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Internalized smoking stigma in relation to quit intentions, quit attempts, and current e-cigarette use

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Abstract

Background: Reducing the social acceptability of smoking is associated with lowered smoking prevalence. However, denormalization strategies can also contribute to the stigmatization that some smokers may feel about their smoking. Smoking stigma may be more acute if smokers are also members of other stigmatized groups, such as racial/ethnic minorities. This study examined correlates of smoking self- and felt-stigma and discrimination, among current smokers.

Methods: Participants were recruited in the United States via a national commercial consumer panel to complete a cross-sectional, web-based survey. Participants were 1528 current cigarette smokers aged 14 and older. Measures included the Internalized Stigma of Smoking Inventory (ISSI), Heaviness of Smoking Index, quit intentions, past-year quit attempts, and current use of electronic cigarettes.

Results: Self-stigma was significantly associated with higher intent to quit in the next 6 months (OR=2.47, $p<0.01$), and in the next 30 days (OR=4.21, $p<0.01$), relative to no intention to quit, as well as having made 1 or 2 quit attempts in the past year (OR=1.60, $p<0.01$) or 3 or more quit attempts (OR=1.74, $p<0.01$), and with daily e-cigarette use (OR = 1.73, $p<.05$). Felt-stigma was positively associated with intent to quit in the next 30 days (OR=1.54, $p<0.01$), having made 3 or more quit attempts in the past year (OR=1.35, $p<0.01$), and both daily (OR=2.05, $p<.05$) and some-day (OR=1.30, $p<.05$) e-cigarette use. Discrimination was associated only with increased odds of daily e-cigarette use (OR=1.83, $p<.05$).

Conclusions: Smokers who reported greater feelings of stigmatization about their smoking were more likely to report having made recent quit attempts, report a stronger intention quit smoking in

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AUTHOR CONTRIBUTIONS

RJO conceived the study. CR conducted data analysis and wrote the first draft. VWR, DKH, and KMC contributed substantially to manuscript writing and data interpretation. All authors approve the final submitted manuscript.

the future, and report use of an e-cigarette suggesting that feelings of self- and felt stigmatization are related to greater motivation to stop smoking.

Keywords

Stigma; smoking; cessation; e-cigarettes; social denormalization

INTRODUCTION

Reducing the social acceptability of smoking is associated with a reduction in the prevalence of smoking. Policies such as smoke-free laws, increased insurance rates for smokers, and corporate policies that discourage hiring smokers have been used to reduce smoking rates through social denormalization of tobacco use.^{1,2} However, concerns have been raised about the potential for smoking denormalization strategies to contribute to the stigmatization of smokers.³ Smoking stigma refers to the negative stereotypes associated with smoking that identify it as a socially unacceptable or undesirable activity, resulting in exclusion, rejection, or devaluation of smokers.⁴ Evans-Polce and colleagues also note that public stigma of tobacco smoking could result in greater self-stigma (i.e., agreement with the negative stereotype), and thus reduce self-efficacy, among smokers.⁵ There is evidence that some smokers do not announce quit attempts in advance, in part to avoid stigma associated with failure.⁶ While evidence is limited, stigma may reduce willingness to truthfully report smoking or to seek treatment for smoking-associated illnesses.^{7,8} Emerging literature further suggests that lung cancer is a particularly stigmatized disease,⁹ contributing to poor quality of life and psychological distress in patients.¹⁰ Indeed, a large body of research has demonstrated the deleterious effects on a range of health outcomes that arise from stigma associated with discrimination by race, gender and socioeconomic status.¹¹ Research has also shown that members of stigmatized minorities who experience the effects of multiple stigmas, which may in turn increase risk for adverse health outcomes.¹² Potentially, smoking stigma (both self-stigma and active discrimination) may be more acute if smokers are also members of other stigmatized groups, such as racial/ethnic minorities.^{13–16}

