Youth's Perceptions of E-cigarette Advertisements with Cessation Claims

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Abstract

Objectives: E-cigarettes are not FDA-approved smoking cessation aids. Nevertheless, content analyses have shown that e-cigarette companies make claims about cessation efficacy. Some advertisements are explicit (directly mentioning their product can help smokers quit or stop smoking), while others are implicit (not containing cessation-related language, but implying cessation efficacy through subtle wording and imagery). This is the first study to examine directly how adolescents and young adults (AYAs) perceived these ads, and specifically whether they identify the cessation claims in e-cigarette advertisements.

Methods: 248 AYAs in California viewed 4 e-cigarette advertisements with cessation claims, then selected claims made by each advertisement. Descriptive statistics and multi-level logistic regression models were used to examine the relationship between the type of claims and perception.

Results: The claim "helps me quit smoking" was most frequently selected after viewing advertisements with explicit cessation claims, but not after viewing implicit claims. No significant effect of tobacco use and age on claim selection was observed.

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Conclusions: E-cigarette manufacturers make claims about cessation efficacy, and AYAs can identify such claims in advertisements, especially the explicit ones. FDA should regulate these advertisements as making therapeutic claims.

INTRODUCTION

Electronic cigarettes (e-cigarettes) are not FDA-approved smoking cessation devices, nor can they be marketed for therapeutic purposes, including smoking cessation.[1] Nevertheless, content analyses of e-cigarette advertisements[1–3] and retailer websites[4] have found numerous messages about e-cigarettes' efficacy as a smoking cessation aid. Cessation claims can be explicit, unambiguously arguing their products help quit smoking cigarettes (eg, "quit smoking with e-cigarettes," [made by the brand NE Where]); or implicit, not containing words such as "quit" or "stop" but implying cessation efficacy through more subtle wording and imagery (eg, "Works for me," [Blu]).[3]

Adolescents and young adults (AYAs) are a particularly important population in tobacco control[5,6] as almost all users start using tobacco as an adolescent or a young adult. E-cigarettes are now the most commonly used tobacco and nicotine product among middle and high school students.[7] Nicotine exposure during adolescents can result in addiction and can alter brain development;[8] even without nicotine, using e-cigarettes can expose users to several chemicals that can cause adverse health effects.[8] One reason AYAs start using tobacco products is exposure to tobacco marketing. Advertising and marketing by tobacco companies have been shown to cause AYAs to initiate and continue smoking.[5,9,10] Young adults' self-reported exposure to e-cigarette marketing was associated with feeling more informed about e-cigarettes including nicotine and toxic chemicals, but greater likelihood of being incorrect about whether e-cigarettes contain nicotine.[11] Cessation claims in e-cigarette advertisements are particularly concerning because they may encourage the use of e-cigarettes for smoking cessation despite generally mixed findings about whether e-cigarettes help smoking cessation,[12–14] rather than the use of evidence-based methods, and may reinforce the impression that e-cigarettes are safe or healthy products among those who are not current smokers. While researchers have analyzed the veracity[13,15] and presence[1–4] of e-cigarette cessation claims, understanding whether AYAs actually identify the cessation claims in these advertisements and perceive e-cigarettes as effective cessation aids is important to inform e-cigarette marketing regulation. The current study is the first to examine whether AYAs identify cessation claims in e-cigarette advertisements using explicit and implicit claims. This is an important initial step before examining the attitudinal and behavioral effects of such cessation claims on AYA's e-cigarette and cigarette usage.

METHODS

The current study analyzed data from 248 AYAs in California who are part of a larger, longitudinal study on adolescent tobacco use and perceptions (detailed methods for

recruitment were published elsewhere[16,17]). About half (55.7%) of the participants were female. The participants were comprised of 43.2% 14–17 years old and 56.8% 18–20 years old (M_{age} = 17.48, SD = 1.60). The participants were racially/ethnically diverse, with 29.8% Hispanic, 25.4% non-Hispanic White, and 17.7% non-Hispanic Asian/Pacific Islander. Among the participants, 29.0% reported ever using cigarettes or e-cigarettes.

