Innocent vapor or poisonous viper?

Examining how media frame e-cigarettes to adolescent and adult audiences

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Abstract

This framing analysis examined stories and articles in newspapers and health websites to identify frames in order to determine whether media have played a role in the popularity of the e-cigarette as a healthy alternative to smoking. A total of 74 articles retrieved from online (Internet) archives of elite newspapers and top health information websites were analyzed between 2006 and 2013. The study found that both newspapers and health websites frequently framed e-cigarettes as a risk rather than a benefit. Four subframes were identified under the risk frame: e-cigarettes presented as an unsafe alternative, an ability to influence youth, the unknown safety and health risks of e-cigarettes and e-cigarettes presented as a gateway to nicotine addiction or conventional cigarette smoking among users. There were three subframes identified under the benefit frame: e-cigarettes as a healthy and/or safer alternative to cigarettes, e-cigarettes as a social alternative and/or as an effective smoking cessation tool. Two additional frames were also identified among the sample: informational and debate and controversy. Furthermore, it was found that risk-framed articles were dominated most by health sources, and benefit-framed articles featured public sources and health sources almost equally.

Cigarette smoking is viewed as a health crisis in the United States and throughout the world. Cigarettes contain nicotine, a highly addictive drug that contributes to the statistics: 19% of all adults in the United States smoke cigarettes (CDC, 2013a), 18% of high school students and more than four percent of middle school students smoked at least one cigarette in the past month (CDC, 2013b). The vast majority of smoking habits are initiated during adolescence; in fact, 88% of current smokers reported that they began smoking by the age of 18 (CDC, 2013b).

According to the Centers for Disease Control and Prevention (CDC), smoking is the leading cause of preventable deaths in the United States accounting for one out of every five each year (CDC, 2013d). The inhalation of carcinogens in cigarettes is linked to a number of health problems, including cancer, heart disease, stroke, emphysema, bronchitis and other diseases of the lungs (CDC, 2013d). Health problems associated with smoking resulted in the loss of more than $193 billion in the United States between the years 2000-2004 — $97 billion in lost productivity and another $96 billion in health care costs (CDC, 2013d). Nonsmokers are also at risk if they are exposed to secondhand smoke. Through illness, mortality and loss of productivity, secondhand smoke resulted in the loss of $10 billion in 2005 in the United States (CDC, 2013d).

Nicotine replacement therapy was created as a way to help wean tobacco users off of nicotine by delivering it to the body through safer methods. There are several smoking cessation devices and strategies that are available to people who wish to quit. Some of the more well-known nicotine replacement therapies include chewing gum, patches, inhalers and lozenges (Silagy et al., 2004). Recently, electronic cigarettes have come on the forefront of the smoking cessation market. E-cigarettes are battery-operated devices that allow the inhalation of nicotine

as an odorless vapor (U.S. Department of Health and Human Services, 2013), enabling the user to use the device in smoke-free public areas while also satisfying the oral fixation often present with those addicted to cigarettes. E-cigarettes first became available overseas in 2002, but did not make an appearance in the United States until late 2006 (The Associated Press, 2011). According to the Food and Drug Administration (FDA), e-cigarettes did not go through the FDA for approval (2013). Therefore, it is unknown whether the device is safe for use or how much nicotine or other potentially harmful chemicals are being inhaled (FDA, 2013).

Additionally, a recent press release by the CDC announced that e-cigarette use by American high school and middle school students more than doubled from 2011 to 2012 (CDC, 2013). The same report also found that 76% of the teens who used e-cigarettes in the last 30 days also reported smoking conventional cigarettes (CDC, 2013). The concern raised by this data is that e-cigarettes may be used as a gateway device for youth, introducing them to conventional cigarettes and nicotine addiction. Currently, there are no federal policies regulating the sale of e-cigarettes to minors (E-Smoking Among Teenagers, 2013). Some states do have age restrictions, but for the states without regulations, it is easy for minors to purchase the product.

Although many use e-cigarettes as a way to quit smoking, there is no scientific evidence that the devices lead to long-term smoking cessation (CDC, 2013c). In fact, due to the questionable efficacy of e-cigarettes, there could be a new concern with the devices. Instead of aiding in the termination of smoking, the devices may be used as a supplement to cigarettes, especially since they can be used inside buildings and in public areas where traditional smoking has been banned.

Undeniably, the media and the Internet play highly influential roles in society and have the ability to sway the mindset of their readers or viewers through framing. Framing is the

conceptualization of how "media shape news and people's perceptions of it" (Miller & Richert, 2001, p. 109). The e-cigarette is a relatively new device on the scene of nicotine replacement therapy, and little is known about its effects. Recent warnings of the unknown safety of the device, in addition to the concern that it has become popular among America's youth, has led to the current study that looks at the presentation of e-cigarettes in the media.

Literature Review

A safer alternative to smoking?

Since their introduction to the United States in late 2006, e-cigarettes have become increasingly popular. Distributed over the Internet and in shopping mall kiosks, e-cigarettes seem destined for a larger market. In an attempt to offset the loss of conventional cigarette smokers, tobacco companies are embracing e-cigarettes, and many such as Marlboro-maker Altria Group Inc., have announced plans to release their own line of e-cigarettes.

Cahn and Siegel (2011) identified 16 studies that have characterized the ingredients contained in e-cigarettes, which are primarily propylene, glycol, glycerin, and nicotine. A 2013 FDA study found that e-cigarettes release carcinogens and toxic chemicals; however, they *might* be safer than conventional cigarettes because they don't release tar, carbon monoxide, hydrogen cyanide and other toxins found in cigarette smoke. Still, existing research does not necessarily conclude that e-cigarettes are completely safe, and further research is needed to evaluate their safety.