The Internalized Stigma of Smoking Inventory (ISSI)¹⁷ was adapted from the widely used and validated Internalized Stigma of Mental Illness (ISMI) measure,¹⁸ and is the only published, psychometrically assessed measure of smoking stigma. The ISSI measures three types of smoking related stigma: (1) self-stigma resulting from the internalization of public stigma and characterized by statements about the individual's worth; (2) felt-stigma, characterized by fear of being stigmatized, experiencing external blame, and social isolation; and (3) enacted stigma, which refers to acts of discrimination perpetrated on stigmatized individuals.¹⁷ Research with the ISSI in patient populations has shown that smoking stigma is associated with increased readiness to quit.¹⁷ In fact, there is existing evidence that internalizing smoking stigma may prompt some individuals to quit smoking.⁵ More recently, Brown-Johnson & Popova showed that dual tobacco product users felt greater stigma, but also had a higher number of quit attempts.¹⁹ However, research on the ISSI has largely been limited to clinical populations, limiting its generalizability.

The current study aimed to extend previous research with the ISSI, by using a non-clinical population to examine correlates of smoking stigma and putative relationships between smoking stigma, intentions to quit, past year quit attempts, and use of e-cigarettes.

METHODS

The study utilized a Web-based survey methodology and data were collected over a one-week period in July 2015. Participants were recruited from a panel maintained by Global Market Insite (<http://www.gmi-mr.com/global-panel/index.php>), a private company that maintains global consumer and specialty panels. Membership in their panel involves a double opt-in process where interested parties complete an online registration form, and then activate their account by clicking a link provided by GMI via e-mail. U.S. residents were targeted for inclusion. All participants were invited to respond to the survey via email and were deemed eligible if they were between the ages of 14 and 65 and provided consent. In the case of minors, parents were e-mailed a statement describing the survey risks and benefits of participation, compensation, and confidentiality prior to their child engaging in the survey. Parental consent and youth assent was obtained prior to participation in the survey. The sample pool from which final participant sample was derived was designed with target accruals for particular subgroups, including 14–17 year olds (N=500) and current smokers (25% of sample). Respondents were compensated 60 GMI “marketpoints” (20 marketpoints=1 USD) for their time. The final analytical sample was 1528 current smokers. The study protocol was approved by the Institutional Review Board at [redacted for blinding].

Measures

Internalized Stigma of Smoking Inventory (ISSI).—The survey included 7 of the 8 items on the Internalized Stigma of Smoking Inventory (ISSI).¹⁷ (The second item on the discrimination scale was omitted in error). Two subscales were utilized: Self-stigma (ISSI-self), and felt-stigma (ISSI-felt); there was also a single item assessing perceived discrimination. Responses used a 5-point Likert scale with the following designations: Completely Disagree (1), Disagree (2), Neutral (3), Agree (4), Completely Agree (5). Scores for each scale were calculated as a mean of the component items.¹⁷ Three items were included in the ISSI-self subscale (i.e. *I am embarrassed or ashamed that I am/was a smoker; I am disappointed in myself that I am/was a smoker; I feel inferior to others who are not/were never smokers*). Three items were included in the ISSI-felt subscale (i.e. *People ignore me or take me less seriously just because I am/was a smoker; Others think that I can't achieve much in life because I am/was a smoker; Nobody would be interested in getting close to me because I am/was a smoker*). One item measured experiences of enacted stigma/discrimination (i.e. *People discriminate against me because I am/was a smoker*).

Participant Characteristics.—Demographics included as covariates were age, sex, race/ethnicity, and education. Nicotine dependence was assessed using the Heaviness of Smoking Index (HSI).²⁰ Intention to quit smoking was assessed by a single item drawn from stage of change models (seriously thinking of quitting within the next 30 days, 6 months, or not at all). We also asked participants to report the number of quit attempts of at least 24-hour

duration in the past year, which was then categorized as 0, 1–2, and 3 or more. We recorded current use of electronic cigarettes (every day, some days, not at all), as a substantial number of smokers report using these as a means of quitting, reducing smoking, or dealing with restrictions on smoking.^{21,22}

