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“Think it. Mix it. Vape it.”: A Content Analysis on E-cigarette Radio Advertisements

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Introduction

The use of e-cigarettes (ECs) in the U.S. has increased considerably since their introduction to the market in 2007, and continues to grow, particularly among youth and young adults (Marynak et al., 2017; Noel, Rees, & Connolly, 2011). Data from 2011–2015 National Youth Tobacco Surveys (NYTS) show that ECs are the most commonly used tobacco product in the past 30 days among middle (5.3%) and high (16%) school students (Singh et al., 2016). Among adults in the U.S., National Health Interview Survey data from 2014 estimated that 3.8% (5.5 million) of adults had used ECs in the past 30 days and more than 20% of adults ages 18–24 had ever tried an EC (Schoenborn & Gindi, 2015; Syamlal, Jamal, King, & Mazurek, 2016). In 2016, ECs came under the authority of the U.S. Food and Drug Administration (FDA) deeming rule to be regulated as tobacco products under The Family Smoking Prevention and Tobacco Control Act of 2009 (U.S. Food & Drug Administration, 2018). The deeming rule requires premarket review of scientific evidence by FDA in order for manufacturers to make claims that ECs reduce the harm or risk of tobacco-related disease associated with conventional cigarettes and requires EC products to have a warning label stating that these products contain nicotine (U.S. Food & Drug Administration, 2018). However, the FDA currently does not address EC advertising, and unlike conventional cigarettes, there are no regulations banning EC advertising through any outlet (Ramamurthi, Gall, Ayoub, & Jackler, 2016).

Advertising for EC products increased from \$6.4 million in 2011 to \$115 million in 2014 and is expected to increase further (Ramamurthi et al., 2016). In comparison, conventional cigarette and smokeless tobacco companies spent more than \$9 billion on advertising and promotional materials in 2014 (Centers for Disease Control and Prevention, 2016). Conventional cigarette advertising has made a significant impact in smoking. Youth were commonly exposed to cigarettes via advertisements on the radio and on TV, before these outlets were prohibited to advertise cigarettes in 1971 through the Public Health Cigarette Smoking Act (U.S. Department of Health & Human Services, 2012a). The 1994 Surgeon

General's Report documented a body of evidence that cigarette advertising is positively associated with initiation and continued use of conventional cigarettes among youth (U.S. Department of Health & Human Services, 1994). For example, youth participating in an experiment who correctly identify cigarette brands in print advertisements where they had been removed were more likely to smoke cigarettes (Botvin, Botvin, Michela, Baker, & Filazzola, 1991).

The lack of restrictions on EC advertising and associated exposures to EC media may be linked to increases in youth EC use. In a study conducted using NYTS data from 2014, self-reported exposure to EC advertisements from various outlets was found to be significantly associated with increases in EC use among youth (Dai & Hao, 2016). A randomized controlled experiment determined that youth aged 13–17 years who had never used ECs were 50% more likely to report wanting to try an EC soon after viewing four print EC advertisements in comparison to a control group that completed the survey before viewing the same advertisements (Farrelly et al., 2015). Results from a 2013 experimental study among a sample of U.S. adult cigarette smokers (age 18 or older) who had never used ECs found that interest in trying ECs increased when online advertisements highlighted differences between combustible cigarettes and ECs, including cost and health benefits of ECs (Pepper, Emery, Ribisl, Southwell, & Brewer, 2014). This finding is consistent with previous findings that adults who use ECs perceived them to be healthier than and can help them quit smoking conventional cigarettes (Pepper & Brewer, 2014).

