those who were in the YouTube condition (\(M = 2.22, SD = .64\)) (Table 4-8). No interaction effect was found, \(F(3, 141) = 2.63, p = .11\).

R3.3: Are there any medium effects (Facebook vs. YouTube) on individual’s intention to avoid smoking in the future?

A GLM test results showed a near significant interaction effect, \(F(3, 143) = 3.42, p = .07\) (Table 4-9). Among participants who were in the health-related context, the ones who were in the Facebook condition expressed a higher intention to avoid smoking in the future, \(M = 4.51, SD = .65\), than participants in the YouTube condition, \(M = 3.87, SD = .84\). A post-hoc comparison applying Turkey HSD indicated that the medium difference of intention to avoid smoking was significant only in the health-related context \((p < .05)\) and not in the humor-related context (Figure 4-1).

R4: Are there any medium effects (Facebook vs. YouTube) on individual’s viral marketing actions?

The GLM test was employed to examine the main effect and interaction effect regarding viral marketing actions. The result showed neither main effect, medium—\(F(3, 153) = 1.00, p = .32\); context—\(F(3, 153) = 1.44, p = .32\), nor interaction effect, \(F(3, 153) = .05, p = .83\) (Table 4-10).

Relationship between Perceived Interactivity and Attitude towards the Health Promotion Video, Attitude towards Health Message, and Viral marketing Effects

This set of questions were examined by three dimensions of perceived interactivity, which was identified in the previous findings—engaging and control, attention, and two-way and simulated interpersonal communication. Pearson Correlation was used to test the correlation between variables.
R5: Does perceived interactivity relate to individual’s attitude towards humorous health related videos?

Pearson correlation revealed that perceived interactivity factor, engaging and control, and individual’s attitude towards the health promotion videos was moderately correlated, \( r(139) = .34, p < .001 \). For the attention factor, a moderate correlation was revealed as well, \( r(141) = .40, p < .001 \). There was also a correlation between attitude towards the videos and two-way and simulated interpersonal communication, \( r(138) = .36, p < .001 \).

R6.1: Does perceived interactivity relate to individual’s risk perception towards smoking?

The Pearson correlation showed that individual’s risk perception about smoking was positively correlated with perceived interactivity—engaging and control, \( r(145) = .45, p < .001 \), attention, \( r(147) = .20, p < .05 \), and two-way and simulated interpersonal communication, \( r(144) = .22, p < .05 \).

R6.2: Does perceived interactivity relate to individual’s positive attitude towards smokers?

The result of Pearson Correlation showed a low correlation between individual’s positive attitude towards smokers and engaging and control, \( r(142) = -.27, p < .05 \). The attention factor and two-way and simulated interpersonal communication did not correlate with attitude towards smokers (\( p > .05 \)).

R6.3: Does perceived interactivity relate to individual’s intention to avoid smoking in the future?

There is a low correlation between perceived interactivity, engaging and control, and individual’s intention to avoid smoking, \( r(144) = .17, p < .05 \). However, the attention factor and two-way and simulated interpersonal communication did not reveal correlations (\( p > .05 \)).

R7: Does perceived interactivity relate to individual’s viral marketing actions?
First, there is no correlation between perceived interactivity, engaging and control, and viral marketing actions, $r(144) = .13, p = .12$. Nevertheless, the attention factor was found to have a low correlation with viral marketing action, $r(147) = .29, p < .001$, as well as a moderate correlation with the two-way and interpersonal communication factor, $r(144) = .33, p < .001$.

**Effects of Humor Appeal Health Messages and the Medium Differences**

R8: What impact do humorous health promotion videos have on individual’s attitude towards the health message in social media environment (Facebook and YouTube)?

**Risk perception towards smoking**

The ANOVA test was employed to examine the difference between the control group and experiment groups. First, a medium effect was found when comparing participants in the Facebook condition, the YouTube condition, and those who were in the control group, $F(2, 210) = 4.69, p < .05$. The post-hoc comparison test applied Turkey HSD and indicated a near significant difference ($p = .08$) between the Facebook group and the control group. As a result, participants who were in the Facebook condition revealed a higher risk perception towards smoking ($M = 4.77, SD = .40$) than those who were in the control group ($M = 4.56, SD = .60$).

However, in terms of the difference between each experiment group and the control group, no significance was found ($p > .05$).

**Positive attitude towards smokers**

First, a medium effect was found when comparing participants in the Facebook condition, the YouTube condition, and those who were in the control group, $F(2, 206) = 4.39, p < .05$. The post-hoc test revealed a near significant difference ($p = .08$) between the Facebook group and the control group. That is, participants who were in the Facebook condition revealed a more negative attitude toward smokers ($M = 1.92, SD = .66$) than those who were in the control group ($M = 2.16, SD = .60$).
Nevertheless, in terms of the difference between each experiment group and the control group, no significance was found ($p > .05$).

**Intention to avoid smoking in the future**

The result of ANOVA test showed neither medium difference nor group difference between 5 groups regarding attention to avoid smoking in the future ($p > .05$).

