

Adolescents' interpretations of e-cigarette advertising and their engagement with e-cigarette information: results from five focus groups

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Keywords

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Abstract

Objective: The objective of this study is to explore adolescent non-ecigarette users' interpretations of e-cigarette advertising and their engagement with e-cigarette information. Given adolescents' lack of persuasion knowledge and the association between advertising and behaviour, insights from non-users who are heavily targeted by the industry add evidence to a field that mainly focuses on risk perceptions and reasons for experimentation. **Design:** Five focus groups were conducted with 39 adolescents (mean = 14.21 years, age range 12–17, 80% female). Data were analysed using the thematic approach. **Results:** Three themes were emerged: (1) advertising motivates nonsmokers to use e-cigarettes, (2) there is fascination with the technical and emotional appeals featured in commercials and (3) searching for information about e-cigarettes involves little validation. Adolescents also recalled health and social appeals that are consistent with content analysis of e-cigarette advertising. Further, adolescents used digital platforms and interpersonal sources for information on e-juice ingredients, health effects, accessibility, and price to satisfy their curiosity and justify their use. Very few, however, questioned the trustworthiness of the information. **Conclusion:** Findings provide support for the implementation of strategies, such as media literacy in public health and media campaigns, and the development of regulations vis-à-vis advertising and access to e-cigarette products to reduce future uptake.

Introduction

The growing popularity of e-cigarettes among the U.S. adolescents is an increasing public health concern (Cantrell et al., 2017; CDC, 2017; U.S. Department of Health and Human Services, 2016). E-cigarettes, a type of Electronic Nicotine Delivery Systems (ENDs), are battery-powered devices that deliver an aerosol by heating a solution (usually containing nicotine) that users inhale. As the technology continues to advance, some products even resemble a USB flash drive (Juul, n.d.), demonstrating the pace with which the industry revamps its design and transforms users' vaping experience.

Of particular concern, as it relates to youth, is the presence of nicotine in most e-cigarettes. As a highly addictive neurotoxin, nicotine exposure in adolescence can harm brain development (CDC, 1998; U.S. Department of Health and Human Services, 2016). Not only have some devices been found to have high levels of nicotine (Cobb, Byron, Abrams, & Shields, 2010), there also has been inconsistent labelling of nicotine levels (Cheng, 2014; German Cancer Research Center, 2013). Some brands could even 'contain as much nicotine as one to two packs of cigarettes' in one refill (Belluz, 2018). Further complicating the issue is the lack of regulation by the FDA in the U.S., which has delayed its decision to fully regulate e-cigarettes until 2022 (FDA, 2017). There currently is no national prohibition over the sale of e-cigarettes to minors, no restrictions on free sampling, no requirements for warning labels, no process for manufacturers to register with the FDA, and no requirements for manufacturers to seek agency approval of new products (Federal Register, 2016).

What is even more concerning is that longitudinal datasets and a recent meta-analysis both find a significant relationship between e-cigarette use and subsequent initiation of combustible tobacco products in samples of U.S. and UK adolescents (Barrington-Trimis et al., 2016; Conner et al., 2018; Leventhal et al., 2015; Moore, Littlecott, Moore, Ahmed, & Holliday, 2016; Soneji et al., 2017; Wills et al., 2016). Longitudinally, the relationship between e-cigarette use and escalation of cigarette use is either moderate (Conner et al., 2018) or non-existent (Wills et al., 2016). Nevertheless, these data still highlight a need to explore the underlying mechanisms for experimentation and to better understand how youth interpret messages marketers tailored to them in an effort to enhance tobacco prevention and control efforts.