A cessation device or tobacco supplement?

Previous studies on the effectiveness of e-cigarettes as a cessation device have demonstrated the product's ability to significantly reduce tobacco cigarette cravings; however, to date, no studies have directly measured the effectiveness of e-cigarettes in helping smokers

abstain from smoking in the long-term (Cahn & Siegel, 2011). While e-cigarettes deliver nicotine more effectively than a nicotine inhaler, evidence from Bullen et al. (2010) and Eissenberg (2010) suggest that reduced cravings are not exclusive to the consumption of nicotine. In fact, studies such as Barrett's (2010) have established the ability of cigarettes without any level of nicotine to provide craving relief as well (Cahn & Siegel, 2011). This demonstrates the behavioral component of cigarette addiction, suggesting that smoking-related stimuli alone can suppress cravings and withdrawals related to smoking cessation (Buchhalter et al., 2005). Thus, smokers may try e-cigarettes instead of other proven-effective methods simply to continue the hand-to-mouth oral fixation that accompanies act of smoking.

In prolonging smoking behavior, smokers may embrace e-cigarettes as an alternative to traditional cigarette smoking in order to evade clean indoor air policies. Continuing this addictive behavior may lessen an individual's motivation to quit smoking altogether (Choi & Forster, 2013). Therefore, at the core of public health professionals' concerns is the fear that smokers who might otherwise have quit smoking will instead become addicted to another potentially harmful product (Cahn & Siegel, 2011). Additionally, professionals worry that "a product that reduces harm to one individual may attract new, nonsmoking users, and thus undermine efforts to prevent tobacco use" (Zeller & Hatsukami, 2009, p. 326), ultimately making a case for e-cigarettes to serve as a gateway to conventional cigarette smoking.

A growing trend among adolescents

According to Ling and Glints (2002), young adults are in general more likely to try new things. Furthermore, the 2012 Surgeon General's report states, "Nearly all tobacco use begins during youth and young adulthood" (CDC, 2012, p. 2). According to the Surgeon General, adolescents are more vulnerable than adults and easily influenced by marketing and media

(CDC, 2012). "Young people are also more willing to take risks, even with their health" (CDC, 2012, p. 5). Consequently, they may be more likely than adults to try e-cigarettes, especially if they are marketed as a safer and healthy alternative to traditional cigarettes. Nonetheless, some experts argue that if teens are inclined to try smoking anyway, they are better off smoking e-cigarettes than cigarettes (Cahn & Siegel, 2011). Still, many experts feel that promoting the use of e-cigarettes as acceptable among youth would debase the work of anti-tobacco campaigns, which have made great strides in decreasing cigarette and tobacco consumption among America's youth (Zeller & Hatsukami, 2009).

In 2011, Etter and Bullen assessed the perceptions of e-cigarettes among an international sample of users recruited online. They reported, "83.5% of users believed e-cigarettes are less toxic than tobacco and 76.8% used e-cigarettes to quit smoking or avoid relapse" (Etter and Bullen, 2011, 2019). However, this study was limited; the prevalence of these perceptions specific to young adults was not presented, and it did not assess the characteristics associated with these perceptions (Choi and Forster, 2013). Prior to Choi and Forster's 2013 study, the perceptions of young adults regarding awareness and use of e-cigarettes were unknown. This study demonstrated that "about half of participants who were aware of e-cigarettes believed that they can help people quit smoking, and that they were less harmful than cigarettes. About one quarter believed that e-cigarettes are less addictive than cigarettes" (Choi and Forster, 2013, p. 559). Results from a survey conducted in Utah weighed adolescents' interest in e-cigarettes, and investigators found that nearly 8% of 12th graders had experimented with e-cigarettes (Leonard, 2012). Still, despite previous research, the perceptions of e-cigarettes among adolescents remain largely unknown, making it difficult for anti-tobacco campaigns to deter individuals, particularly nonsmokers, from using e-cigarettes.

Framing Theory

Framing theory states that: "An issue can be viewed from a variety of perspectives and be construed as having implications for multiple values or considerations. Framing refers to the process by which people develop a particular conceptualization of an issue or reorient their thinking about an issue" (Chong & Druckman, 2007, p. 104). Analyzing media through the frame that is represented often shows only one side of a story, influencing others to agree with what is being presented rather than making their own opinion. According to Tankard, "framing recognizes the ability of a text—media presentation—to define the issues, and to set the terms of a debate" (2001, p. 2). The ability to add a cognitive dimension to the text or media being examined gives meanings to messages that they would not have if framed in a different way. The "frames are manifest in the patterns of symbols that people choose to argue for their positions" (Miller, 2001, p. 114); thus, by examining the text, the frame can be defined so that the researcher becomes aware of the angle that the media or organization is presenting to their publics.

Frames are often used when the media present information to their publics. Hertog and McLeod (2001) believe that frames have their own content and follow a clear set of rules to process this content. In order to understand the frame presented, researchers look to the keywords and common language used, sources interviewed, and the focus of the story, in addition to other indicators (Tankard, 2001). As the researcher examines these elements, he or she will be able to determine the frames presented and group similar articles with each other.

Due to the controversy surrounding e-cigarettes recently, two specific frames of interest to the researchers are risk and benefit. Previous research has established the advantages of studying the risk and/or benefits of new or controversial products. For example, Ernst (2002)

compared the risks and benefits of herbal remedies and found that "the potential for doing good seems greater than that for doing harm" (p. 42). E-cigarettes framed as a risk or benefit to someone's health may affect how the public views the device. A person will decide to use e-cigarettes based on perceived benefit of using the device (Cahn & Siegel, 2011). Conversely, perceived risks of e-cigarettes may deter others.