**Effect of Context Differences (Health-related vs. Humor-related) on Argument Scrutiny, Counterarguing, and Message Discounting**

H1 predicted that individuals who view humorous health messages presented in the humor-related context will be associated with less counterargument and less argument scrutiny than those who view the same messages in the health-related context. The ANOVA test was employed to examine the main effect and interaction effect. There was no condition effect found among argument scrutiny, $F(3, 142) = .68, p = .56$ and counterarguing, $F(3, 144) = .89, p = .45$. No context effect or interaction effect were found either. Therefore, hypothesis 1 is not supported.

H2 predicted that individuals who view the humorous health messages presented in a humor-related context are more likely to exhibit greater message discounting than those who view the same messages in the health-related context. The ANOVA test was used to examine the main effect and interaction effect. No significance was found within conditions, $F(3, 143) = .51$, $p = .68$, and no significant interaction was presented, $F(3, 143) = 1.08, p = .23$. Furthermore, no context effect was found either. Therefore, hypothesis 2 was not supported.
Table 4-1. Random assignment of participants in five conditions.

<table>
<thead>
<tr>
<th>Source of variation</th>
<th>Humorous health promotion videos on Facebook</th>
<th>Humorous health promotion videos on YouTube</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health-related comments</td>
<td>N=53</td>
<td>N=54</td>
<td>N=107</td>
</tr>
<tr>
<td>Humor-related comments</td>
<td>N=55</td>
<td>N=55</td>
<td>N=110</td>
</tr>
<tr>
<td>Subtotal</td>
<td>N=108</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control group</td>
<td>N=68</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td>N=285</td>
</tr>
</tbody>
</table>

Table 4-2. Valid samples in five conditions.

<table>
<thead>
<tr>
<th>Source of variation</th>
<th>Humorous health promotion video on Facebook</th>
<th>Humorous health promotion video on YouTube</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health-related comments</td>
<td>N=35</td>
<td>N=36</td>
<td>N=71</td>
</tr>
<tr>
<td>Humor-related comments</td>
<td>N=42</td>
<td>N=44</td>
<td>N=86</td>
</tr>
<tr>
<td>Subtotal</td>
<td>N=77</td>
<td>N=80</td>
<td></td>
</tr>
<tr>
<td>Control group</td>
<td>N=68</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td>N=225</td>
</tr>
</tbody>
</table>

Table 4-3. Effects of context & medium on attitude towards the videos.

<table>
<thead>
<tr>
<th>Source of variation</th>
<th>Sum of squares</th>
<th>df</th>
<th>F</th>
<th>Sig. (two-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Context</td>
<td>.10</td>
<td>1</td>
<td>.08</td>
<td>.78</td>
</tr>
<tr>
<td>Medium</td>
<td>2.55</td>
<td>1</td>
<td>2.07</td>
<td>.15</td>
</tr>
<tr>
<td>Context*Medium</td>
<td>.005</td>
<td>1</td>
<td>.004</td>
<td>.95</td>
</tr>
</tbody>
</table>

Table 4-4. Effects of context & medium on risk perception towards smoking.

<table>
<thead>
<tr>
<th>Source of variation</th>
<th>Sum of squares</th>
<th>df</th>
<th>F</th>
<th>Sig. (two-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Context</td>
<td>1.18</td>
<td>1</td>
<td>4.16</td>
<td>.04</td>
</tr>
<tr>
<td>Medium</td>
<td>2.75</td>
<td>1</td>
<td>9.75</td>
<td>.002</td>
</tr>
<tr>
<td>Context*Medium</td>
<td>.005</td>
<td>1</td>
<td>.004</td>
<td>.39</td>
</tr>
</tbody>
</table>

Table 4-5. Risk perception towards smoking by medium.

<table>
<thead>
<tr>
<th>Source</th>
<th>M</th>
<th>SD</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Facebook</td>
<td>4.77</td>
<td>.40</td>
<td>71</td>
</tr>
<tr>
<td>YouTube</td>
<td>4.50</td>
<td>.64</td>
<td>77</td>
</tr>
</tbody>
</table>

Table 4-6. Risk perception towards smoking by context.

<table>
<thead>
<tr>
<th>Source</th>
<th>M</th>
<th>SD</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health-related</td>
<td>4.53</td>
<td>.62</td>
<td>68</td>
</tr>
<tr>
<td>Humor-related</td>
<td>4.71</td>
<td>.47</td>
<td>80</td>
</tr>
</tbody>
</table>
Table 4-7. Effects of context & medium on positive attitude towards smokers.

<table>
<thead>
<tr>
<th>Source of variation</th>
<th>Sum of squares</th>
<th>df</th>
<th>F</th>
<th>Sig. (two-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Context</td>
<td>.02</td>
<td>1</td>
<td>.04</td>
<td>.85</td>
</tr>
<tr>
<td>Medium</td>
<td>3.5</td>
<td>1</td>
<td>8.35</td>
<td>.004</td>
</tr>
<tr>
<td>Context*Medium</td>
<td>1.1</td>
<td>1</td>
<td>2.63</td>
<td>.11</td>
</tr>
</tbody>
</table>

Table 4-8. Positive towards smokers by medium.

<table>
<thead>
<tr>
<th>Medium</th>
<th>M</th>
<th>SD</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Facebook</td>
<td>1.92</td>
<td>.66</td>
<td>70</td>
</tr>
<tr>
<td>YouTube</td>
<td>2.23</td>
<td>.64</td>
<td>75</td>
</tr>
</tbody>
</table>

Table 4-9. Effects of context & medium on intention to avoid smoking in the future.

