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E-cigarette Curiosity among U.S. Middle and High School Students: Findings from the 2014 National Youth Tobacco Survey

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Abstract

Curiosity is a potential risk factor for electronic cigarette (e-cigarette) use, which has increased considerably among US youth in recent years. We examined the relationship between curiosity about e-cigarettes and perceived harm, comparative addictiveness, and e-cigarette advertisement exposure. Data came from the 2014 National Youth Tobacco Survey, a nationally representative survey of U.S. middle and high school students. In 2014, 2.5% of middle school and 9.2% of high school students currently used cigarettes, while 3.9% of middle school and 13.4% of high school students reported current e-cigarette use. Among never e-cigarette users ($n=17,286$), descriptive statistics assessed curiosity about e-cigarettes by combustible tobacco use, sex, race/ethnicity, and school level. Associations between curiosity and perceived harm (absolute and comparative to cigarettes), comparative addictiveness, and e-cigarette advertising exposure were explored using multivariate models in 2015. Among youth who never used e-cigarettes, 25.8% reported curiosity about e-cigarettes. Higher levels of perceived absolute harm and comparative harm were associated with lower levels of curiosity, while no association was observed between comparative addictiveness and curiosity. Among never combustible tobacco users, the odds of high curiosity were greater among non-Hispanic blacks (odds ratio (OR): 1.39; 95% confidence interval (CI): 1.02–1.88), Hispanics (OR=1.79; 95%CI:1.48–2.16), and non-Hispanic ‘Other’ (OR=1.47; 95%CI:1.15–1.89) race/ethnicities than non-Hispanic whites. One-quarter of middle and high school students who have never used e-cigarettes are curious about the products, with greater curiosity among those with lower perceptions of harm from these products. These findings may help inform future strategies aimed at reducing curiosity about e-cigarettes among youth.

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INTRODUCTION

Preventing youth initiation of tobacco is critically important as most adult tobacco users first initiate use during adolescence.¹ Tobacco experimentation during youth may lead to addiction and regular use during adulthood.² Further, during adolescence, the brain has not completely matured and nicotine exposure during this time may have lasting adverse consequences for brain development.²⁻⁴ Youth use of tobacco or nicotine containing products in any form is unsafe, irrespective of whether it is combustible, non-combustible, or electronic.

The tobacco product landscape in the U.S. is rapidly evolving, and research on emerging tobacco products such as e-cigarettes continues to grow. An increasing proportion of youth are using novel tobacco products such as electronic cigarettes (e-cigarettes), which are battery-operated devices that can deliver nicotine derived from tobacco along with flavorings and other chemicals into an aerosol that is inhaled by the user.^{5,6} Approximately 2.5% of middle school students and 9.2% of U.S. high school students use cigarettes, but e-cigarettes surpassed use of cigarettes to become the most commonly used tobacco product among both middle (3.9%) and high (13.4%) school students in 2014.^{7,8} During 2011–2013, the number of students who were never cigarette smokers, but had ever used an e-cigarette, increased over 3-fold from 79,000 to over 263,000. In 2014, an estimated 2.4 million U.S. middle and high school students had used e-cigarettes within the past 30 days.^{7,8} Some longitudinal studies have also found that youth and young adults who try e-cigarettes may be more likely to progress to using conventional cigarettes in the future^{9,10}. Furthermore, many youth are engaging in dual use, or using e-cigarettes in addition to traditional cigarettes; studies have found e-cigarette use is associated with higher odds of ever or current cigarette smoking and higher odds of established smoking.¹¹

Research suggests that e-cigarette use among youth is increasing at varying rates among different demographic groups.^{7,12} For example, from 2011 to 2012, current e-cigarette use significantly increased among middle and high school age females, males, and Hispanics and high school age non-Hispanic whites but remained unchanged for other demographic groups.¹³ With the increasing prevalence of e-cigarette use in multiple population groups, it is essential to understand why youth use these products. One reason frequently cited for e-cigarette use by youth and young adults is the perception that they are less harmful than conventional cigarettes.^{2,14} More specifically, high school students perceive e-cigarettes to have generally low harm (absolute harm), and lower harm compared to cigarettes (comparative harm).¹⁵ Additionally, young adults perceive e-cigarettes to be less addictive than other conventional tobacco products, including cigarettes, smokeless tobacco, and cigars.¹⁶ The perception that e-cigarettes are less addictive than cigarettes has been associated with intention to use among college students.¹⁷