Sources

Whether an article about e-cigarettes is being presented as either a risk or a benefit can be determined by analyzing the sources quoted in that article. Sources are important not only because they provide practical information for a relevant subject, but also because they increase legitimacy and authority for the article (Franklin & Carlson, 2010). Experts and authorities are known as "elite sources" and are generally considered more credible (Druckman, 2001). Readers are more likely to accept what is being presented in a story or article if the information is coming from an expert such as a doctor, professional, researcher or authority on a given subject matter because they "delegate to ostensibly credible elites to help them sort through many possible frames (Druckman, 2001, p. 1045). Therefore, readers may be influenced first by whether an elite source is being quoted in the article and also whether the source is presenting information about e-cigarettes as a risk or benefit.

Throughout this study, newspapers and health websites were examined to determine how e-cigarettes are framed. The framing of e-cigarettes as a risk or benefit will be of specific interest to the researchers. The type of sources used in the sample will help determine what frame the articles fall under. Framing theory will be used to help guide the study and aid the researchers in formulating their results.

Based on the established research on framing theory and e-cigarettes, three research questions were developed to guide this study.

1. What was the dominant framing of e-cigarettes in newspaper stories?
2. What was the dominant framing of e-cigarettes in information provided by health websites?
3. Who are the dominant sources being used and with what frame are they most often associated?

Methodology

This study employed a mixed-method quantitative and qualitative framing analysis to examine how media and health websites represented the e-cigarette. Framing was chosen because it allowed the researchers to gain a "broad understanding" of how the topic is represented by media (Hertog & McLeod, 2001). The aim of this study was to observe how the e-cigarette has been framed in newspapers and websites to determine whether the device is portrayed as a healthy, convenient alternative to smoking or a health risk to users. Additionally, the study will illustrate how the sources used in these articles contribute to the determined frame.

News, feature, and opinion stories published in U.S. newspapers and articles posted on the most-visited health information websites over a seven-year period were analyzed. America's anti-smoking culture stands apart from other nations (Brandt, 1990); for this reason, it was deemed important to analyze only U.S. news sources. Newspapers were identified for their known excellence in news coverage and prominence within the country (Husselbee & Stempel, 1997). The elite newspapers were found in the electronic databases *ProQuest* and *Access World News Newsbank*. They are: *The New York Times*, *USA Today*, *Los Angeles Times*, *Washington Post* and *New York Daily News*. Based on circulation rates, *The Wall Street Journal* ranked

highest among the elite U.S. newspapers, however, it was excluded because of the publication's focus on finance and economics.

The health information websites used in this research were selected based on a ratings study by Healthcare Global (2012). The ratings study ranked the top 10 healthcare websites based on popularity as measured by visitor traffic. The top 10 websites identified were the National Institute of Health (NIH), Kids Health, WedMD, Drugs.com, Yahoo! Health, Weight Watchers, NHS Direct, Net Doctor, MayoClinc.com, and Men's Health. Based on rank and relevancy, the researchers selected the top five sites, which included NIH, WebMD, Drugs.com, Yahoo! Health, and MayoClinc.com. Kids Health and Weight Watchers were excluded for relevancy while NHS Direct and Net Doctor were not included because of their representation of healthcare in the United Kingdom. Furthermore, the selected websites were identified as information websites and were not affiliated or sponsored by a corporation.

The time frame used for the collection of news articles and website content related to e-cigarettes began Jan. 1, 2006, and ended Oct. 12, 2013. Researchers chose this time frame because it spans the period of time in which the e-cigarette was introduced in the United States up to the date of data collection. E-cigarettes being unregulated by the FDA combined with an increase in use among adolescents has increased discussion related to e-cigarettes in the current years. News and feature stories, press releases and commentary were identified to find articles for the study. News stories, features and website content were acquired using a keyword search for "e-cigarette(s)," "e-cig(s)" and "electronic cigarette(s)."

The sample population included stand-alone news, feature, and opinion stories published in news, health, or science sections of the newspapers. The sampling of health information websites included press releases, research reports, and fact sheets posted online. Non-news

stories, letters to the editor, book reviews, slide shows, videos, quizzes, obituaries, polls, comment pages, and links to other online sites were excluded from both samples. Duplicated stories and articles of 250 words or less were also excluded from the sample because they would not provide the depth of information necessary for a detailed framing analysis.

The unit of analysis was the individual article or story, with an examination of the headlines, leads, and visual elements of all articles and stories. All articles and stories were printed and numbered. The articles and stories were divided among three coders, who read the stories and articles and then completed a detailed coding worksheet to examine: publication type; publication name; publication date; article length (in words); section where article appeared; page number; type of item; visual element(s) including photographs, graphs, illustrations, etc.; title or headline of item; lead of item; main topic of item; secondary topic of item; mention of nicotine and context of use; mention of cigarettes and context of use; mention of cessation devices other than e-cigarettes and context of use; mention of health effects of e-cigarettes and context of use; mention of youth and context of use; hyperlinks in item; sources quoted or identified in the item; and frames identified. Before coding the entire sample, the researchers determined inter-coder reliability. To establish this, all coders examined a sample of 10% of the articles. The results were then compared for accuracy before coding the entire sample. The sample achieved a 0.7333 inter-coder reliability using Holsti's method (Stacks, 2011).