<table>
<thead>
<tr>
<th>Source of variation</th>
<th>Sum of squares</th>
<th>df</th>
<th>F</th>
<th>Sig. (two-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Context</td>
<td>7.81</td>
<td>1</td>
<td>.000</td>
<td>.99</td>
</tr>
<tr>
<td>Medium</td>
<td>5.87</td>
<td>1</td>
<td>9.60</td>
<td>.002</td>
</tr>
<tr>
<td>Context*Medium</td>
<td>2.09</td>
<td>1</td>
<td>3.42</td>
<td>.07</td>
</tr>
</tbody>
</table>

Table 4-10. Effects of context & medium on viral marketing actions.

<table>
<thead>
<tr>
<th>Source of variation</th>
<th>Sum of squares</th>
<th>df</th>
<th>F</th>
<th>Sig. (two-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Context</td>
<td>1.27</td>
<td>1</td>
<td>1.44</td>
<td>.23</td>
</tr>
<tr>
<td>Medium</td>
<td>.88</td>
<td>1</td>
<td>.88</td>
<td>.32</td>
</tr>
<tr>
<td>Context*Medium</td>
<td>.04</td>
<td>1</td>
<td>.05</td>
<td>.83</td>
</tr>
</tbody>
</table>
Figure 4-1. Interaction plots between 4 conditions and intention to avoid smoking in the future.
CHAPTER 5
DISCUSSION AND CONCLUSION

This study explores whether the context (i.e. health-related vs. humor-related) and medium (i.e. Facebook vs. YouTube) affect: (1) the persuasion of anti-tobacco messages, (2) individual’s attitude towards the videos, and (3) potential viral marketing effect. In terms of medium effects, this study investigates Facebook and YouTube’s perceived interactivity and further examines whether perceived interactivity is related to attitude towards the health message, attitude towards videos, and viral marketing actions. The effect of medium difference was stated by McLuhan in 1964; however, in the present Internet era, the effects of different media have received little attention. Previous research found different viral marketing effects among twitter and blog users (Schultz et al., 2011); however, the finding lacks theoretical implications. This study suggests that different levels of perceived interactivity might be the main reason that produces different attitudes among the social media.

In addition, this research proposes that the health message on social media is not only the author’s intended message, but is also assembled with the comments beneath the original message. Therefore, depending on the nature of comments, the health message could lose its original intention to persuade and be regarded as an issue-irrelevant joke. Hence, another focus of this study is to understand how the characteristic of context influences the persuasion quality. Three elements, message discounting, argument scrutiny, and counterarguing, are assessed to test the persuasion quality. Scholars found that when the message applies to political humor, more message discounting and less counterarguing and argument scrutiny occurs than in serious messages (Nabi et al., 2007; Young, 2008). This study compares the persuasion quality between the health-related (serious) context and the humor-related context, and examines the differences of message discounting, argument scrutiny, and counterarguing between the two contexts.
A 2x2 factorial design with a control group was used where participants were exposed to two media, Facebook and YouTube, with different nature of context, health-related (serious) or humor-related. This study employed artificial websites with login pages in order to simulate the social media environment with user IDs appearing on the websites. 225 valid data items were used in the analysis.

The results find some medium differences between Facebook and YouTube. First, Facebook’s overall perceived interactivity is significantly higher than YouTube’s, especially in the engaging and control dimension. In addition, the level of attention and two-way and simulated interpersonal communication do not differ much between Facebook and YouTube. That is, participants who were in the Facebook condition reported that they had more opportunities to respond to the video freely and easily than those who were in the YouTube condition. Interestingly, although YouTube provides more interactive functions than Facebook (such as adding playlist, and rating, disliking functions), participants in the Facebook condition still perceived themselves as being more engaged and having more control over the webpage than those in the YouTube condition. Overall, Facebook’s interactive functions are easier to use and manage than YouTube’s interactive functions.

Second, medium difference is found to affect attitudes toward the health message. Findings show that Facebook is a more effective medium to disseminate health messages than YouTube. For risk perception towards smoking, the finding indicates that Facebook generates more risk perception in participants than health messages presented on YouTube. For attitude toward smokers, participants in the Facebook condition revealed a more negative attitude toward smokers than those in the YouTube condition. In terms of the intention to avoid smoking in the future, only when the health message is presented in a “health-related context”, participants who
were in the Facebook condition revealed greater intention to avoid smoking than participants who viewed the health promotion videos on YouTube.

A speculation is made that the sense of “social norm” might be the reason causing the medium differences only in “health-related context.” The approach of social norm marketing is used in correcting false behaviors by promoting accurate norms to the target audience (Perkins, 2003). Perkins, Linkenbach, Lewis, and Neighbors (2010) conducted an experiment to reduce drunk driving and to increase the practice of designated drivers among young adults, age 21 to 34. The result showed subjects exposed to the norm with correct drinking behavior did decrease driving after drinking behavior and increase the use of a designated driver, as compared to the control group. Another research involving more than 7000 college students also proved the social norm marketing approach (i.e. face to face and internet conversation) can effectively decrease the drinking amount in young adults (Moreira, Smith, and Foxcroft, 2009).