The growing popularity of e-cigarettes among youth is due, in part, to the industry's intensive marketing efforts (Cantrell et al., 2017; CDC, 2017). An estimated 27.3 million adolescents (ages 12–17) and 45 million young adults (ages 18–24) have seen e-cigarette advertising in television programs and magazines popular among them (Truth Initiative, 2014). Earlier qualitative studies conducted with adolescents and young adults have explored perceptions of and motivations to experiment with e-cigarettes in this population. These studies have painted a similar picture on the positive attributes of the products (Camenga et al., 2015; Choi, Fabian, Mottey, Corbett, & Forster, 2012; Kong, Morean, Cavallo, Camenga, & Krishnan-Sarin, 2015; Peters, Meshack, Lin, Hill, & Abughosh, 2013; Wagoner et al., 2016). Many young people perceived e-cigarettes favourably, thinking they are healthier and less harmful than traditional tobacco products and that they can help people quit smoking (Camenga et al., 2015; Choi et al., 2012; Peters et al., 2013). Reasons for experimentation included peer/family influence, flavours, the 'cool' factor, and curiosity, all of which are similar

to the reasons why youth initiate traditional tobacco products (Camenga et al., 2015; Choi et al., 2012; Kong et al., 2015; Wagoner et al., 2016). E-cigarettes are also easier to hide, giving them an ability to vape anywhere (school bathrooms, home, etc.) (Kong et al., 2015; Peters et al., 2013). Uniformly, participants also regarded e-cigarettes as a suitable quitting device, despite unsatisfactory experiences reported by some participants (Camenga et al., 2015; Pokhrel, Herzog, Muranaka, & Fagan, 2015). This alarmingly large number of perceived positive attributes, as reported by adolescent and young adults, foreshadows the public health challenges that lie ahead.

Another challenge is the limited exploration of how adolescents interpret e-cigarette marketing messages – a key factor in eliciting e-cigarette experimentation and tobacco uptake in youth (Dai & Hao, 2016; Farrelly et al., 2015; Mantey et al., 2016). Yet, how youth perceive industry's overt advertising efforts and the way in which they search for e-cigarette information remain uncharted in these studies. Prior qualitative studies somehow have missed an opportunity to examine how youth interpret e-cigarettes' marketing and advertising appeals and their engagement with e-cigarette information (e.g. how they obtain information to learn more about the products, the extent to which they validate the information found, etc.). While some researchers suspect that both marketing and a lack of product regulation may be keys to influencing youth's positive perceptions of e-cigarettes (i.e. less harmful than cigarettes) (Wagoner et al., 2016), the marketing promotional factor is peripherally examined at best. For example, only few qualitative studies sporadically reported how participants liked e-cigarette's sleek, aesthetic design and packaging (Choi et al., 2012; Peters et al., 2013). In the context of e-cigarette marketing and in the absence of regulatory oversight, focusing on adolescents and their interpretations of e-cigarette messages has public health and policy implications.

Additionally, younger adolescents' voices (especially those who are non-users) are rarely the focal point in these studies; instead, quotes were primarily reported from high school and college students (Camenga et al., 2015; Kong et al., 2015; Pokhrel et al., 2015) as well as from current e-cigarette users or smokers (Choi et al., 2012; Peters et al., 2013). Insights from non-users who are heavily targeted by the industry but have been largely ignored in the literature, provides researchers with a crucial understanding of how they search and verify e-cigarettes information that may impact their future uptake. Finally, only one study, to date, reported youth's perceptions of e-cigarettes advertising (Johnson, Mays, Hawkins, Denzel, & Tercyak, 2017). Its methodology (i.e. one-on-one interview) and sample sources (i.e. 25 participants in a clinical setting), however, prohibits a deep dive into the nuances that youth might have expressed in an interactive, focus group setting.

In response to a recent call to explore e-cigarette marketing and communication to gather evidence vis-'a-vis advertising and perceptions of harms (Collins, Glasser, Abudayyeh, Pearson, & Villanti, 2018; Wagoner et al., 2016), this study asks the following research questions: What are adolescents' understanding and interpretations of e-cigarette advertising? How do adolescents engage with e-cigarette information – both online and offline? Exploring adolescents' exposure to and views towards e-cigarette advertising and their engagement with e-cigarette information could elevate future public health and media programs that use strategies such as media literacy to counter the influences of advertising on youth's behaviours.