Results

An initial search resulted in a total of 227 articles published between Jan.1, 2006, and Oct. 12, 2013, in newspapers and health websites. After exclusions for relevancy and length, the final sample contained a total of 74 stories – 56 stories from newspapers and 18 stories from health websites. The majority of the items (58%) were classified as news items (n=43) followed

by opinion items with 19% (n=14), other items with 14% (n=10) and feature items with 9% (n=7) (Table A1). The bulk of the stories were written in 2013. Interestingly, no articles were found from 2006 to 2008, even though e-cigarettes were introduced in the U.S. in 2006. There were 12 (16%), 10 (13%), seven (8%) and four (5%) articles written in 2009, 2010, 2011 and 2012, respectively. The conversation surrounding e-cigarettes has grown exponentially in 2013, with 58% (n=43) of the articles examined stemming from this year.

(Insert Table A1 here)

Articles were examined to determine if e-cigarettes are framed as risk or benefit, and two additional frames were also found during examination: informational and debate and controversy. The risk frame found in the sample was identified when e-cigarettes were mostly presented as a risk to consumers. Three subframes were identified in this category, including e-cigarettes presented as an unsafe alternative, an ability to influence youth, the unknown safety and health risks of e-cigarettes and e-cigarettes presented as a gateway to nicotine addiction or conventional cigarette smoking among users. A benefit frame was assigned to an article when it positioned e-cigarettes as any of the following three identified subframes: a healthy and/or safer alternative, a social alternative and/or as an effective smoking cessation tool.

The additional two frames found among the articles were debate and controversy and informational. The debate and controversy frame contained articles that presented frames for both sides of the e-cigarette controversy equally. The informational frame was assigned to articles that gave the reader general information on e-cigarettes, such as what the device is and how it works, without framing the article in a specific way.

RQ1: What was the dominant framing of e-cigarettes in newspaper stories?

(Insert Table A2 here)

From the newspapers searched, 56 stories about e-cigarettes were examined (Table A2). Of the 56 stories from newspapers, *USA Today* presented the most articles mentioning e-cigarettes (n=18). The remaining newspaper articles were dispersed among *The New York Times* (n=13), *Washington Post* (n=11), *Los Angeles Times* (n=12) and *New York Daily News* (n=2).

(Insert Table A3 here)

The frame used most frequently in the newspaper articles was risk, at 37.5% (n=21) (Table A3). The most dominant subframe in this category was the influence on youth with 76% (n=16) risk articles (Table A6). Often this subframe was presented in the articles in relation to e-cigarette flavors or the ability of teenagers to easily purchase the device. For example, one newspaper article stated: "'It looks like a cigarette and is marketed as a cigarette… There's nothing that prevents youth from getting addicted to nicotine'" (Zezima, 2009a, para. 19). Another article described youths' use of e-cigarettes as "deeply troubling" (Koch, 2013, para.3).

Unknown safety and health risks of e-cigarettes was the risk subframe presented the most after e-cigarettes' influence on youth with 14 of the 21 (66.67%) risk articles (Table A6). For example, unknown safety and health risks of e-cigarettes were described as: "The reaction of medical authorities and antismoking groups has ranged from calls for testing to skepticism to outright hostility. Opponents say the safety claims are more rumor than anything else, since the components of e-cigarettes have never been tested for safety" (Zezima, 2009a, para. 5). In addition, "Electronic cigarettes contain traces of toxic substances and carcinogens, according to a preliminary analysis of the products by the Food and Drug Administration" (Zezima, 2009b, para. 1).

(Insert Table A6 here)

The other two subframes categorized under the risk frame were e-cigarettes as an unsafe alternative and e-cigarettes as a gateway to nicotine addiction and cigarette smoking. These subframes were present in six and 12 of the articles, respectively (Table A6). For example, the unsafe alternative subframe was often presented to "contradict claims by electronic cigarette manufacturers that their products are safe alternatives to tobacco and contain little more than water vapor, nicotine and propylene glycol, which is used to create artificial smoke in theatrical productions" (Zezima, 2009b, para. 2). The last subframe, e-cigarettes as a gateway to nicotine addiction and cigarette smoking, was mentioned often in the newspaper articles. For example, one article described e-cigarettes in such a way that they "could conversely lead to more smoking" (Anonymous, 2009, para. 5). This subframe was also often found in conjunction with the e-cigarette's influence on youth subframe, as noted in one USA Today article: "Many teens who start with e-cigarettes may be condemned to struggling with a life-long addiction to nicotine and conventional cigarettes" (Koch, 2013, para. 3).

The second-most prevalent frame was the debate and controversy frame, accounting for 30% (n=17) of the newspaper articles (Table A3). In debate-and-controversy framed articles, the author(s) presented both sides of the e-cigarette argument. As one *Los Angeles Times* article reported, for example, "If they're substantially less dangerous than regular cigarettes but substantially more dangerous than not smoking at all, should they be subject to the laws the govern cigarettes on TV advertising, sales to minors and restrictions on smoking?" and "Should the devices be considered virtually the same as cigarettes when it comes to secondhand inhalation indoors?" (The haze around e-cigarettes, 2013, para. 2).

A benefit frame was used in only 12 of the newspaper articles (Table A3). The effective smoking cessation subframe was present in six of the benefit-framed articles (50%), the e-

cigarettes as a healthy and safer alternative subframe was present in five of the articles (41.67%) and e-cigarettes as a social alternative was present in four of the articles (33.33%) (Table A7). For example, benefit-framed articles presented statements such as "The user 'vapes,' or puffs on the vapor, to get a hit of the addictive nicotine (and the familiar sensation of bringing a cigarette to one's mouth) without the noxious substances found in cigarette smoke" (Tierney, 2011, para. 2). And "Users and distributors say e-cigarettes address both the nicotine addiction and the behavioral aspects of smoking – the holding of the cigarette, the puffing, seeing the smoke come out and the hand motion – without the more than 4,000 chemicals found in cigarettes" (Associated Press, 2011b).