Although there is emerging evidence on the influence of print EC advertising on perceptions and use of ECs, particularly among youth, the evidence on EC radio advertising is considerably more limited. According to Nielsen data from 2015, more than 90% of U.S. adults (age 18 or older) listened to the radio each week, averaging nearly 13 hours weekly (Nielsen, 2015a). Radio is second only to television in its outreach to adults in the U.S. (Nielsen, 2015a). Radio listening in 2015 among younger audiences reached approximately 90% of youth aged 6–17 years, where nearly half of youth who listen to the radio without adults present were listening to adult contemporary stations (Nielsen, 2015b). Radio is an effective platform for advertising and can result in a return of up to \$17 for every dollar expended (Nielsen, 2015a). Expenditures on EC radio advertisements increased from \$364,794 in 2011 to \$1.6 million in 2012 (Kim, Arnold, & Makarenko, 2014). Radio EC advertisements make a variety of claims regarding the health and economic benefits of using ECs, and exposure to these advertisements could increase misperceptions regarding the safety of ECs (Ramamurthi et al., 2016). In an international survey of current and former cigarette smokers conducted in 2010–2011, 85% of EC users reported using ECs as a means to quit conventional cigarettes. However there was no difference in conventional cigarette quit rates among EC users and non-EC users (Adkison et al., 2013). Importantly, no conclusive evidence exists to support the claim that ECs are an effective tool to quit cigarette smoking or are free from harm, though advertisements in many forms, including radio, continue to make this claim (Grana, Benowitz, & Glantz, 2014; Ramamurthi et al., 2016).

To date, there are no published content analyses regarding EC radio advertisements, as the current literature focuses primarily on the content of EC advertisements on the Internet (Grana & Ling, 2014; Kim et al., 2014; Ramamurthi et al., 2016). The current study utilizes

radio advertisements that aired in the U.S gathered by a national media-tracking firm. The purpose of this study is to describe the prominent themes in marketing messages used in EC radio advertisements. Analyzing the content of these EC radio advertisements will inform researchers and policymakers on claims and methods EC companies use to market their products.

Methods

Sample Identification

Competitrack, a comprehensive advertising tracking firm that monitors 22 various traditional and emerging media sources (e.g., television, radio, online, etc.), was used to identify radio advertisements for ECs. Competitrack gathers all data in-house, where data was identified less than 48 hours of airing and captures the ad as it is presented to the consumer. Advertisements for this study were identified by selecting the radio medium using Competitrack's search tool. Competitrack defined the EC category as a cigarette-shaped device containing a nicotine-based liquid that is vaporized and inhaled, used to simulate the experience of smoking tobacco. Electronic vapor cigars were also classified under the EC category, along with e-hookahs, e-vaporizers, e-cig accessories such as e-liquids, liquids, starter kits, as well as e-cig retailers and suppliers. The current analysis included any EC radio advertisements that aired between January 1, 2015 and August 30, 2016 within 31 U.S. markets (Atlanta, Baltimore, Boston, Charlotte, Chicago, Cincinnati, Cleveland, Dallas-Fort Worth, Denver, Detroit, Hartford, Houston, Indianapolis, Las Vegas, Los Angeles, Miami-Fort Lauderdale, Milwaukee, Minneapolis-St Paul, New York City, Orlando, Philadelphia, Phoenix, Pittsburgh, Portland (OR), Sacramento, San Diego, San Francisco-Oakland, Seattle-Tacoma, St. Louis, Tampa-St. Petersburg, Washington, DC) covering 618 radio stations. These U.S. markets represent some of the largest major cities/metropolitan areas reaching approximately 122,213,500 people (or 38.2% of the population on January 1, 2015) 12 years and older (Nielsen, 2015c). All advertisements, including notifications of new advertisements recently added, within the EC category were obtained from the Competitrack's proprietary online database. Attached to radio media obtained was a spending report, which included information on the media channel, first and last run date, total number of advertisement occurrences, and dollar amount spent for each radio advertisement.

Content Coding

All available radio EC advertisements were coded based on a methodology used in prior analyses of EC print and internet advertisements (Grana & Ling, 2014; Richardson, Ganz, Stalgaitis, Abrams, & Vallone, 2014) and adapted according to content characteristics specific to EC radio advertisements. The sample included nineteen radio advertisements from four different EC brands (VaporFi, Logic, Vapor Shark, and V2 Cigs) were coded for the presence or absence of content themes using an instrument developed for this study. Nielsen data from 2012–2013 indicate Logic as the third best-selling brand in the US after blu and NJOY (Giovenco et al., 2016). The coding instrument was pilot tested with 5 unique EC radio advertisements available on [YouTube.com](https://www.youtube.com) that were not included in the Competitrack database used in this study. Two trained research assistants coded all ads