Method

This study conducted five focus groups with adolescent non-e-cigarette users aged 12 to 17 years to answer these research questions. Focus groups allow for continued exploration and follow-up as well as group dynamics. The method also is particularly helpful for idea generation, such as messaging design for health promotion (Peterson-Sweeney, 2005). It also encourages youth to share insights and viewpoints with each other through interactions and elaborations that survey and experimental research on e-cigarettes would not be able to achieve (Butler, 1996; Kennedy, Kools, & Krueger, 2001).

Moderator guide development

First, a moderator guide was developed by the first author to explore youth's views towards e-cigarette advertising and communication sources to bridge the gap in prior literature, in addition to topics covered in prior focus group research (Camenga et al., 2015; Kong et al., 2015). The moderator guide was designed to start from a broad topic to a narrower focus on advertising and communication questions. Key questions included (1) awareness and knowledge of e-cigarettes, (2) motivation to use e-cigarettes among kids who smoke and kids who don't smoke, (3) youth's experience with e-cigarettes, (4) comparative perception to cigarettes, (5) social norms focusing on how friends and family would react to their e-cigarette use, (6) communication sources youth use to learn about e-cigarettes, and (7) exposure to e-cigarette marketing and advertising activities. In addition, a paper-and-pencil questionnaire was developed to gather basic demographic information, family history of tobacco use, personal history of tobacco use, and youth's exposure to e-cigarette promotion.

Focus group recruitment

The project received IRB approval for human subject research. The lead author of the research team provided training to a staff member, who was then tasked with recruitment of participants. The trained staff member, who had significant professional experience working on substance abuse-related initiatives in a Midwest community, recruited from local middle and high schools (e.g. after school programs, student clubs) and from local Boys and Girls Clubs by using active (e.g. collaborating with local community organizations, word-of-mouth) and passive (e.g. posting flyers) recruitment methods.

While working with community partners was instrumental for participant recruitment, there was still a considerable amount of difficulty recruiting immediately before the summer break. Eventually, 39 adolescents were recruited to participate in a total of five focus groups. Focus groups were conducted in one Boys and Girls Club location at the end of July and early August 2015. Conducting multiple focus group sessions increases the dependability of the data (Krueger, 1994; Sim, 1998) and allows for response saturation (usually reached after the third focus group) (Nyamathi & Shuler, 1990).

Focus group procedures

Prior to the focus groups, the trained staff, who also was the sole moderator of the five

focus groups, went through the assent and parental permission procedure with the participants and their parents/legal guardians. During the assenting process, the moderator ensured the confidentiality of participants and told them that they could withdraw from the study at any time without any repercussions. At the end of the focus groups, participants filled out a paper-and-pencil survey and received a \$10 gift card in return for their participation. All of the focus groups were audio-recorded and transcribed verbatim to help with data analysis.

Data analysis

Demographic information was entered into SPSS and a frequency for each variable was reported. Focus group data were analysed by two coders (the lead author and one research team member not involved in the recruitment and data collection process) using Krueger's thematic approach to explore themes developed from both the questions and the participant narratives (Krueger, 1994).

Each coder coded the transcribed data individually by first carefully reading and rereading the data (Rice & Ezzy, 1999) to recognize patterns and interpret data using the following criteria (Krueger, 1994): (1) words (vocabulary used by participants), (2) context of a statement within the focus group, (3) internal consistency and shifts of opinion, (4) extensiveness of comments, (5) specificity of comments (responses that give first person examples should be given more weight), (6) intensity of comments (excitement, depth of feeling), and (7) big ideas, or taking a step back to consider larger trends and concepts. Using a multi-step process, researchers (1) familiarized themselves to the data by listening to tapes and reading entire transcripts and notes several times to immerse in the details, (2) conducted line-by-line coding and identified emerging themes/concepts that begin to develop categories, (3) sifted through and indexed quotes and cases, (4) rearranged quotes and charted the developing categories, and (5) interpreted key categories, relationships, commonalities, and differences among participant comments (Bender & Ewbank, 1994; Rabiee, 2004; Ritchie & Spencer, 1994). After the initial coding process, the coders met to triangulate data by sorting through common themes, discussing discrepancies and, in some cases, re-reading the transcribed data again to seek further clarity. In the results section below, the basic demographic information and themes specifically related to the communication and marketing factors are presented.