An informational frame was present in only 11% (n=6) of newspaper articles. This frame was found when the article stated information without a bias toward e-cigarettes as a risk or a benefit. As one *Los Angeles Times* article reported, "Since the devices came out nearly a decade ago, sales have jumped so quickly that some analysts predict they will outsell traditional cigarettes within a decade" (Pfeifer, 2013, para. 7).

RQ2: What was the dominant framing of e-cigarettes in information provided by health websites?

(Insert Table A4here)

A total of 18 articles were examined from health websites. With eight relevant articles, Yahoo! Health produced the most of the five health websites, followed by Drugs.com with five articles, NIH and MayoClinic.com with two, and Web MD with just one article (Table A5).

(Insert Table A5 here)

Of the 18 qualifying articles, 66.67% (n=12) portrayed e-cigarettes as a health risk (Table A4). Of the 12 risk-framed articles from health websites, 83.3% (n=10) mentioned e-cigarettes'

unknown safety and health risks. Yahoo! Health posted a CDC release that elaborated on the unknown risks, "Because e-cigarettes are largely unregulated, the agency (FDA) does not have good information about them, such as the amounts and types of components and potentially harmful constituents" (2013c, para.6). The influence e-cigarettes have on youth was the second-most prominent subframe under risk, appearing in 75% (n=9) of health website articles. For example, Tim McAfee, Director of the CDC Office on Smoking and Health, was quoted in an article on Drugs.com: "We are worried about the adolescent use of nicotine, because the adolescent brain is uniquely susceptible to addiction and nicotine is harmful to their brain development" (Drugs.com, 2013, para. 9). Another Drugs.com article mentioned the attraction of youth to the many possible flavors available with e-cigarettes, "These products are marketed and sold to young people…They are also available in different flavors such as chocolate and mint, which may appeal to young people" (Drugs.com, 2009, para.1).

The risk that e-cigarettes could be used as a gateway to nicotine addiction or cigarette smoking was found in 41.67 % (n=5) of website articles, followed by 33.33% (n=4) of articles portraying e-cigarettes as an unsafe alternative to traditional cigarettes (Table A6). For example, an article on Yahoo! Health described e-cigarettes as "dual use — They're smoking cigarettes in certain circumstances, and in other circumstances, they're continuing to smoke cigarettes" (McCullen, 2013, para. 12).

E-cigarettes were portrayed as a health benefit in a total of three (16.67%) website articles (Table A4). All three (100%) of the benefit articles described e-cigs as an effective smoking cessation device. "E-cigarettes have the potential to increase the number of smokers who quit and to reduce costs to quitters and health care systems," according to an article found on NIH (Preidt, 2013, para. 12). However, only one article mentioned e-cigs as a healthier or

safer alternative to traditional cigarettes: "It is the only available product that deals with both the chemical (nicotine delivery) and psychological (inhaling and exhaling 'smoke', holding it, etc.). addiction to smoking" (Drugs.com, 2012, para. 7) (Table A7). There were no website articles that employed the benefit subframe that e-cigs are a social alternative to traditional cigarettes.

Following the dominant benefit and risk frames, website articles were also found to be framed as informational or debate and controversy related to e-cigarettes. Health website articles were framed as informational when simple, neutral information about e-cigarettes was presented. Two of the total 18 health website articles were framed as informational. For example, one article from Yahoo! Health simply described the electronic cigarette and how it's used. "Electronic cigarettes, also known as e-cigarettes, are battery-operated devices shaped like a traditional cigarette" (Healthline Editorial Team, 2010). Only one of the health website articles was framed as debate and controversy. The single debate and controversy frame from a website came from Yahoo! Health, which summed up the debate concerning e-cigarettes as, "Going forward, one question that still remains unanswered is whether electronic cigarettes are any less harmful than their analog equivalents" (Weller, 2013, para.8).

(Insert Table A7 here)

RQ3: Who are the dominant sources being used and with what frame are they most often associated?

Taking into consideration that sources provide practical information for a relevant subject, and also increase legitimacy and authority for the article (Franklin & Carlson, 2010), researchers established figures for source choice and use. Three groups of sources appeared dominant in the analysis of newspapers and health websites: health sources, industry sources, and public sources. The health group included sources from health organizations and medical

associations such as the CDC, the FDA, the National Institutes of Health, the American Cancer Society, the American Lung Association, and the Campaign for Tobacco-Free Kids; physicians, pharmacists, health institutions and their representatives, and professors in the fields of health and medicine. The industry group included sources with a financial stake in either the tobacco or e-cigarette industry. This group consisted of e-cigarette manufacturers such as NJOY, Ruyan, Blu eCigs, Crown 7 and Smoke Anywhere; American tobacco companies such as Altria and Lorillard; and e-cigarette and tobacco associations such as the Tobacco Vapor Electronic Cigarette Association and the Electronic Cigarette Industry Trade Association. Finally, the public group of sources included any source other than those falling into the health or industry group: e-cigarette users, political officials, judicial representatives, health journalists and reporters, business owners and employees, and celebrities. Of the three groups, health sources appeared most frequently; 47% of all sources used in the examined articles were attributed to those included in the health group, compared to 22% of industry sources and 31% public sources (Table A8).

(Insert Table A8 here)

It was found that risk-framed articles were dominated most by health sources - 63% (n=111), followed by industry at 21% (n=35) and public at 16% of sources (n=31) (Table A9). Health sources were least prevalent in informational-framed articles (7%). Benefit-framed articles featured public sources (46%) and health sources (40%) almost equally but lacked support from industry sources (14%) (Table A9). Overall, industry sources were used heavily in risk-framed (38%) and debate-and-controversy-framed articles (37%). Nearly half of all public sources in the examined articles were presented in debate-and-controversy-framed articles (48%). Additionally, public sources dominated debate-and-controversy-framed articles (43%)

although in comparison to other frame types, this frame was the most balanced in its use of all source types (Table A9).