Curiosity, which is a feeling of “deprivation that arises from the perception of a gap in knowledge or understanding,”¹⁸ (p.75) has been associated with increased susceptibility to future cigarette use among adolescents.¹⁹ Curiosity is an important measure from a public health context, as it indicates interest, even when adolescents have not expressed intention to

use a tobacco product.²⁰ Moreover, recent studies added curiosity to the smoking susceptibility index as it significantly improves identification of adolescents at risk for becoming smokers.^{19,21,22} Furthermore, regardless of conventional cigarette smoking status, curiosity was identified as one of the leading reasons adolescents try e-cigarettes.^{23,24}

One possible source of curiosity about e-cigarettes is exposure to advertising. A commonly acknowledged goal of advertising in general is to increase product trial among never users.¹⁹ Research suggests that prior exposure to tobacco marketing is associated with curiosity and future tobacco use among adolescents.²⁵ In a review of longitudinal studies of adolescents aged 18 years or younger, subjects who were more aware of tobacco advertising or receptive to it were more likely to have experimented or become smokers at follow-up.²⁰ This may be problematic, as e-cigarette advertising expenditures are rising rapidly. E-cigarette advertising expenditures in magazines, television, newspapers, and the Internet grew from \$6.4 million in 2011 to \$60 million in 2013.^{26,27} This increase in expenditure may be contributing in part to increased exposure to e-cigarette advertising; during 2011–2013, youth exposure to television e-cigarette advertisements on television increased 256%, and young adult exposure increased 321%.²⁸ Moreover, in a study of college freshmen, the appeal of e-cigarette advertisements was associated with intent to use e-cigarettes.¹⁷

Given the rise in use of e-cigarettes among youth, coupled with current harm and addictiveness perceptions, curiosity as a reason for use, and the rapid increase in advertising for these products, it is becoming increasingly important to understand the interplay between these factors. However, to date, no study has assessed potential associations between curiosity, harm perceptions and advertising among a nationally representative sample of youth. To address this gap, this study used data from the 2014 National Youth Tobacco Survey (NYTS) to determine associations between curiosity about e-cigarettes and perceived harm (absolute and comparative to cigarettes), comparative addictiveness, and e-cigarette advertising exposure. This analysis specifically sought to: 1) determine the prevalence of e-cigarette curiosity among youth who have never used e-cigarettes, both overall and by sex, race/ethnicity and school level; 2) examine if lower levels of perceived harm and addictiveness of e-cigarettes are associated with higher levels of curiosity among never users of e-cigarettes; and 3) assess whether increased exposure to e-cigarette advertisements is associated with higher levels of curiosity about e-cigarettes.

METHODS

Sample

Data came from the 2014 NYTS, a cross-sectional, school-based, pencil-and-paper questionnaire self-administered to U.S. middle and high school students.²⁹ More information about the NYTS protocol and survey is available elsewhere.²⁹ A three-stage cluster sampling procedure is used to generate a nationally representative sample of U.S. students who attend public and private schools in grades 6–12 (range = 9 to 19 years of age).

Of the 258 schools selected for participation in the 2014 NYTS, 207 (80.2%) participated in 2014, with a sample of 22,007 (91.4%) among 24,084 eligible students; the overall response

rate was 73.3%. The Centers for Disease Control and Prevention (CDC) Human Research Protection Office approved the NYTS protocol.

Measures

A lifetime combustible tobacco product use item was created based on categorizations previously employed by Bunnell et al.⁸ Respondents who indicated that they had ever tried smoking at least one of the following five product types were classified as “ever combustible users”: 1) cigarettes; 2) cigars, cigarillos, or little cigars; 3) tobacco from a hookah or waterpipe; 4) pipe filled with tobacco; and 5) bidis. Those that indicated that they had never tried any of the aforementioned products were classified as “never combustible users.” Lifetime e-cigarette use was measured by the item, *Have you ever tried an electronic cigarette or e-cigarette such as Blu, 21st Century Smoke or NJOY?* Respondents who reported *no* were classified as “never e-cigarette users.”