According to the social norm approach, Facebook might create a sense of “social norm” where users are having a conversation with their “friends.” The notion of “friends” could be regarded as “peers” and what these peers said could have impacts on individuals’ attitudes and beliefs. Turning now to the current study, the health-related context could be considered as the accurate norm which presents the correct attitude toward smoking. Thus, when the tobacco intervention message is presented in a peer environment (Facebook) with the accurate norm (health-related context), it is more effective in changing attitude than in disseminating tobacco intervention in a non-peer environment (such as YouTube) and in the control group.

Third, the medium difference is also found when compared to the control group. In terms of the effectiveness of humor appeal health messages on social media, the result shows that Facebook is a more influential social media than YouTube. The finding indicates that
participants who were exposed to Facebook revealed a higher risk perception toward smoking and a more negative attitude toward smokers than those who did not receive any health messages.

In addition, the finding comparing control group also shed light on applying humorous health messages online since many studies found the fear appeal is generally more effective than the humor appeal for a long time (Mongeau, 1998). In general, most of the Public Service Announcements rely on fear appeal (Freimuth, Hammond, Edgar, & Monahan; Beaudoin, 2002) to generate a greater effect on individuals. However, previous research showed humor could be an alternative message appeal targeting young adults (Lee & Ferguson, 2002). It is true that in Beaudoin’s content analysis of anti-smoking ads on television, he found that humor appeal is widely used to target the youth audience (2002). The current study follows the notion of applying humor to target a younger generation and the results suggests to health practitioners that Facebook with the humor appeal is more likely to produce a greater effect of health intervention.

For the justification that perceived interactivity was the cue to generate medium differences in terms of attitudes difference, correlations are found. These findings are in line with previous research that the perceived interactivity has positive correlation to an individual’s attitude towards the website (McMillan, 2000). For the attitude towards videos, three factors of perceived interactivity are all positively correlated. In addition, this study expands the realm of perceived interactivity to a behavior level—viral marketing actions. The result indicates that the attention factor and two-way and simulated interpersonal communication factor are positively correlated with viral marketing actions. It might be inferred whether individuals regard the direction of communication to influence their intentions to forward the message to others.
In terms of the relationship between attitude towards health message and three dimensions of perceived interactivity, only the factor of “engaging and control” reveals correlation consistently. One possible explanation to this finding is that the “engaging and control” factor might be associated with the “perceived behavior control” in the planned behavioral theory (Ajzen, 1991). According to Ajzen, perceived behavior control is whether an individual considers certain behaviors easy or difficult to prosecute (Ajzen, 1988). The perceived behavior control is also one of the main elements that influence individuals’ behavior intentions. The “engaging and control” factor in the perceived interactivity seems to reveal a similar characteristic with perceived behavior control. That is, when participants reported having more control over the webpage and felt the features on the webpage easier to use, they were more likely to feel that performing a certain behavior was easier than on a website which is less engaged and less controllable. This same notion might apply to self-efficacy as well. Bandura proposed that self-efficacy is the most important factor in changing an individual’s behavior (1977). The more a person feels that one is capable of performing certain behavior, the more likely behavioral change happens. In this study, it is likely that the more individuals feel they are engaged and have control over the website, the more perceived behavioral control and self-efficacy they have, therefore, enhancing the intention of avoiding smoking and smokers (i.e. perceived more risk perception towards smoking, more negative attitude towards smokers, intention to avoid smoking in the future). However, this speculation needs further research.

However, perceived interactivity was not manipulated in the experiment. Only the Pearson Correlation test was used to examine the correlation between variables in this study. Direct causation of perceived interactivity and attitude towards video, attitude towards health message, and viral marketing effect need further research to identify.
In the case of different context characteristics, the results are not consistent with previous studies. First of all, in terms of risk perception about smoking, videos presented in a humor-related context are more effective than those presented in a health-related context. This finding is oddly distinct from previous research that shows serious health consequences are more effective than normative behavior and humorous messages (Biener, Ji, Gilpin, & Albers, 2004). Secondly, findings are not consistent with Nabi and other researchers’ (2007) findings either. No significant differences of message discounting, argument scrutiny and the ability to counterargue were found within health-related (serious) context and humor-related context.

Possible explanations to the above findings could be: first, although participants did review the comment underneath the video, they were not affected by the context. The assumption that context would influence how the individual processes the main message is not supported. Whether the original video is powerful enough to dominate the context characteristic or the audiences view the comments as a decorator and neglect it in the context need further research to conclude.

Secondly, previous studies found significant message discounting, argument scrutiny, and counterarguing differences between humor message and non-humor message (Nabi et al., 2007, Polk et al., 2009). The “pure” humor effectively discounts the original message, and decreases an individual’s argument scrutiny and the ability to counterargue. However, this current study combines the humorous video with non-humor comments (text) together to compare with a “pure humor” context (humorous video and humorous comment). No comparison was made between “pure humor” context and “pure non-humor” context in this study. Therefore, no different counterargumentation, argument scrutiny, and message discounting were presented.
Third, the sample of this study is basically composed of non-smokers. Non-smokers already choose a lifestyle of staying away from smoking and smokers; therefore, they are assumed to agree with the message in anti-tobacco videos. There is no reason for nonsmokers to counterargue with anti-smoking message hence the level of counterarguing exhibited no major difference between contexts and between conditions.