Analyses

Data were cleaned and analyzed using SPSS 21.0 (SPSS, Inc., Chicago, IL). The analyses were restricted to current every day or someday smokers. Data were first evaluated with Cronbach's alpha to assess internal consistency for each scale. The sample characteristics were described using frequencies and means. ANOVA and Pearson correlation tests were run for the three ISSI subscales with demographic, smoking, and stigma variables. We also completed a generalized linear model with ISSI subscales as dependent variables, including gender, race/ethnicity, education, age, intention to quit smoking, heaviness of smoking. Finally, the association between the 7 ISSI items and quit attempts, intention to quit, and e-cigarette use were examined using cross-tabulations and Chi-square tests for categorical items and Pearson correlation tests for the subscales. Multinomial logistic regression was used to examine correlates of quit intentions and attempts.

RESULTS

Sample characteristics

Characteristics of the sample are presented in Table 1. The majority of the sample (74%) was White non-Hispanic, 5% were Black non-Hispanic, 18% were Hispanic, 3% were Asian, and 1% reported other non-Hispanic. Slightly less than half of the sample was female (43%). More than three-fourths of respondents (77%) reported having at least some college education. Compared to past 30-day smokers in the 2014 National Survey on Drug Use and Health (which includes youth aged 14–17), the current sample was of similar gender distribution, but was of higher education, older, and had relatively more Hispanic smokers and fewer Black smokers (see Table 1). One third of respondents (33%) reported that they are not thinking of quitting smoking, 40% reported that they were planning to quit in the next six months, and 28% reported an intention to quit in the next 30 days. Twenty-one percent are classified as “High dependence” on the Heaviness of Smoking Index.

Scale description overall and by group

Cronbach's alphas were 0.86 for self-stigma, and 0.92 for felt-stigma, with 0.92 for the total ISSI, indicating good internal reliability. Table 2 summarizes descriptions of the subscales by demographic and group and nicotine dependence. For the full sample, ISSI-felt scores were the lowest on average, followed by the discrimination measure, with highest scores on the ISSI-self subscale (see Table 1 for means; p-values <.01 for paired samples t-tests). There were strong correlations among scale scores – ISSI self vs. ISSI-felt ($r=0.69$); ISSI-felt vs Discrimination ($r=0.75$); ISSI-self vs. Discrimination ($r=0.59$).

After controlling for covariates (Table 2), ISSI-self scores were significantly higher in smokers who reported planning to quit in the next 6 months ($\beta=0.30$, $p<0.01$) or in the next 30 days ($\beta=0.49$, $p<0.01$), compared to those who reported that they are not thinking of

quitting smoking. ISSI-felt scores was also significantly higher in smokers who reported planning to quit in the next 6 months ($\beta=0.21$, $p<0.01$) or in the next 30 days ($\beta=0.48$, $p<0.01$), compared to those who reported that they are not thinking of quitting smoking. Reported discrimination was also significantly higher in smokers who reported planning to quit in the next 6 months ($\beta=0.16$, $p<0.01$) or in the next 30 days ($\beta=0.40$, $p<0.01$), compared to those who reported that they are not thinking of quitting smoking (Table 2). There was also some evidence that Hispanic smokers reported discrimination and had higher ISSI-felt scores than White smokers, and younger smokers had higher ISSI scores compared to smokers age 56 and over ($p<0.01$) (Table 2).

Smoking-related correlates

In multivariable models, increased score on the ISSI-self subscale was significantly associated with higher intent to quit in the next 6 months (OR=2.47, $p<0.01$), and in the next 30 days (OR=4.21, $p<0.01$), relative to no intention to quit. Increased score on the ISSI-felt subscale was not associated with higher intent to quit in the next 6 months (OR=1.04, $p=0.66$), but it was significantly associated with intent to quit in the next 30 days (OR=1.54, $p<0.01$). (Table 3).

Relative to not making any quit attempts in the past year, adjusting for covariates, increased score on the ISSI-self subscale was significantly associated with having made 1 or 2 quit attempts in the past year (OR=1.60, $p<0.01$), and with having made 3 or more quit attempts (OR=1.74, $p<0.01$). Increased score on the ISSI-felt subscale was significantly associated with having made 3 or more quit attempts in the past year (OR=1.35, $p<0.01$). (Table 3).