Curiosity was measured with the item, *Have you ever been curious about using an electronic cigarette or e-cigarette such as Blu, 21st Century Smoke or NJOY?* Response options included: *Definitely yes, Probably yes, Probably no, and Definitely no.* Those who responded *Definitely yes* and *Probably yes* were classified as “highly curious.” Those who responded *Probably no* were classified as “somewhat curious” as past research has found that those who respond “probably not” curious are more likely to experiment than those who respond “definitely not.”^{19–21} Those who responded *Definitely no* were classified as “not curious.”

Two items related to e-cigarette harm perceptions were assessed. Absolute harm was measured with the question, *How much do you think people harm themselves when they use e-cigarettes some days but not every day?* Response options included: *No harm; Little harm; Some harm; and A lot of harm.* Comparative harm was measured using the question, *Do you believe that e-cigarettes are (Less harmful, Equally harmful, More harmful) than regular cigarettes?* In addition, comparative addictiveness was measured with the question, *Do you believe that e-cigarettes are (Less addictive, Equally addictive, More addictive) than regular cigarettes?*

Exposure to internet, newspaper/magazine, point-of-sale, and TV/movies e-cigarette advertising was measured as follows: *When you (are using the Internet/read newspapers or magazines/ go to the convenience store, supermarket, or gas station/ watch TV or go to the movies) how often do you see any ads or promotions for electronic cigarettes or e-cigarettes?* Response options to all items were: *Never; Rarely; Sometimes; Most of the Time; and Always.* Due to small sample sizes, response categories were collapsed using an approach previously employed by Portnoy et al.¹⁹ More specifically, response options were dichotomized such that *Always* and *Most of the Time* were classified as “High Exposure”, while *Sometimes, Rarely, and Never* were classified as “Not High Exposure.”

Assessed demographic characteristics included: sex (female or male), race/ethnicity (non-Hispanic White, non-Hispanic Black, Hispanic, and non-Hispanic ‘Other’), and school level (middle school or high school).

Data Analysis

All analyses were conducted in 2015 using SAS 9.3 and SAS-callable SUDAAN 11.0 to account for the complex sampling design of the 2014 NYTS. Survey weights were used to obtain population-level point estimates and accurate variance estimates. All *p*-values were reported for 2-tailed tests and a value of $< .05$ was considered statistically significant. Because curiosity is believed to serve as a psychological precursor to susceptibility and product use,²⁵ all analyses were limited to students who reported that they had never used e-cigarettes ($n = 17,286$).

Models were stratified by lifetime combustible tobacco product use rather than lifetime cigarette use as the latter measure fails to capture other combustible tobacco product use, contributing to diluted effects. Secondary sensitivity analyses confirmed these findings, as the direction and trends of observed effects were identical across models that relied on lifetime combustible and lifetime cigarette use, with the latter models producing smaller effects sizes. In addition, sensitivity analyses were conducted with lifetime tobacco product use, and these models were comparable to models that incorporated lifetime combustible tobacco product use.

Descriptive statistics assessed the prevalence of e-cigarette curiosity among youth who reported never having used e-cigarettes. In addition, distributions of e-cigarette curiosity were assessed across different levels of perceptions of e-cigarette absolute harm, comparative harm relative to cigarettes, and comparative addictiveness. Bivariate associations were stratified by lifetime combustible tobacco product use and presented as predicted marginals, adjusting for sex, race/ethnicity, and school level.

Weighted multinomial logistic regression models, stratified by lifetime combustible tobacco product use, were conducted to examine the association between e-cigarette curiosity and exposure to e-cigarette advertisements, adjusting for demographic variables. For these analyses, the “not curious” group served as the referent group, and comparisons were made between respondents reporting “highly curious” and “not curious,” as well as between those reporting “somewhat curious” and “not curious.” Odds ratios (OR) and 95% confidence intervals (CI) are reported for each demographic and e-cigarette advertising variable.

RESULTS

Among students in middle school, 1,114 (10.1%) indicated that they had ever tried an e-cigarette, while 1,188 (11.4%) indicated that they had ever tried a cigarette. Among students in high school, 3,059 (27.3%) indicated that they had ever tried an e-cigarette, while 3,630 (30.8%) indicated that they had ever tried a cigarette.

