HHS Public Access

Author manuscript

Health Behav Policy Rev. Author manuscript; available in PMC 2017 January 01.

Published in final edited form as:

Health Behav Policy Rev. 2016 January 1; 3(1): 13–20. doi:10.14485/HBPR.3.1.2.

Exploring Smoking Stigma, Alternative Tobacco Product Use, & Quit Attempts

Cati G. Brown-Johnson, PhD and

Postdoctoral Fellow, Stanford Prevention Research Center, Department of Medicine, Stanford University, Stanford, CA

Lucy Popova, PhD

Research Scholar, Center for Tobacco Control Research and Education, University of California San Francisco, CA

Abstract

Objectives—Investigate smoking stigma among different tobacco user types.

Methods—US adults (N=1,812) responded to an online survey, including non-smokers, smokeless tobacco users, exclusive smokers, and smokeless and cigarette "dual users".

Results—Dual users perceived the highest smoking stigma. Stigma was higher for smokers open to quitting by switching to smokeless. E-cigarette users (smokers) reported higher stigma than non-users. Making a past-year quit attempt was predicted by smoking stigma, and smokeless and/or e-cigarette use.

Conclusions—Smoking stigma and dual use of smokeless tobacco and/or e-cigarettes with cigarettes predict quit attempts. However, smoking stigma might prevent smokers from consulting doctors and induce use of alternative tobacco products as cessation aids.

Keywords

: Smoking stigma; cessation; smokeless tobacco; e-cigarettes; guilt; shame

Smoking is now predominately the behavior of groups already experiencing negative effects of health inequities, including individuals with low socio-economic status, mental health diagnoses,[1] and those unemployed and unhoused.[2] Smoking stigma may play a role in further ostracizing smokers,[3] and has been variously defined: 1) as "criticism, confrontation and judgment [related to smoking] irrespective of individual… contexts and social backgrounds"[4]; 2) as discrimination against smokers that is primarily an artifact of social class and increasingly public body-politics[5]; and most practically, 3) as smoker perceptions of devaluation, differential treatment, and social withdrawal, often resulting in undisclosed smoking status.[6] Definition three addresses smoking stigma from the point of view of

Correspondence Dr. Popova; lyudmila.popova@ucsf.edu).

Human Subjects Approval Statement: The study was approved by the Committee on Human Research (the IRB) of the University of California, San Francisco.

Conflict of Interest Declaration: Cati Brown-Johnson consults on an ongoing basis with the Oklahoma Tobacco Settlement Endowment Trust. All authors of this article declare they have no additional conflicts of interest.

smokers, while definition two highlights smoking stigma's role in the landscape of social and gender politics. These diverse definitions indicate that social stigma is a complex multidimensional phenomenon that needs to be examined from different perspectives, and may also be symptomatic of the nascent research in the field. Social stigma in other related arenas such as lung cancer has been associated with concrete and deleterious health outcomes including worse physiological symptoms[7] and lower quality of life.[8] Therefore, determining the potential effects of social stigma on smoking is important as public health organizations including local, state, and national departments of health as well as independent heart- and lung-health groups such as the American Lung Association or the Legacy Foundation look to encourage and support smokers in cessation. These organizations may be best positioned to help or hinder both smokers looking to quit and those affected by smoking-related illnesses such as lung cancer patients as they consider potential effects of mass media tobacco control campaigns on not just cessation and prevention, but also the experience of stigma.

A growing body of work has shown that most non-smokers stigmatize smokers.[9] Smoking stigma is now pervasive in higher income countries, regardless of historical acceptance of smoking. Studies in both New Zealand[10] where there is a low historical acceptance of smoking and France,[9] which has high historical acceptance of smoking, reflect widespread stigma against smokers.

While smoking stigma has been documented among non-smokers, less attention has been paid to the experience and impact of stigma for tobacco users. However, a number of qualitative explorations of smoker experiences of smoking stigma have identified the following themes: 1) social isolation as seen in both the creation of “smoking islands”, where smokers self-ostracize,[3] and perception of a “deep divide” between smokers and non-smokers[10]; 2) self-stigma/shame or stigmatization of smokers by smokers[11]; and 3) perceived judgment experienced in the negative labeling of smokers such as “anti-social” and “other,”[12] and perceptions of smokers as bad parents.[4,11,13]

This rich qualitative literature is in contrast to the few quantitative studies of perceived stigma by tobacco users. Limited quantitative research has investigated qualitative themes, finding that smoking stigma is linked to social withdrawal and ultimately social isolation,[14,15] that self-stigma is related to quitting Stage of Change and experience of stigma in other domains including mental health and ethnicity,[16] and that fully half of smokers and former smokers experience perceived judgment in the form of devaluation and discrimination.[15] Variations on these themes with respect to discrimination, shame and perceived judgment by others make up three major elements of the experience of stigma for smokers as it is currently understood.[6] One aim of the current study was to further explore elements of discrimination, shame and perceived judgment in a national sample. Additionally, our focus on quantitative investigation of smoking stigma is part of the novelty of this project, since quantitative accounts of smoking stigma are as yet limited.