Data from this study come from the third wave of data collection (conducted in 2016), when items concerning advertisement perceptions were added to the online survey, administered using Qualtrics. Among the full wave 3 sample (N = 508, 65.8% of the original sample who completed baseline in 2014), half (N = 248) were randomly assigned to view 4 e-cigarette advertisements with cessation claims, one at a time in a random order. The advertisements were classified as either featuring explicit or implicit cessation claims in a previous content analysis.[3] Two advertisements featured explicit claims that e-cigarettes help the users quit smoking (ie, "…kept me smoke free" [Veppo]; "…never going back to analogs again" [ProVape]); the other 2 used implicit claims that e-cigarettes can be a successful alternative (ie, "Works for you" [Blu]; "Paper or Plastic?" [NJOY]). Implicit claims often include ambiguous texts which are then complemented by visuals, such as tobacco products placed next to each other for comparison, which implies substitution of one product for another. Below each advertisement, participants saw a list of 8 statements about the product identified in e-cigarette marketing content analyses[3,4] as common themes, such as "helps me quit smoking regular cigarettes" and "healthier than regular cigarettes" presented in a random order, and were asked to select all claims that apply to the advertisement. When they moved on to the next page, the same format of page with another advertisement was shown. See online supplement for the advertisements and full list of statements.

In addition to descriptive statistics, multi-level logistic regression models were fitted to examine the difference between explicit versus implicit cessation claims on whether or not the participant selected the claim "the product helps me quit smoking regular cigarettes," controlling for participants' age group (14–17 or 18+ years old) and tobacco use. For tobacco use, the participants were categorized into 2 groups: Never-users (never used either cigarettes or e-cigarettes) or ever-users (ever used cigarettes or e-cigarettes, even one puff). Additional logistic regression models were also fitted to test the interaction effect between seeing an explicit claim interact and the participants' age or tobacco use, to examine whether the effect of claim type is different between age groups or never- and ever-users of tobacco. Because all participants saw 4 advertisements, multi-level mixed-effect regression models accounting for the fact that the responses were nested within each individual were fitted to test the main and interaction effect terms. Three participants did not respond to the tobacco use questionnaire and were excluded from these analyses.

RESULTS

Table 1 shows the number and proportion of participants who selected each statement as applicable to the advertisement. For the 2 explicit claim advertisements, "helps me quit smoking regular cigarettes" was the most frequently selected (by 72.7% for Veppo and 54.7% for ProVape). For the 2 implicit claim advertisements, "helps me quit smoking" was selected 5th and 4th among the 8 claims (34.3% for Blu and 22.9% for NJOY). Other claims

including "makes me look cool" (Blu, 52.7%) and "none of the above" (NJOY, 43.3%) were the most frequently selected for the two implicit claim advertisements. In all 4 advertisements, participants selected "healthier than regular cigarettes" and "less harmful to my health" second or third most frequently out of the 8 possible claims.

In the logistic regression analyses, seeing explicit cessation claims predicted greater likelihood of selecting "helps me quit smoking" (*OR* = 8.57, *SE* = 1.67, p < .001), controlling for tobacco use status or age. Participants' tobacco use or age group did not show a significant effect independently or interacting with type of claims on claim selection (all *p*'s > .10).

CONCLUSIONS

The current study found that AYAs clearly identified the claim, "helps me quit smoking regular cigarettes" after viewing e-cigarette advertisements using explicit cessation claims. For the 2 implicit claim advertisements, "helps me quit smoking" was selected by more than 20% of the participants, but significantly less often than explicit claim advertisements. Despite research showing that ever-users of tobacco products often report significantly more favorable attitudes and beliefs toward e-cigarettes than never-users,[16] these groups did not differ in identifying claims in the e-cigarette advertisements. This suggests that cessation claims might attract both tobacco users and non-users to e-cigarettes, rather than attracting mainly tobacco users. This is concerning as this might translate into non-users initiating with e-cigarettes after seeing these cessation claims. However, this study could not address whether the effect of seeing such claims on attitudes toward e-cigarette might differ between ever- and never-users of tobacco. Future studies are needed to understand the effect of seeing such claims on AYA's tobacco use.

While the proportion of participants who acknowledged "helps me quit smoking" is significantly lower for implicit advertisements than explicit ones, it should be noted that still over 20% of the participants identified implicit statements as cessation claims. Whether or not the audience will identify cessation claims in any e-cigarette advertisement regardless of the content is another empirical question, but these findings suggest that implicit advertisements should not be exempt from regulatory considerations. This study also demonstrates that as part of the FDA approval process, advertisements could be empirically tested as they were in this study for identification of cessation claims by consumers, which may be an important complement to content analysis.

Another notable result is that participants frequently identified modified health risk claims ("healthier than cigarettes" or "less harmful to my health") for all 4 advertisements. It is possible that implicit and explicit comparisons between e-cigarettes and cigarettes invoked such reduced risk perceptions among the audience. Previous studies have found perceived risks of smoking significantly predicts adolescents' future smoking initiation,[18] and perceived risks of e-cigarette use is significantly associated with e-cigarette use status.[17] This result suggests another reason tobacco control researchers should be wary of e-cigarette advertisements using cessation claims.

Limitations.