(Insert Table A9 here)

Discussion

The purpose of newspapers is to present unbiased information from both sides of a story in order to remain neutral and allow readers to make their own decisions on a given subject. Health information websites, on the other hand, are meant to be a resource to readers looking to find information on a health topic, while presenting that information in a credible manner with legitimate sources.

As the researchers examined the articles from newspapers and health websites that mentioned e-cigarettes, they looked carefully at how e-cigarettes were presented as a healthy alternative to smoking and how the e-cigarette was presented. In 2013, the CDC report on the increased use of e-cigarettes by youth was published. Subsequently, an increase in articles mentioning e-cigarettes was found, with over half of the articles in the sample coming from this year. The majority of the articles presented in the sample were risk framed, and the majority of the articles also mentioned the health effects of e-cigarettes and youth. The majority of the articles, being risk-framed, encourage the reader to think that e-cigarettes are not a healthy alternative to cigarette smoking, as well as a risk for youth because of the lack of regulation of e-cigarettes.

The sources used within the articles also helped to understand what frames were presented and the frames' probable influence on the intended audience. When risk frames were presented, the majority of sources were from the health group. In using these types of sources,

the results show that the articles, for the most part, do not always support e-cigarettes as a healthy alternative to smoking.

Overall, from the findings presented, it was determined that the media do not currently present e-cigarettes as a healthy alternative to smoking. In fact, the overall frame present in both newspaper and health information website articles was a risk frame, and many of the articles presented e-cigarettes' influence on youth as a risk and were concerned that this new gadget would entice the younger generation to become new users of nicotine and tobacco products. Thus, while the device can be seen as innovative and interesting to new users, the media, overall, are presenting the e-cigarette as a risk to all readers through the use of negative framing.

The findings presented here cannot agree or disagree with previous studies because e-cigarettes have not been studied before from a communication perspective. This study presents new information that supports the controversial debate about the purpose of e-cigarettes as a healthy and safer alternative to conventional cigarettes and the need for FDA regulation. Additionally, the findings of this study offer support for classifying e-cigarettes as a potential danger to youth. Despite the latter, the study is not without limitations. Furthermore, the data collection method restricted the sample to stories dated from 2009 to 2013, as there were no articles found from 2006 to 2008. Therefore, an extended time frame may contribute to a larger sample size. Finally, due to the subjective nature of qualitative research partly used in this study, the results may vary among other researchers.

In conclusion, future research could expand on the findings presented here by examining other resources, such as television news broadcasts, blogs, videos, and social media sites. Additionally, experimental studies could be conducted to determine effects of e-cigarettes, and surveys or interviews would allow for the discovery of the public's attitudes, beliefs and

knowledge of the product. Future research could use this study as a model for a framing analysis on how e-cigarettes are viewed as a supplement to cigarette smoking in accordance with the proposed city and state laws, which would regulate e-cigarettes in the same way conventional cigarettes are regulated; thus, prohibiting e-cigarettes from being used in public places.

References

Anonymous. (2009, Oct 26). Smoking out e-cigarettes. *Los Angeles Times*. Retrieved from http://search.proquest.com/docview/422313510?accountid=10920

Associated Press. (2011). "E-cigarettes to get FDA regulations like tobacco." CBSNews. Retrieved from http://www.cbsnews.com/2100-201_162-20057307.html

Associated Press. (2011, Apr 26). Regulator will treat e-cigarettes like tobacco. *New York Times.* Retrieved from http://search.proquest.com/docview/863319911?accountid=10920

Barrett, S.P. (2010). "The effects of nicotine delivery, denicotinized tobacco, and nicotine-containing tobacco on cigarette craving, withdrawal, and self-administration in male and female smokers." *Behavioral Pharmacology*, 21(2): p. 144-152.

Brandt, Allan. 1990. The cigarette, risk, and American culture. Daedalus, 119 (4): 155-176.

Buchhalter, A.R., Acosta, M.C., Evans, S.E., Breland, A.B., and Eissenberg, T. (2005). "Tobacco abstinence symptom suppression: The role played by the smoking-related stimuli that are delivered by denicotinized cigarettes." *Addiction*, 100 (4): p. 550-559.

Bullen, C., McRobbie, H., Thornley, S., Glover, M., Lin, R. and Laugseen, M. (2010). "Effect of an electronic nicotine deliver device (e-cigarette) on desire to smoke and withdrawal, user preferences and nicotine delivery: Randomized cross-over trial. "*Tobacco Control,* 19(2): p. 98-103.

Cahn, Z. and Siegel, M. (2011). "Electronic cigarettes as a harm reduction strategy for tobacco control: A step forward or a repeat of past mistakes?" *Journal of Public Health Policy*, 32(1): p. 16-31.

Centers for Disease Control and Prevention. (2012). "A Report of the Surgeon General: Preventing Tobacco Use Among Youth and Young Adults." Retrieved from http://www.cdc.gov/tobacco/data_statistics/sgr/2012/consumer_booklet/pdfs/consumer.pdf

Centers for Disease Control and Prevention. (2013a). "Adult Cigarette Smoking in the United States: Current Estimate." Retrieved from http://www.cdc.gov/tobacco/data_statistics/fact_sheets/adult_data/cig_smoking/index.htm

Centers for Disease Control and Prevention. (2013b). "Youth and Tobacco Use." Retrieved from http://www.cdc.gov/tobacco/data_statistics/fact_sheets/youth_data/tobacco_use/index.htm

Centers for Disease Control and Prevention. (2013c). "E-cigarette use more than doubles among U.S. middle and high school students from 2011-2012." Retrieved from http://www.cdc.gov/media/releases/2013/p0905-ecigarette-use.html

Centers for Disease Control and Prevention. (2013d). "Smoking and Tobacco Use Fast Facts." Retrieved from http://www.cdc.gov/tobacco/data_statistics/fact_sheets/fast_facts/index.htm

Choi, K. and Forster, J. (2013). "Characteristics associated with awareness, perceptions, and use of electronic nicotine delivery systems among young US Midwestern adults." *American Journal of Public Health*, 103 (3): p. 556-561.