Relative to no e-cigarette use and controlling for other factors, higher ISSI-self score was positively associated with daily e-cigarette use (OR = 1.73, $p<.05$). ISSI-felt score was positively associated with both daily (OR=2.05, $p<.05$) and some-day (OR=1.30, $p<.05$) e-cigarette use. Greater scores on the discrimination item were associated with increased odds of daily e-cigarette use (OR=1.83, $p<.05$). (Table 3).

(Univariate associations of individual scale items with smoking-related variables are shown in Supplemental Table 1).

DISCUSSION

Consistent with other literature,^{5,17} this paper shows that smoking stigma (as measured by ISSI) is associated with increased intention to quit and quit attempts, and that this association holds across the stigma subscales. The findings expand on the results of the previous study to examine these associations outside of a clinical setting, in a general population sample. Controlling for sociodemographic measures, self-stigma was strongly associated with intentions to quit both in the next 30 days and next six months, and also with having made at least one quit attempt in the past year. Felt-stigma was associated with 30 day intention and with making 3 or more attempts in the past year. Because all participants were current smokers at the time of survey, we are unable to address the success of quit attempts with these data. Nonetheless, the results suggest a positive relationship between internalized stigma and quitting behaviors. The higher quit readiness and likely quitting

associated with stigma is consistent with some research on reactions to graphic warnings. There is evidence that negative emotions engender avoidance behavior,²³ and some data suggest that a subset of smokers actively avoids health warnings.²⁴ At the same time, those who attempt to avoid them were more likely to stub out a cigarette, make quit attempts and eventually quit.^{25–27} Actions of avoidance suggest that the appearance of the labels was sufficiently impactful on the individual to influence their smoking behavior. A commonality between graphic warning response and felt stigma may be engagement of negative emotion. Future research could examine whether there is overlap between avoidance of health warnings and smoking stigma.

In this sample, we also found a strong and consistent relationship between measures of smoking stigma and daily use of e-cigarettes. Adjusting for other factors, greater scores on self-stigma, felt-stigma, and discrimination were all associated with greater odds of daily e-cigarette use. Interestingly, the effects were strongest for felt-stigma, and e-cigarette use was the only behavior with which discrimination was significantly associated. This suggests that for some smokers, concurrent use of e-cigarettes may be motivated by smoking-related stigma. Soule and colleagues used concept mapping to elucidate reasons for e-cigarette use, and among the groupings identified were conscientiousness, and social impact, which included statements relevant to smoking stigma (e.g., “To not feel like an outcast anymore,” “To be a better role model.”).²⁸ More research is needed on the extent to which internalized stigma may motivate e-cigarette use.

We observed differential stigma by age, suggesting that younger smokers have grown up in a very different social environment regarding the acceptance of smoking compared to the older age group. Interestingly, we observed low self-stigma, but high felt-stigma, among the youngest age group, a pattern not seen in older age groupings. This may be reflective of accumulated experience – they may not have had sufficient opportunity to develop a negative self-schema associated with smoking, but still note a social context that discourages it. Persons in our oldest age group (56+) were born prior to the 1964 Surgeon General’s report (SGR), which was a major event in changing public views about smoking.²⁹ Those under age 25 came of age after the 1988 SGR, which identified tobacco use as addictive. Older continuing smokers also may have a social network more conducive to smoking.³⁰ Thus, age-cohort effects may be an important consideration in studies of smoking stigma.

Social factors, such as number of smoking friends and relatives, and the relative prevalence of smoking in the community, may also contribute to stigma.^{30,32,33} We saw greater felt-stigma among Hispanic (though not Black) smokers relative to Whites, and also among men relative to women. Level of dependence (as assessed by HSI) was not associated with either self- or felt-stigma. Stigmatized minority groups – e.g. LGBT, some minority race/ethnicities and those with mental illness – who have a higher smoking prevalence than the general population, may experience multiple stigmas, which may in turn reinforce smoking behavior.^{13,15} That is, smoking stigma may promote segregation among high smoking groups, determine internal social norms, and potentially isolate stigmatized minority smokers from engaging with cessation services.³¹ Further research into which subgroups of smokers are likely to make positive behavior changes in response to internalized stigma is needed.