Results

Participants' demographic information

Of all the 39 adolescents (*Mean age* = 14.21, *SD* = 1.38; age range 12–17), 80% were female (*n* = 31). The majority classified themselves as Caucasian (74.4%), followed by Native American (17.9%), Hispanics (12.8%), African American (10.3%), and Asian American (10.3%). Totals exceed 100% because participants could answer more than one racial/ethnicity category. Close to half of the participants' mothers had a college degree (*n* = 17, 43.7%), followed by some forms of college education (e.g. some college or technical associate or certificate) (17.9%), high school/GED (23.1%), grades 1–11 (7.7%), and graduate degree (2.6%). There were two missing data points. More than half of the participants' fathers had some forms of a college education (degree included) (*n* = 20, 51.3%), followed by high school/GED (17.9%), grades 1–11 (15.4%),

and graduate degree (5.1%). There were three missing data points.

With regard to family history of tobacco use, 12 participants (30.8%) said that one or more of their parents or legal guardians have used traditional tobacco products (i.e. cigarettes, chew or cigar/pipe). Thirty-five participants (89.7%) said one or more of their parents or legal guardians have used e-cigarettes. With regard to their own personal history of tobacco use, only one participant reported having tried cigarette smoking (4.3%). None has tried e-cigarettes. Finally, the majority of the participants reportedly saw e-cigarette advertisements and promotion from the Internet (92.3%), convenience stores (84.6%), social media (84.6%), TV commercials (82.1%), and magazines (79.5%).

Focus group themes

Three themes pertaining to advertising and communication factors were emerged from our analyses: (1) Advertising motivates nonsmokers to use e-cigarettes, (2) There is fascination with the technical and emotional appeals featured in commercials and (3) Searching for information about e-cigarettes involves little validation. Quotes characterizing identified themes are provided below. Because quotes that correspond to the themes may emerge from participants' answers to other questions, they were grouped with similar themes to provide a comprehensive view of youth's perceptions of and attitudes toward e-cigarettes and e-cigarette marketing. Names were removed from quotes to ensure confidentiality. We selected quotes representative of each theme. While presenting participants' sex for each quote may be ideal, our sample size was consisted of largely female participants; therefore, providing sex information may not warrant our ability to tease out potential sex differences.

Theme 1: Advertising motivates nonsmokers to use e-cigarettes. We asked participants to explain what would motivate *nonsmokers* their age to use e-cigarettes. While normative influences, flavours, a safe and healthy alternative, and vaping is cool were commonly mentioned, our participants particularly singled out influences from advertising. Quotes from participants illustrate a general lack of scepticism toward the content that features health benefits (e.g. not addicted to e-cigarette) and emotional appeals (e.g. vaping is cool).

Moderator: What would motivate *nonsmokers* your age to use cigarettes?

Multiple participants: 'Advertisements.'

Participant: 'If ads say they are healthier, kids don't think they will get addicted to e-cig.'

Participant: 'Ads show it looks cool, pictures are made to make smoking look cool.'

Additionally, participants also mentioned the attractive design, a key element in marketing and packaging of e-cigarettes. They noted how the design differed between e-cigarettes and cigarettes. One participant said, 'They [e-cigarettes] come in different designs to attract teenagers and customers.' Another said, 'It looks different, it's thicker, more warm, feels nice I guess, I've seen Lord of the Rings e-cigs and other movie franchise e-cigs.'

Another participant echoed the response by saying 'Looks more cool. Everyone has access

to normal cigs but no a lot have access to e-cigs, say it tastes better.’