independently in December 2016 and January 2017. Accordingly, definitions of content items were revised to achieve greater reliability across raters (Grana & Ling, 2014). The instrument was finalized in February 2017. The lead author (who also participated in pilot coding) reviewed any inter-rater differences and made final decisions (Richardson et al., 2014). Results across coders were compared and examined for reliability using Cohen's Kappa ($\kappa=0.78-1.00$). From the 28 total content themes, 4 main content categories were created: 1) product characteristics; 2) health-related themes; 3) subjective themes; and 4) selling propositions. Table 1 contains the final descriptions, the response categories, and examples of each content theme.

Data Analysis

Analyses were performed using STATA 12.0 (College Station, TX). Data from the radio spending reports were analyzed for location, duration, frequency, and advertising cost. The radio advertisements were coded for frequency of content themes by brand.

Results

Radio Spending Summary

Nineteen radio advertisements were identified in 12 of the 31 markets, where overall spending across these 19 advertisements was \$3,223,000. Logic EC advertisements aired in 6 different cities, were on air for an average of 189 days, had 14,597 time slots, and spent on average \$211.25 per advertisement and \$3,083,600 in total on advertisements (Table 2). VaporFi advertised in only one city and had an average duration of 43 days, yet spent an average of \$183.47 per advertisement and \$87,700 in total. Vapor Shark advertisements advertised in 2 different cities with an average of 68 days on air, \$55.90 spent on average per advertisement, and \$39,800 spent on advertisements in total. V2Cigs advertisements aired in 6 different cities and had an average duration of 43 days and an average cost spent of \$43.59 per advertisement, where \$11,900 was spent in total.

Product Characteristics

The majority of all radio advertisements included describing taste ($n=16$) and benefits ($n=14$; Table 3). For example, all VaporFi, Logic, and V2Cigs brand advertisements discussed the satisfying taste of their ECs. All VaporFi and V2Cigs advertisements discussed the benefits of their ECs unrelated to health, such as not smelling like conventional cigarettes. Ten advertisements, including all Logic and V2Cigs, discussed the technology or other characteristics of the devices, such as the battery power. Nine advertisements discussed the variety of flavors available for their products, where all VaporFi and V2Cigs advertisements included flavors. VaporFi advertisements even included specific flavors, such as "Catch Ya Latte". No advertisements claimed to have a 'green' product, or an EC that was environmentally friendly.

Health-related Themes

Over half the advertisements stated their products are an alternative to conventional cigarette smoking, including both V2Cigs advertisements. Only the Logic advertisements ($n=7$) included a health disclaimer within the radio advertisement describing that their products

contained nicotine. Five advertisements emphasized that ECs could be used anywhere, even in smoke-free establishments. Four advertisements discussed their e-liquids as being organic, which was claimed in both V2Cigs advertisements. Three advertisements made claims about reducing harm (for example, “It’s truly everything you like about smoking without the tar, tobacco, and smoke” V2Cigs), which was also utilized in both V2Cigs advertisements. No advertisements were endorsed by a physician.

Subjective Themes

Ten advertisements discussed how their ECs increased individuality or the ability to take control of their own life, and this theme was present in all VaporFi advertisements. Five advertisements utilized messages that appealed to youth, such as referencing a sporting event. Sociability (appealed to increasing friendship by using ECs) and social positioning (associated ECs with social acceptability) were techniques used in one advertisement each. No advertisements used a romantic approach to advertise their product. V2Cigs did not use any subjective themes in their advertisements.

Selling Propositions

The majority of advertisements included the following content themes: background music (n=14), a comparison to other EC brands (n=12), price (n=11), and a website or social media page (n=11). All of the Logic advertisements (n=7) included a message restricting sales to adults over 18 years of age. Some advertisements included sound effects (n=5) and mentioned upcoming holidays (n=4). Two advertisements offered free samples or referenced a sporting event, and one advertisement included a local store address. No advertisements demonstrated using the product (such as inhaling or exhaling sounds).