At this point, the results only indicate that the different characteristics (humor vs. health) of comments do not influence audiences’ message processing in terms of message discounting, argument scrutiny and counterargumentation.

**Limitation and Future Research**

This study has several limitations. First, a relatively small sample size of participants were smokers. Thus, the finding of this study could only reflect the attitude and beliefs of non-smokers. Future research should include more smokers’ samples to make a more comprehensive understanding of tobacco intervention strategies.

Second, in the manipulation check, many participants were excluded from the data due to misinterpreting the context presented in the designated condition. For the health-related context, 36 participants failed to perceive the designated context; for humor-related context, 24 of them did not perceive the humor in the comments. This could be a potential problem indicating that the intended context (i.e. health-related and humor-related) was not easily comprehended by everyone. Future studies should be cautious of designing contexts in order to gather the most efficient data.

Third, the interactive features on the artificial websites cannot function as they do in real life settings. Participants can only view the features instead of clicking and commenting on them. That is, the perceived interactivity analyzed in this study is reported by participants’ intentions rather than calculating the actual responses on the websites. Future studies, if capable, should
apply computer programs to make the interactive functions active and count the real click to measure viral marketing effects.

Last, this study measured only short-term attitude changes after viewing videos on social media. Moreover, the attitudes are self-reported, which may have not transformed into real behavioral changes. Therefore, future research should use a longitudinal method to observe the participants for a longer time to see whether behavioral changes occur. In addition, gathering psychophysiology data could rule out the under- or over-report of the attitude.

For future study, more research should focus on identifying whether perceived interactivity is the cue to trigger medium difference. In addition, research should examine medium difference with three factors: engaging and control, attention, two-way and simulated interpersonal communication. More evidence should be collected to see if engaging and control is a consistent variable influencing individual’s health attitude. Direct causation of whether perceived interactivity acts as an important cue to generate medium difference needs to be identified. In addition, other types of health messages (e.g. moderate drinking, seat belt safety) should be applied in the social media environment to examine its effectiveness to the general public.

**Conclusion**

This study sheds lights upon the medium differences among social media indicating that, although Facebook and YouTube are both highly interactive Internet media, participants still perceive interactivity differently. Moreover, the perceived interactivity is reported regardless of the medium’s actual interactivity function. This finding not only suggests that Facebook is a more interactive medium than YouTube, but also points out that increasing the interactive feature on the website is not guaranteed to increase user’s perceived interactivity with the website.

Furthermore, several findings in this study are helpful for health agencies who design online health campaigns. First, the humor appeal of anti-tobacco messages is effective on
Facebook in general. Showing humorous health promotion videos on Facebook to influence individual’s risk perception towards smoking and attitude towards smokers were both successful compared to the control group. Second, agencies should avoid using YouTube as the only medium to spread the message. The findings suggest that YouTube cannot inflict such a powerful influence on attitudes as Facebook can. Third, the intended message should preferably be presented in the health-related context. The finding indicates that in a health-related context, Facebook is a more effective channel to persuade individuals to stay away from smokers and prevent individuals from smoking in the future than YouTube.

In addition, the perceived interactivity factor, engaging and control, is correlated with health attitudes (i.e. risk perception towards smoking, positive attitude towards smokers, and intention to avoid smoking). Interestingly, in terms of viral marketing actions, the attention factor and two-way and simulated interpersonal communication factor are positively correlated. This finding implies that perceived interactivity factors should be treated separately to examine the relationship with attitudes. This study also suggests to health practitioners that enhancing a specific perceived interactivity factor will generate a desired attitude change.

Last, the concern of the distraction caused by the humorous context to the original message is relieved. Though social media is an open space for every user to create free discourse, messages are not discounted regardless of the comment. In addition, participant’s argument quality and the ability to counterargue are not affected either. In conclusion, social media is a decent channel to disseminate health promotion messages to the public in a timely and cost efficient way. However, the selection of the medium in the correct context is a crucial contributor to a successful health campaign.
Figure A-1. The layout of Facebook log in page.

http://www.babylimited.tw/tobaccofreetoge/index_fb.php
Figure A-2. The layout of the video summary page on Facebook.
Figure A-3. The layout of health-related context with video 1 on Facebook.
Figure A-4. The layout of health-related context with video 2 on Facebook.
Figure A-5. The layout of health-related context with video 3 on Facebook.
Figure A-6. The layout of humor-related context with video 1 on Facebook.
Figure A-7. The layout of humor-related context with video 2 on Facebook.
Figure A-8. The layout of humor-related context with video 3 on Facebook.
Figure A-9. The layout of YouTube log in page.

http://www.babylimited.tw/tobaccofreetoge/index_youtube.php
Figure A-10. The layout of the video summary page on YouTube.
Figure A-11. The layout of health-related context with video 1 on YouTube.
Figure A-12. The layout of health-related context with video 2 on YouTube.
Figure A-13. The layout of health-related context with video 3 on YouTube.
Figure A-14. The layout of humor-related context with video 1 on YouTube.
Figure A.15. The layout of humor-related context with video 2 on YouTube.
Figure A-16. The layout of humor-related context with video 3 on YouTube.
APPENDIX B
INSTRUCTION TO PARTICIPANTS

Thank you for participating in this study! This research is trying to understand what do individuals respond to the videos and the website. Please read this consent document carefully before you decide to participate in this study.