Theme 2: There is fascination with the technical and emotional appeals featured in commercials. We then delved into how youth perceived e-cigarette advertising, one of the main purposes of this study. Participants elaborated on the aesthetic, fashionable and technological features. The following quotes highlight how product advertising is closely aligned with the appeals of certain media outlets and intended consumers.

Participant: ‘I see in my Vogue magazine so it makes it look like high fashion or fancy.’

Participant: ‘I saw a magazine ad for high-end e-cigarettes, marketing them as a more classy alternative to cigarettes. They were highlighting features and technologies they had, like how long the battery lasted. So it was making it seem fancy—special vapor technology.’

Further, some participants were able to vividly recall the special effects featured in commercials by giving a detailed description: ‘All black with white rays. The e-cig twisted apart and came back together, spinning around. It looked cool.’ We also noted that other participants voluntarily disclosed the visual elements of a specific e-cigarette brand, Blu. The conversations also revealed a connection between exposure and recall. They remembered seeing Blu – one of the most advertised brands at the time of the study – and commented on where they saw the commercials (i.e. TV and magazines) as well as the attributes that make the brand attractive, such as the contrast of the glowing colours (black and white).

Participant: ‘TV commercial with Blu name and it was in black and white and the only colour was on the light of the e-cig, so that colour stood out.’

Participant: ‘Commercials on TV; remember it was cigarette shaped ones that come in a cigarette box. It had a lot of blue in it.’

Participant: ‘I see in my magazines a lot. I liked the way it looked, black with blue glowing lights. It just looked cool.’

Moreover, echoing the first theme mentioned above, participants mentioned the advertising content of e-cigarettes in terms of health (e.g. helping smokers quit and recalled ads promoting e-cigarettes as a healthier option to traditional tobacco) and social benefits (e.g. friendships). Such content does not veer away from the positive attributes emerged from the prior discussions.

Participant: ‘It helps you quit.’

Participant: ‘Remember the part they say they can help you stop smoking cigarettes, felt maybe people will actually stop smoking because of it but know that ads persuade you.’

Participant: ‘Saw video that the e-cigarette heats up so that it only releases the nicotine and none of the other chemicals.’

Participant: ‘I have seen posters that say less nicotine so it is less harmful to your body.’

Participant: ‘I saw a big poster of someone holding an e-cig, make them look cool, you’ll have a lot of friends.’

Participant: 'I've seen one TV ad. It was talking about how and when you smoke regular cigarettes and how bad the second-hand smoke [is]. But since it is just vapor, you don't have to worry about that. I've also heard radio ads talking about how it is a lot cheaper than buying a whole bunch of packs of cigarettes and the vapor again and not secondhand smoke—it is a big selling point.'

Theme 3: Searching for information about e-cigarettes involves little validation. The majority of the participants said that youth their age learn about e-cigarettes through search engines (e.g. Google and Yahoo) and social media platforms (e.g. Twitter, Snapchat, Facebook, Vine, and Instagram). Only one mentioned reading about e-cigarettes in the newspaper.

Participants also specifically searched about e-cigarettes using the hashtag #e-cig on Instagram, for example. Others also noted social media accounts for users who want to play tricks with e-cigarettes.

Participant: 'Social media influences people on what they should and shouldn't do, if you see someone post a pic of them smoking and say they're having a good time, they think they would have a good time if I'd use too.'

Participant: 'Lots of videos (YouTube and Vines) of people doing smoke tricks and they look cool; there are Vine accounts specifically for e-cigarette smoke tricks.'

Participant: 'Facebook and Instagram and Vines of people doing smoke tricks/rings, etc.'

When probing what specific information that people their age may search for, the responses are categorized into: (1) Ingredients (e.g. Does it have nicotine in it? What is in the e-cig?); (2) Health effects (e.g. is it bad for you? what the chemicals could do to your body? will the smell linger? will they be detected?), (3) Accessibility (e.g. how can someone get them? where can someone vape without getting caught?), and (4) Price (e.g. how much does it cost?).