Discussion

As conventional cigarette advertising has shown positive associations with cigarette smoking uptake and prevalence, bans on cigarette advertising, including on the radio in 1971, have been executed to prevent exposure to these advertisements (U.S. Department of Health & Human Services, 1994). However, as evidence is emerging linking EC advertising with increased EC use (U.S. Department of Health & Human Services, 2012b), no restrictions have been implemented for EC advertisements. Previous research efforts on EC advertising content include point-of-sale (Ganz et al., 2015), retail websites (Grana & Ling, 2014), and YouTube videos (Paek, Kim, Hove, & Huh, 2014). However, this is the first known study that analyzed the content of EC radio advertisements. As the majority of both youth and adults listen to the radio (Nielsen, 2015a, 2015b), understanding EC company advertising as well as the content of advertisements listeners are exposed to can be important to support future research on ECs and regulatory efforts to mitigate their public health burden.

Examination of radio spend report data in context with content themes could be important to determine details about which messages are frequently on air in their respective markets. In the current study, Logic advertisements had the most radio advertisements, ran the longest, had the most time slots, and spent the most per advertisement in comparison to the other 3 EC brands. Interestingly, Logic was the only brand to include a health disclaimer on the

addictive property of nicotine as well as an age restriction of selling products only to adults over the age of 18 years old. However, current EC advertisements for products/devices that meet the “covered tobacco product” description require warning labels regarding nicotine content and addictive properties as of August 2018 (U.S. Food & Drug Administration, 2018). As only 13% of teenaged-users believe their EC has nicotine (National Institute on Drug Abuse, 2016), including these nicotine warning labels could be effective to inform potential consumers. Studies on warning labels that include other EC constituents besides nicotine are necessary to determine what factors prevent and promote EC use in all populations. Logic advertisements also contained several themes, such as sports, humor, music, and sound effects, in some advertisements that could appeal to youth. Contrary to the other 3 brands, V2Cigs had the fewest advertisements, had the least amount of time slots, and spent the least amount per advertisements. While reaching several U.S. markets, V2Cigs utilized all product characteristic themes found as well as the themes that claimed their product will reduce harm, help quit cigarettes, are organic, are better in comparison to other EC brands, and are cheaper than cigarettes. Further research is necessary to determine if these advertisements are reaching vulnerable populations as well as being effective in increasing EC sales. Additionally, analyzing effects of differing time slots and the duration of advertisements could inform our understanding of the effectiveness of these features on advertisement reach.

Product characteristics utilized different content themes that appeal to an EC consumer, especially youth, who have cited top reasons for using ECs was curiosity and taste (Johnston, O’Malley, Miech, Bachman, & Schulenberg, 2016). Highlighting taste, whether through satisfaction or pleasure, was a key component of available radio advertisements. Taste was featured more than any other content theme analyzed and was included in all VaporFi, Logic, and V2Cigs advertisements. Another frequently utilized theme, benefits, described the advantages of these products beyond health-related reasons, such as not having a bad smell. Use of content related to EC benefits could appeal to current cigarette smokers who may be unaware of the health effects of ECs as well as youth who may be interested in hiding tobacco use from adults. Additionally, using messages about technology and device characteristics, a theme found in more than half of the radio advertisements, could appeal as novel and interesting to listeners. Although flavors are commonly offered for nearly every EC brand on retail websites (Grana & Ling, 2014), less than half of the radio advertisements mentioned flavored EC products. However, 3 of these brands announced having flavored ECs, which reached several markets nationwide. Further, VaporFi advertisements frequently mentioned specific flavors, such as “Pineapple Pow” and “Island Frost”. Along with other product advantages, such as taste, these themes could appeal to listeners who are unfamiliar with ECs, especially youth.

Health-related claims may increase use with a range of consumers, especially among adult conventional cigarette smokers who report using ECs due to perceptions of less harm and to quit conventional cigarettes (Patel et al., 2016). All 4 brands included advertisements that encouraged using ECs as an alternative to conventional cigarettes; this claim exists despite the lack of empirical evidence to support ECs as being effective in reducing or quitting conventional cigarettes (Carr, 2014; Grana et al., 2014). Some advertisements also included messages about being smoke-free as well as reducing harm while using ECs. Although

commonly perceived as safer than conventional cigarettes (Berg et al., 2015), EC aerosols still contain nicotine, which can be harmful to adolescent brain and cognitive development, and can consist of other harmful substances (U.S. Department of Health & Human Services, 2016). As the FDA deeming rule now requires premarket review in order for manufacturers to make claims about ECs being modified risk tobacco products (U.S. Food & Drug Administration, 2018), determining how EC brands convey health claims in advertisements in the future will be of importance when investigating the effects of EC advertising on use patterns.