The cross-sectional nature of our data make it impossible to determine whether smoking stigma motivates smokers to make quit attempts or plans to quit smoking or encourages e-cigarette use. Indeed, it is possible that adoption of e-cigarette use, and the culture that surrounds it,²⁸ may in turn influence smoking stigma. This is something that could be examined further, along with rates of smoking cessation, with a longitudinal study design. Studies examining impacts of policies that involve smoking denormalization should consider adding measures of smoking stigma to assess its mediating effects on quitting behaviors and use of other tobacco products. We omitted an item from the two-item discrimination scale, limiting our ability to fully replicate the earlier findings. Another potential limitation is the high education (and thus likely high SES) sample used in this study: the general effects of stigma/discrimination are compounded among those of low SES,¹¹ and this may be the case for smoking stigma as well. Thus, a more diverse sample in terms of education/income might be warranted for future research.

In sum, a consequence of reducing the social acceptability of smoking is less smoking in the population and increasing perception among those who remain as smokers feeling stigmatized by their continuing smoking. Tracking the levels of self- and felt-stigma and discrimination among current smokers is probably a surrogate measure for assessing trends in the social acceptability of smoking at the population level. Consistent with previous research we have found that smokers' who reported greater feelings of stigmatization about their smoking were more likely to report having made recent quit attempts and report a stronger intention quit smoking in the future.^{1,19} Stigma was also associated with e-cigarette use which may reflect efforts by smokers to change their smoking behavior although in this cross-section study, use of e-cigarettes was concomitant use with cigarettes, not switch completely away from smoking. It is also important to recognize the potential negative consequences associated with stigmatizing smokers, who may seek ways to evade stigma by segregating themselves into groups accepting of smoking and perhaps fostering the development of fatalistic attitudes about their ability to change their smoking behavior,¹³ which make quitting smoking harder to accomplish. Thus, behavioral interventions for smoking cessation might include addressing stigma-related issues as part of the quitting process.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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Table 1.

Descriptive statistics of demographics and health status (n=1,528 current every day or some day smokers)

	NSDUH 2014		Self-stigma ISSI subscale		Felt-stigma ISSI subscale		Discrimination ISSI subscale		
	n	%	%	Mean (SD)	ANOVA p-value	Mean (SD)	ANOVA p-value	Mean (SD)	ANOVA p-value
Full Sample	1528	100.0		3.16 (1.11)		2.75 (1.21)		3.00	
Gender									
Male	867	56.7	54.1	3.17 (1.13)	p=0.45	2.90 (1.26)	p<0.01	3.07 (1.31)	p=0.01
Female	661	43.3	45.9	3.13 (1.09)		2.54 (1.12)		2.90 (1.26)	
Race/ethnicity									
White	1124	73.6	68.9	3.09 (1.11)	p<0.01	2.62 (1.18)	p<0.01	2.92 (1.28)	p<0.01
Black	77	5.0	12.9	3.03 (1.09)		2.57 (1.38)		2.68 (1.40)	
Asian/Pacific Islander	38	2.5	2.4	3.16 (0.84)		2.77 (0.83)		2.66 (1.10)	
Other	21	1.4	3.4	2.65 (1.10)		2.46 (1.15)		2.76 (1.37)	
Hispanic	268	17.5	12.6	3.51 (1.09)		3.34 (1.20)		3.46 (1.22)	
Education									
< HS degree	115	7.5	19.5	3.23 (1.17)	p<0.01	2.97 (1.15)	p<0.01	3.23 (1.24)	p<0.01
HS degree/GED	234	15.3	36.2	2.92 (1.05)		2.35 (1.06)		2.64 (1.27)	
Some college	506	33.1	29.7	3.08 (1.15)		2.59 (1.20)		2.94 (1.27)	
College degree+	673	44.0	14.5	3.28 (1.07)		2.96 (1.23)		3.12 (1.29)	
Age									
14–17	83	5.4	2.1	3.31 (1.14)	p<0.01	3.13 (1.11)	p<0.01	3.34 (1.12)	p<0.01
18–25	64	4.2	18.0	3.18 (1.12)		2.80 (1.25)		2.95 (1.30)	
26–35	590	38.6	79.9	3.36 (1.07)		3.17 (1.23)		3.29 (1.27)	
36–45	344	22.5		3.26 (1.06)		2.69 (1.17)		2.88 (1.28)	
46–55	252	16.5		2.84 (1.12)		2.19 (1.01)		2.68 (1.27)	
56+	195	12.8		2.70 (1.10)		2.10 (0.86)		2.59 (1.22)	
Intention to Quit									
Within the next 30 days	425	27.8		3.97 (0.79)	p<0.01	3.66 (1.08)	p<0.01	3.79 (1.13)	p<0.01
Within the next 6 months	603	39.5		3.23 (0.93)		2.64 (1.08)		2.89 (1.16)	
Not thinking of quitting	500	32.7		2.38 (1.01)		2.10 (0.98)		2.45 (1.24)	
Heaviness of Smoking Index ^b									
Low dependence	1211	79.3		3.23 (1.07)	p<0.01	2.83 (1.22)	p<0.01	3.02 (1.29)	p=0.11
High dependence	317	20.7		2.87 (1.22)		2.42 (1.11)		2.89 (1.30)	