What you will be asked to do in the study:

You will view 3 online videos and then you will be asked to answer a series of questions based on these videos and the website. Please view the webpage carefully, including 3 videos, all comments, and all the features on the webpage. You can only check one choice which describe your feelings or thoughts best.

Time required:

Each video will not exceed 1 minute. Depends on the pace you answer the questions, usually it takes 5-15 minutes to finish the questionnaire.

Risks and Benefits:

There are no risks or benefits to you for participating in this study.

Compensation:

You will receive extra credits for participating in this research. If you choose not to participate, alternative options for earning extra credits will be provided by your professor.

Voluntary participation:

Your participation in this study is completely voluntary. There is no penalty for not participating.

Right to withdraw from the study:

You have the right to withdraw from this study at anytime without consequence

Confidentiality:
Your answer and personal information (e.g. UFID) will only be used in research purpose and will remain strictly confidential.

Whom to contact if you have questions about the study:

If you have any question, please email to fanninchen@ufl.edu or contact (352) 328-4200.

Whom to contact about your rights as a research participant in the study:

IRB02 office, box 112250, University of Florida, Gainesville, FL32611-2250; phone 392-0433.

This study is approved by the University of Florida, Institutional Review Board 02, Protocol #2012-U-0373 for use through 03/26/2013.

Agreement:

I have read the procedure described above. I voluntarily agree to participate in the procedure and I have received a copy of this description.

(1) I agree to participate in this study. >> Proceed

(2) I don’t agree to participate in this study. >> Quit

**IMPORTANT INSTRUCTIONS**

1. Turn on your **speaker** or put on your **headphone** now. You are about the visit another website.

2. After clicking the link, please **LOG IN** with the ID/password in the invitation I emailed your earlier. **You MUST log in to proceed.**

3. Please view the webpage carefully including **ALL 3 videos, ALL comments**, and **ALL features BEFORE** you proceed to answer the following questions.
4. Attention! Action unrelated to viewing these videos might lead you to another page or occur a connection error. Don’t panic! Just go back to the previous page and you will be fine.

You are ready to go now!

Please come back to the questionnaire after you experience the website.

“Click here” (hyper link to the stimulus)

It will automatically open a new tab (or window). If not, please copy the url and paste it to “another” tab (or window). You will temporarily leave the survey but you can always come back to that webpage any time if you want to view it again.

If you have any problem logging in or viewing the page, please contact Fannin Chen (fanninchen@ufl.edu). ID/password will be resend to you.

_____ I’ve viewed ALL 3 videos, ALL the comments, and ALL the features on the webpage.
APPENDIX C
QUESTIONNAIRE FOR EXPERIMENT GROUPS

WHAT ARE YOUR REACTIONS TO THESE VIDEOS?
Please indicate your level of agreement with the following statements.

1. I would very much like to “share” these videos with others
   Strongly Disagree (1) (2) (3) (4) (5) Strongly Agree

2. I would very much like to “comment” on these videos.
   Strongly Disagree (1) (2) (3) (4) (5) Strongly Agree

3. I would very much to click “like” button on these videos.
   Strongly Disagree (1) (2) (3) (4) (5) Strongly Agree

4. I am going to share one/all of these videos right away via social networks.
   Strongly Disagree (1) (2) (3) (4) (5) Strongly Agree

5. I don’t plan to share any these videos by any means.
   Strongly Disagree (1) (2) (3) (4) (5) Strongly Agree

WHAT ARE YOUR REACTIONS TO THESE VIDEOS?
Please indicate your level of agreement with the following statements.

1. I think these videos I just saw are very funny.
   Strongly Disagree (1) (2) (3) (4) (5) (6) (7) Strongly Agree

2. I enjoyed the humor used in these videos.
   Strongly Disagree (1) (2) (3) (4) (5) (6) (7) Strongly Agree

3. These videos are NOT amusing.
   Strongly Disagree (1) (2) (3) (4) (5) (6) (7) Strongly Agree

4. One of the things I liked about these videos was how funny they were.
   Strongly Disagree (1) (2) (3) (4) (5) (6) (7) Strongly Agree
5. I found myself laughing when I watched these videos.

Strongly Disagree (1) (2) (3) (4) (5) (6) (7) Strongly Agree

6. I found myself feeling very good after I watched these videos.

Strongly Disagree (1) (2) (3) (4) (5) (6) (7) Strongly Agree

**WHAT ARE YOUR REACTIONS TO THESE VIDEOS?**
Please evaluate how you feel about the videos you just watched by selecting one number on each of the scales below. You can select number (4) if you would like to indicate your neutrality.