Subjective themes in these advertisements were based on researcher interpretation of underlying messages that could potentially influence consumers (Lewis & Hill, 1998; Waiters, Treno, & Grube, 2001). Over half of the advertisements utilized individuality through inferring that EC use would enable people to take control of their own lives and have independence through using these products. Additionally, a quarter of advertisements directly appealed to youth through discussing using ECs at sporting events and concerts. Sociability and social positioning was utilized in the same Vapor Shark advertisement and indicated closer friendships and social acceptability when using ECs. These content themes could be measured in newer radio advertisements as well as advertisements through other outlets, such as [YouTube.com](https://www.youtube.com), to determine if this technique could be utilized in other media. Subjective themes, such as those relative to individuality and youth appeal, should be identified in all EC advertisements and studied further to determine if these techniques are effective in alluring potential consumers to use these products.

Several selling proposition themes were analyzed for frequency and have not been observed for other EC advertisements to our knowledge. Music playing in the background, comparison to other EC brands, referencing a website for further information, and highlighting price were found in more than half of the advertisements. Price often compared EC cost to cigarettes, emphasizing that ECs cost significantly less. Both comparison to other EC brands and price themes were utilized in at least one advertisement for all 4 brands. Humor, sound effects, and mentioning holidays, such as a New Year's resolution to quit smoking, were also utilized in several advertisements. More research is needed to determine if these themes are associated with the sale and use of ECs.

The number of radio advertisements found in this study was unexpectedly low, only 19 ads from 4 EC brands, and were marketed in only 12 of the 31 urban areas where nearly 40% of the US population reside. We theorize that the EC brands in our study used radio advertising to compete with more popular brands, like blu and NJOY, that utilized other advertising channels, such as TV and online via social media that target specific populations and are more costly. Three of the four brands identified in this analysis, VaporFi, Vapor Shark, and V2, were owned by private EC and vaping companies during the time of data collection, while Logic was purchased by a tobacco company in the midst of data collection. This difference in brand ownership may be reflected in differences of total amount spent in radio advertising amongst these brands (over \$3 million for Logic compared to a combined \$139,400 for the other three brands). VaporFi and Vapor Shark only advertised in one and two markets, respectively, and may have been local franchises using this market to reach the local vaping community. Further, we are unsure of the radio advertising in rural areas, as all

of the markets were urban. However, themes commonly found in these advertisements, including taste and benefits, could be appealing to listeners in both urban and rural locales.

In regard to other limitations, only Competitrack was used to collect EC radio advertising data. Other media tracking resources could be utilized to ensure all possible advertisements are captured for analysis. As there were only 4 EC brand advertisements, findings from themes in these advertisements cannot be generalized to all EC radio advertisements. Additionally, this descriptive study does not provide information on exposure or receptivity of these advertisements or effects on EC use behaviors. Finally, issues with coder reliability could potentially affect results; however, kappa scores indicate substantial or almost perfect agreement and a third-rater was utilized to resolve any discrepancies.

Conclusions

EC advertisements have previously shown an association with EC use behaviors. This is problematic, as EC use continues to increase within the U.S., especially among youth and young adults. As cigarette advertising was regulated for evidence of leading to smoking, this study adds to the growing body of evidence needed to inform EC regulations on advertising. Of the 4 EC brands featured in these radio advertisements, Logic had spent the longest duration, had the most advertisements and time slots, and had spent the most on radio advertisements. Additionally, Logic was the only brand that included messages on age restrictions and health warnings that their products contain nicotine, yet commonly used themes appealing to youth. The most common themes found in these 19 advertisements were taste, benefits, music, and comparison to other ECs, which could appeal to all listeners regardless of age. All of these radio advertisements have the potential to reach vulnerable populations, such as youth, and regulations are necessary to prevent exposure to EC and subsequent use.