Among students who never used e-cigarettes, 13.4% reported *high curiosity*, 12.4% reported *some curiosity*, and 74.1% reported *no curiosity* about e-cigarettes. Males and females displayed similar levels of curiosity about e-cigarettes. High school students displayed higher levels of curiosity than middle school students. Hispanic students reported higher levels of curiosity than other racial/ethnic groups. Ever combustible tobacco users reported higher levels of curiosity than never combustible users (Table 1).

Table 2 presents predicted marginals for curiosity about e-cigarettes for various levels of perceptions of harm and addiction, stratified by lifetime ever/never combustible tobacco use and adjusting for sex, race/ethnicity, and school level. In general, ever combustible tobacco users reported higher levels of curiosity about e-cigarettes compared to never combustible tobacco users. Among never combustible tobacco users, higher perceptions of absolute harm ($p < .001$) and comparative harm ($p < .001$) were associated with lower levels of curiosity, while perceptions of comparative addictiveness were not significantly associated with curiosity. Similarly, among ever combustible tobacco users, lower perceptions of absolute harm ($p < .01$) and comparative harm ($p < .01$) were associated with higher levels of curiosity, while perceptions of comparative addictiveness were not significantly associated with curiosity (Table 2).

The results of the multinomial logistic regression analyses examining factors associated with curiosity about e-cigarettes are presented in Table 3. Among never combustible tobacco users, respondents who identified as non-Hispanic Black (OR = 1.39, 95% CI = 1.02, 1.88), Hispanic (OR = 1.79, 95% CI = 1.48, 2.16), or non-Hispanic 'Other' (OR = 1.47, 95% CI = 1.15, 1.89) had higher odds of being *highly* curious about e-cigarettes than non-Hispanic Whites. Comparisons of *some* curiosity to no curiosity revealed that non-Hispanic Black respondents (OR = 0.63, 95% CI = 0.47, 0.86) had lower odds of reporting *some* curiosity, while Hispanic respondents (OR = 1.31, 95% CI = 1.09, 1.57) had higher odds than non-Hispanic White respondents to report *some* curiosity. Exposure to point-of-sale e-cigarette advertising (OR = 1.34, 95% CI = 1.09, 1.64) was associated with higher odds of having high curiosity. Exposure to TV/movie e-cigarette advertising (OR = .68, 95% CI = .49, .95) was associated with lower odds of having *some* curiosity. Sex, school level, exposure to internet or newspaper and magazines e-cigarette advertising were not significantly associated with e-cigarette curiosity.

Among ever combustible tobacco users, high school students (OR = .59, 95% CI = .40, .86) had lower odds of having *high* curiosity compared to middle school students. In addition, non-Hispanic Black students (OR = .55, 95% CI = .36, .86) had lower odds of having *some* curiosity compared to non-Hispanic White students. Sex and exposure to e-cigarette advertising (internet, newspaper or magazines, point-of-sale, and TV/movies) were not significantly associated with e-cigarette curiosity.

DISCUSSION

Curiosity is a major risk factor for tobacco use among this subpopulation,^{19,21,22} and to date, no study has assessed the interplay between curiosity, harm perceptions, and advertising. This study fills that existing void in the literature, finding that one-quarter of U.S. middle and high school students who never used e-cigarettes reported some level of curiosity about using these products, with high school students displaying higher levels of curiosity compared to middle school students. Further, greater curiosity was observed among those with lower perceptions of harm from these products and among those who had previously tried a combustible tobacco product. Some longitudinal studies have found that youth and young adults who try e-cigarettes may be more likely to progress to using conventional cigarettes in the future.^{9,10} As curiosity may be a critical factor increasing risk of future

tobacco use,^{8,19} these findings underscore the importance of continued efforts to assess factors that influence curiosity towards e-cigarettes. These factors may include exposure to advertising and perceptions of harm towards e-cigarettes, which can inform efforts to reduce youth tobacco use.