There are a few study limitations that should be noted. The current study used a relatively small sample (N = 248), recruited from 10 schools in California. Future studies could include a wider audience, including other states as well as older adults, to determine if there are age differences in interpretation of claims. While the results resonate with concerns that e-cigarette industry is making misleading claims and that AYAs recognize those claims, examining the effects of viewing unsupported cessation claims on misinformation, attitudes, or behavior regarding e-cigarettes among AYAs is needed. While the 4 advertisements used in this study reflected 2 different types of cessation claims, future studies should include a larger set of advertisements, including the ones with and without cessation claims, so that the results can further inform what specific types of cessation claims should be regulated. Despite these limitations, this is the first study that directly measured audience perceptions of e-cigarette advertisements with cessation claims to inform regulation of e-cigarette marketing.

IMPLICATIONS FOR TOBACCO REGULATION

The current study demonstrated that AYAs recognized cessation claims in e-cigarette advertisements deemed by research to be making such claims, especially those making more explicit cessation claims.[1–4] Another notable result is that such advertisements may also be perceived as claiming the promoted products are less harmful than cigarettes. E-cigarettes marketed with cessation claims are considered drugs/devices that cannot be sold without prior approval by FDA.[1,19] This study provides evidence that FDA should better enforce regulations against explicit cessation claims in e-cigarette advertisements, and in doing so, should consider requiring that advertisers conduct audience studies to establish the nature of the claims.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

Acknowledgements

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Table 1.

Adolescents' and Young Adults' Perception of Claims for Each Advertisement; All Participants (N = 245) and by Tobacco Use Experience (Never-User: N = 173, Ever-User: N = 72)

"The product…"	Explicit 1: Veppo			Explicit 2: ProVape			Implicit 1: Blu			Implicit 2: NJOY		
	All	Ever-user	Never-user	All	Ever-user	Never-user	All	Ever-user	Never-user	All	Ever-user	Never-user
"Helps me quit smoking regular cigarettes"	**178 (72.7%)**	**52 (72.2%)**	**126 (72.8%)**	**134 (54.7%)**	**39 (54.2%)**	**95 (54.9%)**	84 (34.3%)	29 (40.3%)	55 (31.8%)	56 (22.9%)	19 (26.4%)	37 (21.4%)
"Is healthier than regular cigarettes"	89 (36.3%)	30 (41.7%)	59 (34.1%)	124 (50.6%)	33 (45.8%)	91 (52.6%)	116 (47.3%)	37 (51.4%)	79 (45.7%)	75 (30.6%)	**27 (37.5%)**	48 (27.8%)
"Is less harmful to my health"	109 (44.5%)	34 (47.2%)	75 (43.4%)	111 (45.3%)	35 (48.6%)	76 (43.9%)	108 (44.1%)	37 (51.4%)	71 (41.0%)	72 (29.4%)	**27 (37.5%)**	45 (26.0%)
"Is okay to smoke anywhere"	18 (7.3%)	8 (11.1%)	10 (5.8%)	48 (19.6%)	15 (20.8%)	33 (19.1%)	108 (44.1%)	39 (54.2%)	69 (39.9%)	39 (15.9%)	13 (18.1%)	26 (15.0%)
"Makes me look cool"	44 (18.0%)	13 (18.1%)	31 (17.9%)	80 (32.7%)	23 (31.9%)	57 (33.0%)	**129 (52.7%)**	**41 (56.9%)**	**88 (50.9%)**	48 (19.6%)	13 (18.1%)	35 (20.2%)
"Tastes good"	18 (7.3%)	8 (11.1%)	10 (5.8%)	36 (14.7%)	8 (11.1%)	28 (16.2%)	77 (31.4%)	26 (36.1%)	51 (29.5%)	26 (10.6%)	10 (13.9%)	16 (9.3%)
"Helps me socialize more"	26 (10.6%)	10 (13.9%)	16 (9.3%)	106 (43.3%)	32 (44.4%)	74 (42.8%)	61 (24.9%)	22 (30.6%)	39 (22.5%)	14 (5.7%)	3 (4.2%)	11 (6.4%)
"None of the above"	49 (20.0%)	14 (19.4%)	35 (20.2%)	47 (19.2%)	15 (20.8%)	32 (18.5%)	48 (19.6%)	11 (15.3%)	37 (21.4%)	**106 (43.3%)**	26 (36.1%)	**80 (46.2%)**

Note. Out of the 248 participants, 3 did not respond to the tobacco use experience question, hence removed from the table. The % in parentheses is the proportion of participants who selected the claim. The sum exceeds 100% since a participant could select multiple claims as applicable. Highlighted cells indicate the most frequently selected claim for the given advertisement within each group.