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Table 1.

Descriptions of each the e-cigarette radio advertisement content themes

Content Theme	Definition	Response Categories	Example
Product Characteristics			
Flavor	Indicates whether a flavored product is being advertised	Flavored; Not flavored	"Now taste premium chef inspired flavors with the grand reserve collection, like Island Frost and Catch Ya Latte." VaporFi
Benefits	Presents a message about an advantage of using the product (e.g., "no smell, "not gross", customizable device)	Yes; No	"You won't bother anyone or stink up the place!" Vapor Shark
Technology/ Device	Highlights the technology and/or device characteristics (e.g., battery type/size, revolutionary, break-through, sophisticated, electronic capability)	Yes; No	"...with a powerful battery for a real, smooth draw." Logic
Taste	References the taste of the product (e.g., highlighting satisfaction, pleasure, freshness, long-lasting taste, aroma)	Yes; No	"It provides a satisfying experience." Vapor Shark
Green	Suggests that the product is greener or more environmentally friendly than cigarettes	Yes; No	No example was found in our sample.
Health-Related Themes			
Reduced Harm	Presents a message about reduced risks or reduced harm (e.g., "No tar", "Smoke-Free", "No Ash", product doesn't expose others to secondhand smoke, presence of less toxins than cigarettes)	Yes; No	"It's truly everything you like about smoking without the tar, tobacco, and smoke." V2Cigs
Smoke-free	Indicates that the product can be used to circumvent smoking restrictions (e.g., "smoke-free laws", "smoke-free rules", "clean indoor air regulations", or "smoking bans") or emphasizes the ability to use the product anywhere (e.g., offices, planes, restaurants, bars)	Yes; No	They can hook you up so you can vape in the car, home, office, movie theater, concert, you name it!" Vapor Shark
Quit Cigarettes	Conveys that product can be used to help reduce or quit cigarette/tobacco smoking (e.g., "switching", "alternative to smoking", "replacing")	Yes; No	"Smoking is a real bad habit and it's tough to quit. A great alternative to cancer sticks is vaping." Vapor Shark
Health Disclaimer	Features a health disclaimer (e.g., contains nicotine, product should not be used to quit, pregnant woman should not use it, nicotine is harmful)	Yes; No	"Logic products contain nicotine, an addictive substance."
Physician Endorsed	Indicates that the product/ad is endorsed by a physician (e.g., "doctor recommended", physician narrator)	Yes; No	No example was found in our sample.
Organic	Highlights organic or "pure" qualities of the products (e.g., no additives)	Yes; No	"An authentic experience with all of our quality ingredients enclosed." V2Cigs
Subjective Themes			
Sociability	Indicates one will have increased friendship, brotherhood, or camaraderie.	Yes; No	Narrator 1: "Hey man. Can I bum a cig?" Narrator 2: "Dude, seriously? And I call you my friend?" Vapor Shark
Romantic	Depicts greater ability to engage in romantic/sexual encounters, increased ability to attract desired sex, contains sexual innuendo	Yes; No	No example was found in our sample.
Youth	Messages mention Santa Claus, sports, video games, school, concerts, or movies	Yes; No	"Front row seats at the ball game...That's absolute satisfaction right there. And now it's yours whenever you want it." Logic