^b Cut-off point: >= 4 classified as high dependence

Table 2.

Generalized linear model of smoking stigma

	Self-stigma ISSI subscale			Felt-stigma ISSI subscale			Discrimination ISSI subscale		
	beta	p	95 % CI	beta	p	95 % CI	beta	p	95 % CI
Overall		<0.001			<0.001			<0.001	
Gender									
Male	-.02	.32	-.04	.01	.06	.02	.10	.01	.80
Female (Ref)	.00			.00				.00	
Race/ethnicity									
Black	-.06	.08	.88	1.01	-.01	.91	1.08	-.09	.08
Asian/Pacific Islander	-.02	.62	.89	1.07	-.03	.87	1.09	-.13	.08
Other	-.03	.71	.84	1.13	.13	.96	1.35	.08	.37
Hispanic	.03	.15	.99	1.07	.10	1.06	1.16	.08	.00
White (Ref)	.00			.00				.00	
Education									
< HS degree	-.01	.78	-.11	.08	-.04	.56	.09	.02	.78
HS degree/GED	-.02	.34	-.07	.02	-.08	.01	-.02	-.07	.05
Some college	.01	.76	-.03	.04	-.03	.23	.02	.01	.78
College degree+ (Ref)				.00			.00		
Age									
14-17	.06	.33	-.06	.18	.23	.00	.38	.09	.26
18-25	.10	.02	.01	.18	.22	.00	.11	.33	.10
26-35	.11	.00	.05	.16	.29	.00	.21	.36	.16
36-45	.10	.00	.04	.16	.17	.00	.09	.24	.04
46-55	.04	.23	-.02	.10	.06	.18	-.03	.14	.03
56+ (Ref)	.00			.00				.00	
Intention to Quit									
Within the next 30 days	.49	.00	.45	.53	.48	.00	.43	.40	.00
Within the next 6 months	.30	.00	.26	.34	.21	.00	.16	.16	.00

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	Self-stigma ISSI subscale			Felt-stigma ISSI subscale			Discrimination ISSI subscale				
	beta	p	95 % CI	upper	beta	p	95 % CI	upper	beta	p	95 % CI
Not thinking of quitting (Ref)	.00			.00				.00			
Heaviness of Smoking Index											
Low dependence	.01	.60	-.03	.05	.00	.90	-.05	.05	-.06	.03	-.11
High dependence (Ref)	.00			.00				.00			

Table 3.