1. Unpleasant (1) (2) (3) (4) (5) (6) (7) Pleasant
2. Fun to watch (1) (2) (3) (4) (5) (6) (7) Not fun to watch
3. Not entertaining (1) (2) (3) (4) (5) (6) (7) Entertaining
4. Unenjoyable (1) (2) (3) (4) (5) (6) (7) Enjoyable
5. Unimportant (1) (2) (3) (4) (5) (6) (7) Important
6. Uninformative (1) (2) (3) (4) (5) (6) (7) Informative
7. Unhelpful (1) (2) (3) (4) (5) (6) (7) Helpful
8. Not useful (1) (2) (3) (4) (5) (6) (7) Useful
9. Doesn’t make me curious (1) (2) (3) (4) (5) (6) (7) Make me curious
10. Boring (1) (2) (3) (4) (5) (6) (7) Not boring
11. Not interesting (1) (2) (3) (4) (5) (6) (7) Interesting
12. Keeps my attention (1) (2) (3) (4) (5) (6) (7) Doesn’t keep my attention

**WHAT ARE YOUR REACTIONS TO THESE VIDEOS?**
Please indicate your level of agreement with the following statements.

*Note: The “author” in the following statements is the one who posts these videos.*
1. These videos were telling people that they should not smoke.

   Strongly Disagree (1) (2) (3) (4) (5) Strongly Agree

2. I found myself actively agreeing with the author’s points.

   Strongly Disagree (1) (2) (3) (4) (5) Strongly Agree

3. They are just funny videos to me.

   Strongly Disagree (1) (2) (3) (4) (5) Strongly Agree

4. I have no opinion.

   Strongly Disagree (1) (2) (3) (4) (5) Strongly Agree

5. It would be easy to dismiss these messages as simply a joke.

   Strongly Disagree (1) (2) (3) (4) (5) Strongly Agree

6. The author was serious about advancing his views in these messages.

   Strongly Disagree (1) (2) (3) (4) (5) Strongly Agree

7. The messages were intended more to entertain than to persuade.

   Strongly Disagree (1) (2) (3) (4) (5) Strongly Agree

8. I don’t understand what these videos are talking about.

   Strongly Disagree (1) (2) (3) (4) (5) Strongly Agree

9. I clearly understand the sarcasm used in these videos.

   Strongly Disagree (1) (2) (3) (4) (5) Strongly Agree

10. The author of these messages was just joking.

    Strongly Disagree (1) (2) (3) (4) (5) Strongly Agree

11. It was easy to agree the arguments made in the message.

    Strongly Disagree (1) (2) (3) (4) (5) Strongly Agree

12. These videos use a ironic tone to present the negative effects of tobacco.
Strongly Disagree (1) (2) (3) (4) (5) Strongly Agree

13. I understand some negative effects of smoking.

Strongly Disagree (1) (2) (3) (4) (5) Strongly Agree

14. I found myself actively disagreeing with the author.

Strongly Disagree (1) (2) (3) (4) (5) Strongly Agree

15. I was looking for the flaws in the author’s argument.

Strongly Disagree (1) (2) (3) (4) (5) Strongly Agree

**WHAT ARE YOUR REACTIONS TO THESE VIDEOS?**

Please answer the following questions based on your viewing experience and functions displayed on the website you just visited, and indicate your level of agreement with the following statement.

1. While I was on the website, I could choose freely what I wanted to respond.

   Strongly Disagree (1) (2) (3) (4) (5) Strongly Agree

2. The features of this website (e.g. comment, share, like) facilitate two-way communication between me and other users.

   Strongly Disagree (1) (2) (3) (4) (5) Strongly Agree

3. I think this webpage and its interactive features (e.g. comment, share, like) provide a variety of choices.

   Strongly Disagree (1) (2) (3) (4) (5) Strongly Agree

4. The website provides me the opportunity to respond in more than one way.

   Strongly Disagree (1) (2) (3) (4) (5) Strongly Agree

5. It is difficult to offer feedback to the video.

   Strongly Disagree (1) (2) (3) (4) (5) Strongly Agree
6. I think my reactions (e.g. comment, share, like) might have influenced my overall viewing experience.

Strongly Disagree (1) (2) (3) (4) (5) Strongly Agree

7. The features of the website (e.g. comment, share, like) are effective in gathering my feedback.

Strongly Disagree (1) (2) (3) (4) (5) Strongly Agree

8. I think I was having an interpersonal communication with other users when receiving feedback from the webpage.

Strongly Disagree (1) (2) (3) (4) (5) Strongly Agree

9. This webpage and its interactive features (e.g. comment, share, like) do NOT keep my attention at all.

Strongly Disagree (1) (2) (3) (4) (5) Strongly Agree

10. I think I can have an interpersonal communication if I use these interactive features (e.g. comment, share, like) on this website.

Strongly Disagree (1) (2) (3) (4) (5) Strongly Agree

11. I can easily find my way through the webpage.

Strongly Disagree (1) (2) (3) (4) (5) Strongly Agree

12. I think the interactive features (e.g. comment, share, like) on this website is NOT interpersonal.

Strongly Disagree (1) (2) (3) (4) (5) Strongly Agree

13. I felt I had a lot control over my viewing experiences at this webpage.

Strongly Disagree (1) (2) (3) (4) (5) Strongly Agree

14. This webpage and its interactive features (e.g. comment, share, like) keep my attention.
15. This webpage and its interactive features (e.g. comment, share, like) lack variety.