Chong, D., & Druckman, J. N. (2007). Framing theory. *Annu. Rev. Polit. Sci.*,*10*, 103-126.

Druckman, J. N. (2001). "On the limits of framing effects: who can frame?" *Journal of Politics*, *63*(4), 1041-1066.

Drugs.com. (2009). "Electronic Cigarettes." Retrieved from http://www.drugs.com/fda/electronic-cigarettes-12568.html

Drugs.com. (2012). "Electronic Cigarettes Have Slight Impact on Heart: Study." Retrieved from http://www.drugs.com/news/electronic-cigarettes-have-slight-impact-heart-study-40042.html

Drugs.com. (2013). "Teens' use of e-cigarettes doubles in a year: CDC." Retrieved from http://www.drugs.com/news/teens-e-cigarettes-doubles-year-cdc-47219.html

Eissenberg, T. (2010). "Electronic nicotine delivery devices: Ineffective nicotine delivery and craving suppression after acute administration." *Tobacco Control*, 19(1): p. 87-88.

Ernst, E. (2002). The risk–benefit profile of commonly used herbal therapies: Ginkgo, St. John's Wort, Ginseng, Echinacea, Saw Palmetto, and Kava. *Annals of Internal Medicine*, *136*(1), 42-53.

E-Smoking Among Teenagers. (2013, September 15). *The New York Times*. Retrieved from http://www.nytimes.com/2013/09/16/opinion/e-smoking-among-teenagers.html

Etter, J.F. and Bullen, C. (2011). "Electronic cigarette: users profile, utilization, satisfaction and perceived efficacy." *Addiction*, 106 (11): p. 2017-2028.

Franklin, B., & Carlson, M. (Eds.). (2010). *Journalists, sources, and credibility: New perspectives* (Vol. 1). Routledge. Retrieved from Goniewicz, M. L., & Zielinska-Danch,

W. (2012). "Electronic cigarette use among teenagers and young adults in Poland." *Pediatrics*, *130*(4), e879-e885.

Goodall, C. & Appiah, O. (2008). "Adolescents' perceptions of Canadian cigarette package warning labels: Investigating the effects of message framing." *Health Communication*, 23(2): p. 117-127.

Grana, R.A. (2013). "Electronic cigarettes: A new nicotine gateway." [Editorial]. *Journal of Adolescent Health,* 52: p. 135-136.

Healthline Editorial Team. (2010). "Smoking Cessation." Retrieved from http://health.yahoo.net/health/quit-smoking-aids

Hertog, J., and McLeod, D. (2001). "A Multiperspectival approach to framing analysis: A field guide," in S. Reese, O. Gandy and A. Grant (Eds.), *Framing Public Life: Perspectives on Media and Our Understanding of the Social World*, p. 139-161. New Jersey: Erlbaum.

Husselbee, P., & Stempel III, G. (1997). "Contrast in U.S. media coverage of two major Canadian elections." *Journalism & Mass Communication Quarterly*, (74), 591-601. doi: 10.1177/107769909707400312

Koch, W. (2013, September 5). "E-cigarette use doubles among U.S. teens." USA TODAY (Arlington, VA) ARC. Retrieved October 25, 2013, from NewsBank on-line database (Access World News)

Leonard, W. "Utah teens are experimenting with e-cigarettes." *Deseret News*. (2012, Jan 24). Retrieved from: http://www.deseretnews.com/article/705397994/Utah-children-are-experimneting-with-e-cigarettes.html?

Ling, P.M. and Glantz, S.A. (2002). "Why and how the tobacco industry sells cigarettes to young adults: evidence from industry documents." *American Journal of Public Health*, 92(6): p. 908-916.

McCullen, L. (2013). "E-Cigarette use doubles among young people." Retrieved from http://health.yahoo.net/articles/smoking/e-cigarette-use-doubles-among-young-people

Miller, M., and Riechert, B. (2001). "The spiral of opportunity and frame resonance: mapping the issue cycle in news and public discourse," in S. Reese, O. Gandy and A. Grant (Eds.), *Framing Public Life: Perspectives on Media and Our Understanding of the Social World*, p. 107-121. New Jersey: Erlbaum.

Pearson, J., Promoff, G., Dube, S.R., and Arrazola, R. (2011). "E-cigarette (ENDS) awareness, use, and harm perceptions in American adults." *American Journal of Public Health,* 102: p. 1758-1766.

Pepper, J., Reiter, P., McRee, A.L., Cameron, L., Gilkey, M., and Brewer, N. (2013). "Adolescent males' awareness of and willingness to try electronic cigarettes." *Journal of Adolescent Health*, 52: p. 144-150.

Pfeifer, S. (2013, Oct 02). "Lorillard buys British e-cigarette firm SkyCig." *Los Angeles Times*. Retrieved from http://search.proquest.com/docview/1438267301?accountid=10920

Pierce, J. (2002). "Harm reduction or harm maintenance?" [Editorial]. *Nicotine & Tobacco Research*, 4(2): p. 53-54.