In the present study, curiosity about e-cigarettes was found to vary by race/ethnicity but only among never combustible tobacco product users. Among never users, non-Hispanic Black, Hispanic and non-Hispanic 'Other' students had greater odds of being curious about e-cigarettes than non-Hispanic Whites. Understanding which youth are curious has important implications for public health practitioners given that existing research shows curiosity is associated with future tobacco use, and tobacco products in general have historically been disproportionately advertised to certain racial/ethnic minority communities.^{19,30} Further, recent decreases in the prevalence of youth cigarette smoking have been offset by the increase in the prevalence of youth use of e-cigarettes and hookahs, resulting in no change in estimates of overall tobacco use.⁷ Demographic differences in curiosity are also important to consider for development of targeted and effective strategies to reduce tobacco use and tobacco related morbidity and mortality among racial/ethnic minority populations.^{30,31}

Existing research suggests that the perception that e-cigarettes pose less risk to health and are less addictive than conventional cigarettes may serve as a motivator for e-cigarette initiation.^{32,33} The present findings indicate that increased harm perceptions of e-cigarettes generally (absolute harm), and increased harm perceptions compared to cigarettes (comparative harm), were associated with lower levels of curiosity about e-cigarettes, irrespective of lifetime combustible tobacco use status. These perceptions have important implications and should be monitored over time, as perceptions about tobacco products are associated with adolescent tobacco use and initiation.³²⁻³⁴ Notably, perceptions of comparative addictiveness were not associated with curiosity. This is an interesting finding that should be examined in future research and may be useful for informing future tobacco prevention programs and youth-centered tobacco educational campaigns.

In the present study, among never combustible tobacco product users, high exposure to point-of-sale advertising was associated with *high* e-cigarette curiosity. This is consistent with findings observed elsewhere for other tobacco products.²⁵ This is particularly problematic as point-of-sale e-cigarette advertising is increasing around college campuses and was found to be prominent around elementary, middle, and high schools in Kentucky.³⁵ In contrast, among never combustible tobacco product users, exposure to e-cigarette advertisements in TV and movies was associated with lower likelihood of some curiosity. This is a somewhat surprising finding, as youth exposure to television e-cigarette advertisements increased 256% from 2011 to 2013²⁸ and is inconsistent with findings observed for other tobacco products.²⁵ It will be important for future research to examine the role of e-cigarette advertisements in TV and movies on curiosity about these products among youth, especially as they are likely to differ from other tobacco products in how they are perceived and used.

These findings have implications for future campaigns aimed at reducing curiosity and increasing perceived harmfulness about e-cigarettes and other tobacco products among

adolescents. The U.S. Food and Drug Administration's (FDA) *Real Cost* campaign launched in 2014 to prevent youth aged 12 to 17 who are open to smoking from trying cigarettes.³⁶ The FDA also plans to implement additional campaigns at point of sale which will be an important avenue considering these findings.³⁷

Limitations

The findings from this study are subject to some limitations. First, the data are cross-sectional in nature, and as a result, causal inferences about curiosity, e-cigarette perceptions, and advertising exposure cannot be made. Moreover, there is no baseline measurement or general measurement for curiosity, so it was not possible to ascertain if this age group is more curious in general. However, both curiosity and perceptions about e-cigarettes among this age group are important for public health consideration. Second, data were collected only from youth who attended either public or private schools and might not be generalizable to all middle and high school-aged youth, including those who have dropped out of school or are being home schooled. However, data from the Current Population Survey indicate 96.1% of those aged 14–17 years were enrolled in traditional schools in 2013;³⁸ thus, the extent of bias as a result of this exclusion would be expected to be minimal. Third, the data were self-reported, which could introduce recall bias, particularly for items related to exposure to e-cigarette advertising. Fourth, frequency of exposure to e-cigarette advertisement may have influenced e-cigarette curiosity. Due to non-normal response distributions of the advertising variables, we dichotomized the advertising variables into high vs low exposure, following conventions by Portnoy et al (2014). Fifth, because e-cigarette products are rapidly evolving, terms and names used for these products may become obsolete or outdated, resulting in missed recruitment of participants who may not identify their products as “e-cigarettes.” However, we believe this limitation to be minimal as findings of the cognitive testing of the survey items indicated that participants found items involving e-cigarettes easy to answer. All participants were familiar with the term ‘e-cigarettes’ and had no problems understanding the term or name. Finally, the study did not examine the role of susceptibility, which was previously linked to tobacco use and initiation.¹⁹ Accordingly, future research may consider also examining susceptibility in the context of these indicators.