16. This website makes me feel it wants to listen to its visitors.

17. This webpage and its features (e.g. comment, share, like) are easy to use.

18. I can respond to these videos and get replies like I am communicate with a real person.

19. While surfing this webpage, I had little control over what I can do on this site.

Are you a current smoker?

___ Yes
___ No

WHAT YOU THINK?
Please indicate your level of agreement with the following statements.

1. Not smoking is a way to express independence.

2. Smoking or secondhand smoke will have many health effects on me in the future.

3. Smoking makes people smell bad.

4. At least one of my friends considers smoking to be very offensive.
5. Most of the smokers that I know are successful people.

6. People who smoke are fun to be around.

7. Smoking makes people your age look cool or fit in.

8. Smoking increases the risk of lung cancer.

9. I don’t like to be around smokers.

10. Smokers are relaxed, easy-going people.

11. Smoking increases the risk of heart diseases.

12. I like the kind of people.

13. Cigarette smoking is harmful to my health.

<Smoker’s questions>

14. I don’t plan to ever quit smoking unless I see my health suffering.

15. I can stop smoking any time I want.
16. I smoke too much.
Strongly Disagree (1) (2) (3) (4) (5) Strongly Agree

17. I would like to smoke a cigarette now.
Strongly Disagree (1) (2) (3) (4) (5) Strongly Agree

18. All things considered, I would very much like to give up smoking.
Strongly Disagree (1) (2) (3) (4) (5) Strongly Agree

19. People I care about are upset I smoke.
Strongly Disagree (1) (2) (3) (4) (5) Strongly Agree

20. I am planning to quit smoking very soon.
Strongly Disagree (1) (2) (3) (4) (5) Strongly Agree

21. I want to involve in efforts to get rid of smoking.
Strongly Disagree (1) (2) (3) (4) (5) Strongly Agree

<Non-smoker’s questions>

Strongly Disagree (1) (2) (3) (4) (5) Strongly Agree

15. I would like to smoke a cigarette now.
Strongly Disagree (1) (2) (3) (4) (5) Strongly Agree

16. I can picture myself smoking at a future point in my life.
Strongly Disagree (1) (2) (3) (4) (5) Strongly Agree

17. Definitely will not or probably will not smoke a cigarette at any time during the next year.
Strongly Disagree (1) (2) (3) (4) (5) Strongly Agree
18. I do not want to hang out with anyone smokes.

Strongly Disagree (1) (2) (3) (4) (5) Strongly Agree

MORE ABOUT YOU
We should like to know more about the smoking behaviors of you and your family. Some questions mentions your father or mother, if you did not live with that particular parents, them please give the answer for the “primary” male/female in your home when you were growing up. We are interested in the adults influence in our home while you were growing up.

1. If you smoke, how many cigarettes would you say you smoke on the average each day?
   (1) Less than 10 (a half pack).
   (2) 11-20 (up to a pack).
   (3) 21-40 (up to 2 packs).
   (4) Over 40 (more than 2 packs).
   (5) Don’t know.
   (6) Can’t answer.

2. Did you smoke regularly before you came to college?
   (1) Yes    (2) No

3. How long have/had you been smoking?
   (1) Less than a year
   (2) 1 year to 2 years
   (3) 2 years to 5 years
   (4) More than 5 years

4. Does your father (or primary make in your home when you grew up) currently smoke?
   (1) Yes    (2) No
5. Did your father smoke when you were a child?
   (1) Yes    (2) No

6. Does your mother currently smoke?
   (1) Yes    (2) No

7. Did your mother smoke cigarettes when you were a child?
   (1) Yes    (2) No

8. Do any of your brothers or sisters, if any, currently smoke?
   (1) Yes    (2) No

9. Does anyone living in the dorm room, apartment, or house you live in currently smoke?
   (1) Yes    (2) No

10. How many of your close friends currently smoke (choose 9 if more than 9)?
    (1) (2) (3) (4) (5) (6) (7) (8) (9)

11. Gender
    (1) Male    (2) Female

12. Age
    ______

13. What is your current class standing?
    (1) Freshman    (2) Sophomore    (3) Junior    (4) Senior or Post-baccalaureate    (5) Graduate students or Doctoral students

14. Who is your instructor?
(1) James D. Leary (2) Jennifer J. Braddock (3) Edmund A. Kellerman (4) Jessica A. Mahone (5) Dennis Dipasquale (6) Moon J. Lee (7) Johanna Cleary (8) None of above

15. Please provide your UFID if you join this experiment for extra credits (e.g. 1234-5678, no space).

_____________________________
LIST OF REFERENCES


BIOGRAPHICAL SKETCH

Fannin Chen was born in Houston, Texas. She grew up in Taiwan and obtained her bachelor’s degree in radio and television from National Cheng-chi University in 2008. National Cheng-chi University has the top communication program in the nation and has trained many students to become outstanding practitioners and scholars in communication field. After graduating from National Cheng-chi University, she started to work as a project manager specializing marketing and advertising at the IPTV station (ELTA TV). After two years of working experience, she joined the graduate program in the University of Florida, College of Journalism and Communications, and majored in telecommunication. Her graduate studies focus on social media effects and the applications of health communications. She received her master’s degree in August 2012 and will extend her academic interests to health communication practice in Taiwan.