Depending on the source, one participant found the information she searched 'was very scientific.' Another one specifically recalled the benefits featured in Blu, a popular brand during the time of the focus group: 'Saw a link on YouTube to a video, 4-min long, about how it would benefit others because you wouldn't have second smoke and how it wouldn't impact environment or those around you and I remember the colour BLU and showing 5 rechargeable cigarettes.'

Some, however, cautioned that the information might be misleading and untrustworthy. For example, one participant said 'They'd go online, Yahoo, look up info but could run into the wrong information' and another said 'It is probably a bunch of lies about nicotine.' Others thought the information could be used to suit their purposes and motives, saying that people their age could use the information to 'give them the reason to verify [if] it is ok to use,' 'skim over the bad and just look at the good,' and 'look up legal age.'

Although in these focus groups digital platforms are the primary channel for e-cigarette information, participants also rely on friends and family who have a direct experience with the products to verify the authenticity of the information. One

participant said ‘People Google it. Lots of different results could come up and be dangerous. [They] can ask friends that have used before.’

Discussion

This study answered the call by Wagoner et al. (2016) and Collins et al. (2018) to address a paucity of qualitative research on e-cigarette advertising and youth’s engagement with e-cigarette information. What youth find appealing in e-cigarette advertising could be synthesized into two related categories: (1) technological and aesthetic appeals that address functionality and attractive design and (2) health and social appeals of e-cigarette use. The technological and aesthetic appeals (e.g. battery power) and the ways in which e-cigarettes look and feel; together, they position the products as a high-end option that seems to elicit participants’ attention. The aesthetic appeals can be found not only through packaging design but also through the visual colour contrasts that participants recalled from the commercials and teen-oriented media outlets. This first category adds qualitative evidence to the universal appeals of e-cigarette marketing and advertising. More particularly, our finding with non-user adolescents who are heavily targeted by the industry echoes what Peters et al. (2013) found in teenage male e-cigarette users.

Learning about product information from e-cigarette marketing and advertising has been reported in a small clinical sample elsewhere (Wagoner et al., 2016); the same pattern also emerged from our non-clinical sample youth. What our study further adds to the literature is the commercial content and advertising appeals that adolescents remembered. Adolescent non-users in our study recalled e-cigarette advertising featuring the products being a healthy alternative, their promises to help smokers quit, and how the user is associated with being popular in social circles. These types of content are not only heavily advertised (Paek, Kim, Hove, & Huh, 2014; Truth Initiative, 2014) but also are in parallel with what other high school and college students reported in prior qualitative studies (Camenga et al., 2015; Choi et al., 2012; Kong et al., 2015; Wagoner et al., 2016). These comments came without any ounce of scepticism, suggesting adolescents’ lack of persuasion knowledge about the marketers.

Our study also adds one of the first few pieces of evidence as to how adolescents use various communication sources and platforms for information about e-cigarettes. Adolescents’ use of the hashtag in search of e-cigarettes across digital platforms, such as Instagram, Twitter, and Snapchat, dominated the conversations and is in line with how youth use digital media for health information (O’Keefe & Clarke-Pearson, 2011). They predominantly looked for information, such as ingredients in e-juice, health effects, accessibility, and price to satisfy their curiosity and, in some cases, justify their use. Conversations about justifying e-cigarette use outnumber those on the credibility of the searched information, suggesting a lack of capacity to question a relatively novel product. Few also disputed the credibility and validity of the information they searched, which could potentially enhance the persuasive impact of marketing messages and jeopardize future tobacco control efforts.

These results are indeed alarming. Unlike college students sceptical of the cessation claims in e-cigarette marketing (Camenga et al., 2015) and of the industry’s profit-driven nature (Choi et al., 2012), few adolescents in our study questioned the industry’s motive and advertising content. These results are consistent with stages of cognitive development (Boush, Friestad, & Rose, 1994). Given that adolescents are still in the midst

of developing their knowledge of persuasion (Boush et al., 1994), it is possible that lack of product knowledge may strengthen marketers' persuasion attempt (Friestad & Wright, 1994). Information campaigns, therefore, may consider the use of hashtags to broadcast facts about e-cigarettes in order to debunk the myths in advertising.