CONCLUSION

This study is the first to provide national estimates of e-cigarette curiosity among U.S. youth in the context of advertising exposure, perceptions of harm, and addictiveness. Findings demonstrate that one-quarter of middle and high school students who have never used e-cigarettes have been curious about the products, with curiosity being greater among those with lower perceptions of harm from these products. Sustained efforts to implement proven tobacco control policies and strategies are critical to prevent youth use of all tobacco products, including e-cigarettes. In April 2014, FDA issued a proposed rule to deem all products made or derived from tobacco subject to FDA jurisdiction.³⁹ Regulation of the manufacturing, distribution, and marketing of tobacco products, coupled with full implementation of comprehensive tobacco control and prevention strategies, could reduce youth tobacco use and initiation.^{2,31}

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Prevalence of Curiosity about E-Cigarettes among Never E-Cigarette Users^{a,b} –NYTS, 2014.

Table 1

	n[†]	Highly Curious n = 2,399	Somewhat Curious n = 2,173	Not Curious n = 12,679
		% (95% CI)	% (95% CI)	% (95% CI)
Overall	17,251	13.4 (12.6, 14.3)	12.4 (11.7, 13.1)	74.1 (72.9, 75.4)
Sex				
Female	8,659	13.8 (12.7, 15.1)	12.1 (11.2, 13.1)	74.1 (72.5, 75.6)
Male	8,477	13.0 (12.0, 14.1)	12.8 (11.8, 13.8)	74.2 (72.8, 75.6)
Race/Ethnicity				
NH White	6,932	11.8 (10.7, 13.0)	12.9 (11.9, 14.0)	75.3 (73.6, 77.0)
NH Black	2,676	14.1 (12.3, 16.1)	8.9 (7.6, 10.4)	77.0 (74.4, 79.4)
Hispanic	4,606	17.2 (15.8, 18.7)	14.2 (13.0, 15.6)	68.6 (67.1, 70.0)
Other	2,135	15.6 (13.7, 17.7)	12.5 (11.0, 14.1)	71.9 (69.7, 74.0)
School Level				
Middle School (grades 6–8)	9,060	12.3 (11.1, 13.5)	11.4 (10.5, 12.4)	76.3 (74.9, 77.9)
High School (grades 9–12)	8,097	14.5 (13.3, 15.7)	13.44 (12.5, 14.5)	72.1 (70.3, 73.8)
Lifetime Combustible^c				
Yes	3,023	26.38 (24.01, 28.90)	16.50 (14.82, 18.32)	57.12 (54.79, 59.41)
No	13,680	10.58 (9.77, 11.46)	11.58 (10.78, 12.42)	77.84 (76.51, 79.12)

[†] Counts are unweighted while proportions are weighted.

^a Never e-cigarette users answered “No” to “Have you ever tried an electronic cigarette or e-cigarette such as Blu, 21st Century Smoke or NIOY?”

^b Students were grouped into three levels of curiosity based on responses to “Have you ever been curious about using an electronic cigarette or e-cigarette...”: High Curious (Definitely Yes/Probably Yes), Somewhat Curious (Probably No), and Not Curious (Definitely No).

^c Lifetime combustible users were defined as students who reported ever having used cigarettes, cigars, cigarillos, little cigars, hookah/waterpipes, pipe tobacco, and bidis.
Abbreviations: CI=confidence interval; NH=non-Hispanic

E-Cigarette Curiosity across Perceptions of Harm and Addictiveness by Lifetime Combustible Tobacco Use –NYTS, 2014.^{a,b}

Table 2

	Never Combustible Use n = 13,695			Ever Combustible Use n = 3,032		
	Highly Curious	Somewhat Curious	Not Curious	Highly Curious	Somewhat Curious	Not Curious
	% (95%CI)	% (95%CI)	% (95%CI)	% (95%CI)	% (95%CI)	% (95%CI)
Absolute Harm						
No Harm	29 (25, 34)	17 (15, 20)	53 (48, 58)	37 (31, 43)	13 (9, 17)	50 (43, 57)
Little Harm	19 (17, 22)	18 (16, 20)	63 (60, 65)	32 (28, 36)	20 (17, 23)	48 (44, 52)
Some Harm	10 (8, 11)	13 (11, 15)	77 (75, 80)	24 (19, 30)	18 (14, 23)	58 (53, 63)
A lot of Harm	6 (4, 8)	7 (5, 9)	87 (84, 89)	20 (13, 29)	16 (11, 24)	63 (54, 72)
Comparative Harm						
Less Harmful	17 (16, 18)	16 (15, 17)	67 (65, 69)	33 (29, 36)	18 (15, 20)	50 (46, 53)
Equally Harmful	11 (9, 14)	12 (9, 14)	77 (73, 80)	24 (18, 30)	16 (12, 20)	61 (54, 67)
More Harmful	13 (8, 20)	9 (5, 14)	78 (72, 84)	19 (12, 29)	20 (11, 34)	59 (46, 71)
Comparative Addictiveness						
Less addictive	16 (14, 18)	15 (13, 17)	69 (67, 71)	29 (25, 33)	18 (15, 21)	53 (49, 58)
Equally addictive	16 (14, 18)	14 (13, 15)	70 (68, 72)	32 (28, 37)	17 (14, 20)	52 (47, 56)
More addictive	17 (13, 21)	16 (11, 21)	67 (62, 73)	21 (13, 33)	18 (11, 28)	60 (48, 71)