Preidt, R. (2013). "E-cigarettes may equal nicotine patches for smoking cessation." Retrieved from http://www.nlm.nih.gov/medlineplus/news/fullstory_140463.html

Schneider, T. R., Salovey, P., Pallonen, U., Mundorf, N., Smith, N. F. & Steward, W. T. (2001).”Visual and auditory message framing effects on tobacco smoking.” *Journal of Applied Social Psychology*, 31: p. 667–682.

Silagy C, Lancaster T, Stead L, Mant D, Fowler G. (2004). “Nicotine replacement therapy for smoking cessation.” *Cochrane Database of Systematic Reviews*, Issue 3. Art. No.: CD000146. DOI: 10.1002/14651858.CD000146.pub2. Retrieved from http://academicdepartments.musc.edu/psychiatry/research/cns/upadhyayareferences/Silagy_2004.pdf

Stacks, D. (2011). Primer of Public Relations Research. New York, NY: The Guilford Press.

Tankard, J. (2001). “The empirical approach to the study of media framing,” in S. Reese, O. Gandy and A. Grant (Eds.), *Framing Public Life: Perspectives on Media and Our Understanding of the Social World*, p. 95-106. New Jersey: Erlbaum.

“The haze around e-cigarettes; it's not yet certain whether 'vaping' is dangerous. but policymakers are deciding now whether to regulate it.” (2013, Oct 03). *Los Angeles Times*. Retrieved from http://search.proquest.com/docview/1438937100?accountid=10920

Tierney, J. (2011, Nov 08). A tool to quit smoking has some unlikely critics. *The New York Times.* Retrieved from http://search.proquest.com/docview/902536958?accountid=10920

U.S. Department of Health and Human Services. (2013). “Electronic cigarettes.” Retrieved from http://betobaccofree.hhs.gov/about-tobacco/Electronic-Cigarettes/index.html

U.S. Food and Drug Administration. (2013). “Electronic cigarettes (e-cigarettes).” Retrieved from http://www.fda.gov/NewsEvents/PublicHealthFocus/ucm172906.htm

Weller, C. (2013). "E-cigarettes Entering Mainstream: What's the Future for Smokeless E-cigs?" Retrieved from http://health.yahoo.net/articles/smoking/e-cigarettes-entering-mainstream-whats-future-smokeless-e-cigs

Westenberger, B.J. (2009). *Evaluation of e-Cigarettes*. St. Louis, MO: Department of Health and Human Services, Food and Drug Administration, Center for Drug Evaluation and Research, Division of Pharmaceutical Analysis, Retrieved from http://truthaboutecigs.com/science/2.pdf.

Zeller, M. and Hatsukami, D. (2009). "The strategic dialogue on tobacco harm reduction: A vision and blueprint for action in the US." *Tobacco Control*, 18(4): p. 324-332.

Zezima, K. (2009a, Jun 02). "Cigarettes with no smoke, tar or, as it happens, U.S. assent." *The New York Times.* Retrieved from http://search.proquest.com/docview/434117748?accountid=10920

Zezima, K. (2009b, Jul 23). Analysis finds toxic substances in electronic cigarettes. *The New York Times*. Retrieved from http://search.proquest.com/docview/434126708?accountid=10920

Appendix A

Descriptive and Analytical Tables and Figures

Table A1: *Distribution of Newspaper Articles and Website Stories*

Year	2006	2007	2008	2009	2010	2011	2012	2013
Frequency	0	0	0	12	9	6	4	43
Percent	0%	0%	0%	16%	12%	8%	5%	58%

Table A2: *Description of Final Newspaper Sample*

Newspaper	Frequency
New York Times	13
Washington Post	11
Los Angeles Times	12
USA Today	18
New York Daily News	2
Total	*56*

Table A3: *Dominant Newspaper Frames*

Frame	Frequency	Percent
Risk	21	37.50%
Benefit	12	21.50%
Informational	6	11%
Debate & Controversy	17	30%
Total	56	100%

Table A4: *Dominant Website Frames*

Frame	Frequency	Percent
Risk	12	66.67%
Benefit	3	16.67%
Informational	2	11.11%
Debate & Controversy	1	5.55%
Total	18	100%

Table A5: *Description of Final Website Sample*

Website	Frequency
Yahoo! Health	8
Drugs.com	5
NIH	2
MayoClinic.com	2
Web MD	1
Total	*18*

Table A6: *Newspaper and Website Risk Frame Subframes*

Subframes	Newspaper frequency	Newspaper percent	Website frequency	Website percent
Influence on youth	16	76%	9	75%
Unknown safety/health risks	14	66.67%	10	83.30%
Gateway to nicotine addiction/cigarette smoking	12	57%	5	41.67%
Unsafe alternative	6	28.50%	4	33.33%

Table A7: *Newspaper and Website Benefit Frame Subframes*

Subframes	Newspaper frequency	Newspaper percent	Website frequency	Website percent
Effective smoking cessation tool	6	50%	3	100%
Healthy/safer alternative	5	41.67%	1	8.30%
Social alternative	4	33.33%	0	0%

Table A8: *Source Type and Use*

Source Type	Frequency	Percent	Direct quotes	Paraphrased quotes
Health	198	47%	80	135
Industry	92	22%	57	53
Public	129	31%	76	76
Total	419	100%	213	264

Table A9.

Dominant Frames and Sources Used

Source Type	Benefit frame %	Freq	Risk frame %	Freq	Informational frame %	Freq	Debate & Controversy frame %	Freq
Health	40%	26	63%	111	40%	13	33%	48
Industry	14%	9	21%	35	42%	14	24%	34
Public	46%	30	16%	31	18%	6	43%	62
Total	100%	65	100%	177	100%	33	100%	144