Our results, together with how the industry increasingly uses digital and mobile media for product promotion, the link between advertising exposure and behaviour, and the positive attributes emphasized in commercials, give grounds for policy development and public health interventions (Cantrell et al., 2017; Dai & Hao, 2016; Choi et al., 2012; Huang, Kornfield, Szczypka, & Emery, 2014; Paek et al., 2014; Richardson, Ganz, & Vallone, 2015). First, these findings inform the development of potential regulations of e-cigarette marketing and advertising, joining the call from Pokhrel et al. (2016), Kong et al. (2015) and Dai and Hao (2016). Unsubstantiated claims (e.g. health benefits and reduced harm), enhanced social life (e.g. friendship) and sweet/fruit flavours in advertising are particularly appealing to youth (even influencing their e-cigarette use frequency) (Morean et al., 2018) and should be regulated. Second, evidence of the potential advertising influences calls for strategies, such as media literacy in public health and media campaigns, and legislative initiatives, such as Tobacco 21 in the U.S. that include restricting the sale of e-cigarettes until age 21, to make up for the current regulatory oversight. Media literacy programs are an effective health promotion tool that have the capacity to change attitudes and behaviour (Jeong, Cho, & Hwang, 2012). Further, as shown in a recent experiment on e-cigarettes and framing, adolescents' preferences for a non-smoker label and for loss-framed health risk messages (Kong, Cavallo, Camenga, Morean, & Krishnan-Sarin, 2016) shed light on how messages for media literacy and public health/media campaigns could be presented. For example, messages could focus on the link between nicotine exposure and addiction, the unknown substances in vapours, and unknown health risks to enhance adolescents' ability to discern the claims in advertising and lessen their engagement of unhealthy behaviour.

Finally, our study also showed that in circumstances where information may be questionable, adolescents also recommended asking friends and family who have a direct experience for validation. This result suggests that individual-based prevention and intervention programs should account for the influences from the interpersonal network that could either enhance or jeopardize the efforts. In cases where young non-users and smokers obtain nicotine from other older social sources who can legally purchase tobacco products, raising the legal sales age for tobacco products with bills, such as Tobacco 21 in the U.S., may delay e-cigarette experimentation and future tobacco initiation (Public Health Law Center, 2016).

Limitations

This study focused on young adolescent non-users; therefore, the current results may not be applicable to other populations and users of e-cigarettes. The saturation of the themes that overlap other dimensions of findings vis-a-vis e-cigarette attributes reported in prior qualitative studies, however, demonstrate how universal these favourable perceptions are across various populations. Although our study has more females than males, it is important to note that women are more likely to try an e-cigarette (Adkison et al., 2013) and to become ever users (Chapman & Wu, 2014).

Exposure to advertising also leads to more e-cigarette use among women (Ashford et al., 2016), thereby justifying the importance of this study despite the gender imbalance in the sample. Further, although our study was not designed to determine the veracity of information about e-cigarettes to which youth are exposed, many consistent comments were made during our focus groups about e-cigarette advertising content with little questioning. Finally, during the time of our study, products that are popular now (e.g. Juul) were relatively unknown in the market and to our participants. While these novel products may not have been covered, they still use similar online and offline marketing tactics that are applicable to our focus group discussions.

Conclusions

At present, evidence-based public health programs designed to reduce e-cigarette uptake are lagging behind the e-cigarette industry's constant innovation and aggressive marketing. Considering how little or peripherally e-cigarette advertising and youth is explored in prior qualitative studies, our study contributes the following new evidence to the field, including what adolescents find appealing in e-cigarette advertising as well as communication sources and platforms for e-cigarette information. Our results provide support for the development of regulations vis-'a-vis advertising and for public health and media campaigns designed to enhance youth's access to evidence-based information about e-cigarettes while increasing their awareness of persuasive techniques in an effort to reduce future uptake in adolescents.

Disclosure statement

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