^f Counts are unweighted, while proportions are weighted, adjusting for sex, school level, and race/ethnicity

^a Never combustible users were defined as students who reported never having used cigarettes, cigars, cigarillos, little cigars, hookah/waterpipes, pipe tobacco, and bidis.

^b Students were grouped into three levels of curiosity based on responses to “Have you ever been curious about using an electronic cigarette or e-cigarette...”: High Curious (Definitely Yes/Probably Yes), Somewhat Curious (Probably No), and Not Curious (Definitely No).

Abbreviations: CI=confidence interval; NH=non-Hispanic

Table 3Factors associated with curiosity about e-cigarettes, by lifetime combustible tobacco use –NYTS, 2014^{a,b}

	Never Combustible Use		Ever Combustible Use	
	<i>Highly Curious OR (95%CI)</i>	<i>Somewhat Curious OR (95%CI)</i>	<i>Highly Curious OR (95%CI)</i>	<i>Somewhat Curious OR (95%CI)</i>
Sex				
Female	Referent	Referent	Referent	Referent
Male	0.93 (.77, 1.14)	0.98 (.83, 1.17)	1.03 (.81, 1.32)	1.07 (.75, 1.53)
Race/Ethnicity				
NH-White	Referent	Referent	Referent	Referent
NH-Black	1.39 (1.02, 1.88)	0.63 (.47, .86)	0.73 (.50, 1.07)	0.55 (.36, .86)
Hispanic	1.79 (1.48, 2.16)	1.31 (1.09, 1.57)	1.32 (.95, 1.85)	0.78 (.58, 1.06)
Other	1.47 (1.15, 1.89)	1.11 (.85, 1.44)	1.34 (.88, 2.04)	0.91 (.56, 1.49)
School Level				
Middle School	Referent	Referent	Referent	Referent
High School	1.10 (.93, 1.29)	1.06 (.88, 1.28)	0.59 (.40, .86)	0.94 (.55, 1.61)
E-Cigarette Ad Exposure: Internet				
Not High	Referent	Referent	Referent	Referent
High	1.08 (.74, 1.59)	1.03 (.72, 1.47)	0.63 (.31, 1.26)	1.19 (.62, 2.27)
E-Cigarette Ad Exposure: Newspaper/Magazine				
Not High	Referent	Referent	Referent	Referent
High	0.95 (.64, 1.41)	0.90 (.65, 1.24)	1.11 (.68, 1.81)	0.79 (.39, 1.62)
E-Cigarette Ad Exposure: Point-of-Sale				
Not High	Referent	Referent	Referent	Referent
High	1.34 (1.09, 1.64)	1.19 (.93, 1.53)	1.37 (.99, 1.90)	0.91 (.63, 1.33)
E-Cigarette Ad Exposure: TV/Movies				
Not High	Referent	Referent	Referent	Referent
High	0.70 (.49, 1.00)	0.68 (.49, .95)	1.10 (.67, 1.80)	1.15 (.70, 1.89)

^aNever combustible users were defined as students who reported never having used cigarettes, cigars, cigarillos, little cigars, hookah/waterpipes, pipe tobacco, and bidis.

^bStudents were grouped into three levels of curiosity based on responses to “Have you ever been curious about using an electronic cigarette or e-cigarette...”: High Curious (Definitely Yes/Probably Yes), Somewhat Curious (Probably No), and Not Curious (Definitely No).

Abbreviations: CI=confidence interval; NH=non-Hispanic