Multinomial logistic regression models of correlates of past year quit attempts (1–2 or 3+) and intentions to quit in the next 30 days or next 6 months, and current e-cigarette use

	Current quit intention				Past-year quit attempts				E-Cig Use									
	30 days		6 months		1 or 2		3+		Every Day		Some days							
	OR	95 % CI	OR	95 % CI	OR	95 % CI	OR	95 % CI	OR	95 % CI	OR	95 % CI						
ISSI self	4.21	3.32	2.47	2.08	1.60	1.35	1.90	1.74	1.46	2.08	1.73	1.35	2.23	1.03	0.89	1.19		
ISSI felt	1.54	1.24	1.92	1.04	0.87	1.24	1.07	1.28	1.35	1.13	1.63	2.05	1.59	2.63	1.30	1.11	1.53	
Discrimination	1.06	0.70	1.60	0.78	0.55	1.09	1.33	0.93	1.89	1.16	1.67	<i>1.83</i>	<i>1.17</i>	<i>2.85</i>	1.18	0.87	1.59	
Gender																		
Male	1.21	0.86	1.71	0.94	0.71	1.23	1.18	0.88	1.57	1.32	0.98	1.76	1.22	0.85	1.75	0.99	0.78	1.28
Female (Ref)																		
Race/ethnicity																		
Black	2.71	1.16	6.30	3.18	1.65	6.13	1.36	0.73	2.53	1.18	0.61	2.27	1.02	0.48	2.19	0.78	0.45	1.36
Asian/Pacific Islander	0.77	0.29	2.08	0.85	0.38	1.88	1.49	0.58	3.84	1.32	0.53	3.29	0.51	0.16	1.64	0.57	0.28	1.18
Other	0.16	0.02	1.46	0.72	0.27	1.95	0.53	0.16	1.76	0.48	0.14	1.71	2.16	0.58	8.07	0.90	0.31	2.59
Hispanic	1.47	0.94	2.31	1.15	0.77	1.72	1.29	0.83	2.00	1.74	1.15	2.64	1.48	0.99	2.21	1.04	0.75	1.45
White (Ref)																		
Education																		
< HS degree	0.84	0.27	2.64	0.74	0.31	1.79	0.46	0.17	1.24	0.50	0.19	1.27	1.08	0.34	3.41	0.76	0.33	1.75
HS degree/GED	0.72	0.42	1.21	0.86	0.58	1.26	0.87	0.58	1.30	0.52	0.34	0.80	0.71	0.40	1.24	0.57	0.39	0.83
Some college	0.74	0.50	1.09	0.85	0.62	1.16	0.74	0.53	1.03	0.61	0.44	0.85	0.47	0.32	0.71	0.64	0.48	0.85
College degree+ (Ref)																		
Age																		
14–17	5.99	1.43	25.10	2.87	0.92	8.93	4.64	1.33	16.16	10.78	3.31	35.09	1.51	0.34	6.75	2.97	1.09	8.10
18–25	1.10	0.42	2.89	0.67	0.32	1.37	1.88	0.82	4.31	5.07	2.28	11.28	3.50	1.15	10.66	2.42	1.19	4.92
26–35	1.52	0.81	2.84	0.98	0.64	1.49	2.54	1.62	3.98	4.47	2.72	7.35	3.78	1.60	8.96	3.95	2.56	6.11
36–45	1.42	0.75	2.71	0.74	0.48	1.15	1.36	0.86	2.16	2.06	1.24	3.44	2.56	1.06	6.20	2.40	1.52	3.76
46–55	1.03	0.51	2.09	0.95	0.61	1.47	1.18	0.74	1.88	1.19	0.69	2.07	2.30	0.90	5.89	1.82	1.13	2.92

	Current quit intention		Past-year quit attempts		E-Cig Use	
56+ (Ref)						
Heaviness of Smoking Index						
Low dependence	<i>1.95</i>	1.25	3.04	<i>1.39</i>	1.01	1.92
High dependence (Ref)						
				<i>1.64</i>	1.18	2.28
				<i>2.92</i>	2.01	4.23
				<i>1.70</i>	<i>1.01</i>	<i>2.86</i>
						0.84
						0.63
						1.14

CI: confidence interval

Referent for current quit intentions was no intentions; Referent for past-year quit attempts was 0; Referent for e-cig use was not at all

Bolded values are significant at p<0.05