Content Theme	Definition	Response Categories	Example
Individuality	Associates product use with the consumer being their “own person,” taking control of their life or aspects of their life, having no restrictions on their life or their activities	Yes; No	“Are you ready to accomplish your New Year’s resolution?” “Keeping your New Year’s resolution has never been this easy or fun.” VaporFi
Social Positioning	Associates the product with increased social acceptability, higher standing in society, and celebrating/praising others using the product	Yes; No	Narrator 1: “Hey man. Can I bum a cig?” Narrator 2: “Dude, seriously? And I call you my friend?” Vapor Shark
<i>Selling Propositions Themes</i>			
Humor	Uses humor to sell the product (e.g., lighthearted, inclusion of joke, sarcasm)	Yes; No	“You know how you can tell it’s fall in South Florida? You can’t!” VaporFi
Sports	References sports or games (e.g., a baseball game, basketball game, video games)	Yes; No	“Shooting hoops over your head with your eyes closed. That’s absolute satisfaction right there.” Logic
Music	Uses background music	Yes; No	
Effects	Contains background special effects or sounds effects (e.g., a car horn, door slamming, clapping)	Yes; No	A crowd cheering at a concert. Logic
Demo	Demonstrates product use (e.g., inhaling or exhaling sound effects, instructions on product use)	Yes; No	No example was found in our sample.
Holiday	References a holiday (e.g., Christmas, Valentine’s Day, New Year’s)	Yes; No	“This Christmas get the gift that will change someone’s life, an e-cigarette set from Vapor Shark.”
Website	Directs consumer to a website, facebook page, social media site, or non-local number (i.e., 1–800)	Yes; No	“Click vaporshark.com ”
Location	Directs consumer to a local phone number or location (i.e., physical address)	Yes; No	“Get yours at Vapor Shark Lebanon Road, on 885 in West Mifflin. Vapor Shark, across the street from Hot Metal Harley and next to Mulligan’s.”
Free	Offers free samples of product	Yes; No	“Meet the vaping experts for free samples and experience a new way of life.” Vapor Shark
Comparison	Compares product to other electronic cigarette product brands directly or indirectly (e.g., “best”, “a pinch better”, “there’s no other e-cigarette/brand like it”)	Yes; No	“FACT: Logic premium electronic cigarettes is the best-selling and most trusted brand in New England.”
Price	Conveys that using the product will save the consumer money or provide a better monetary value than using tobacco/nicotine products, or offers the user coupons/discounts (e.g. “getting more for your money”, 25% off)	Yes; No	“Now buy a pack of Logic refills equal to a carton of cigarettes for less than \$20. Make the logical choice.”
Age Restriction	Indicates that the product will not be sold to people under the age of 18 or to minors	Yes; No	“Logic cigarettes are to be sold to adult smokers of a legal age.”

Table 2.

Radio Spending Report 2015–2016

Brand	Locations	Average Duration (Days)	Number of Time Slots	Average Total Spent (\$)	Total Spent (\$)
VaporFi (n=5)	Miami-Fort Lauderdale	43	478	183.47	87,700
Logic (n=7)	Boston, Chicago, Dallas-Fort Worth, Miami-Fort Lauderdale, New York City, Philadelphia	189	14,597	211.25	3,083,600
Vapor Shark (n=5)	Miami-Fort Lauderdale, Pittsburgh	68	713	55.90	39,800
V2Cigs (n=2)	Cincinnati, Indianapolis, Las Vegas, Philadelphia, Tampa-Saint Petersburg, Washington DC	43	273	43.59	11,900

Table 3.

Frequency of content themes overall and across the four e-cigarette brands

Content Category	Overall (n=19), %	VaporFi (n=5), %	Logic (n=7),%	Vapor Shark (n=5), %	V2Cigs (n=2), %
<i>Product Characteristics</i>					
Flavor	47	100	0	40	100
Benefits	74	100	43	80	100
Technology/Device	53	20	100	0	100
Green	0	0	0	0	0
Taste	84	100	100	40	100
<i>Health-Related Themes</i>					
Reduced Harm	16	0	0	20	100
Smoke-free	26	0	43	40	0
Quit Cigarettes	53	60	14	80	100
Health Disclaimer	37	0	100	0	0
Physician Endorsed	0	0	0	0	0
Organic	21	40	0	0	100
<i>Subjective Themes</i>					
Sociability	5	0	0	20	0
Romantic	0	0	0	0	0
Youth	26	0	29	60	0
Individuality	53	100	43	40	0
Social Positioning	5	0	0	20	0
<i>Selling Propositions</i>					
Demo	0	0	0	0	0
Humor	42	40	43	60	0
Sports	11	0	29	0	0
Music	74	100	57	100	0
Effects	26	0	43	40	0
Holiday	21	60	0	20	0
Website	58	100	0	80	100
Location	5	0	0	20	0
Free	11	0	0	40	0
Comparison	63	40	86	40	100
Price	58	100	43	20	100
Age Restriction	37	0	100	0	0