Discrimination experiences for smokers result in loss of status or resource such as housing or job prospects because of their smoking or status as a “smoker”. Discrimination has been reported to be lower than other elements of smoking stigma by smokers, with only 17% of

New York smokers and former smokers reporting experiences of discrimination with respect to smoking.[14]

While experiences of discrimination originate outside of smokers in other people, shame and perceptions of judgment can be internal experiences. Secrecy is an example of behavior related to shame, an emotion that originates from beliefs that your negative actions are the result of an inherent personal flaw,[17] and smoking stigma has been associated with keeping secrets from those best equipped to help smokers quit, such as family and health practitioners.[15]

Guilt may be a response to perceptions of judgment. Research differentiating shame from guilt has demonstrated that while guilt is related to shame in that they both deal with negative feelings associated with bad behavior, guilt is feeling bad about something you DID, not something you ARE.[17] Most importantly in this instance, feelings of guilt based on perceptions of judgment spur individuals to remedy the bad action by apologizing while feelings of shame result in withdrawal and hiding secretive behaviors.[17] One way we may see guilt remedied for smokers is through cleanliness rituals, which have been documented as an element of smoking stigma.[10]

In further exploration of the contours and impacts of smoking stigma, it was our goal to determine differences in concepts contributing to smoking stigma for a variety of tobacco product users. Smoking stigma across tobacco products is of particular interest in a rapidly-changing marketplace that includes electronic cigarettes (“e-cigarettes”) as well as relatively novel smokeless products such as snus, orbs and nicotine sticks. Whether smoking stigma persists with smoking or former smoker e-cigarette users, for instance, is an open question in tobacco control at present. The tobacco use landscape is changing, and while smoking rates go down, use of smokeless tobacco and e-cigarettes is growing, with studies showing e-cigarette use rates surpassing conventional tobacco particularly for youth.[18] People are motivated to use novel products for health and convenience reasons,[19-23] but management of smoking stigma has not been cited as a reason for use. Furthermore, there is currently little to no research reporting on experiences of stigma for smokeless and e-cigarette users.

Smokers motivated by social pressures, a factor in smoking stigma, have been shown to be more likely to be abstinent than those motivated by health concerns.[24] Additionally, smoking stigma scale development results have demonstrated relationships between stigma and readiness to quit, so we might anticipate relationships between smoking stigma and quit attempts.[16]

Within this changing context, our study aimed to expand quantitative exploration of smoking stigma. We focused on two research questions: 1) How does smoking stigma differ by tobacco product experience?, and 2) Is smoking stigma associated with quit smoking attempts among smokers?

Methods

A national sample of 1,812 US adults aged 18+ was recruited by a survey and research company Toluna (www.toluna-group.com). Participants were recruited to Toluna's panel of

over 2.3 million participants in the U.S. through a variety of online methods, such as web banners, website referrals, natural search optimization, pay-per-click, affiliate marketing, email, and online public relations activities. Participants were notified of the survey by secure email, and Toluna provided email and telephone reminders. To ensure eligibility of participants, participants entered their zip code at the beginning and end of the survey; those whose zip codes did not match had their session terminated. Additional procedures for data quality control are described at http://www.toluna-group.com/about-toluna/about/data-quality-approach. Participants were compensated with points redeemable for cash, vouchers/gift cards, or prize drawing tickets. Participants completed an online study in 2013.

Participant categories included non-smokers, smokeless tobacco users ("SLT"), conventional cigarette smokers ("exclusive smokers"), and smokeless tobacco and conventional cigarette dual users ("dual users") determined by their answers to tobacco use questions. Non-smokers had not smoked 100 or more cigarettes, had not used smokeless tobacco 20 or more times in their lifetime, and reported not using any tobacco products in the past 30 days. Exclusive smokers had smoked 100 cigarettes or more and were currently smoking everyday or some days. Smokeless tobacco users had used smokeless tobacco 20 or more times and were currently using smokeless tobacco everyday or some days. Dual users were those who 1) had smoked 100 or more cigarettes in their lifetime and were currently smoking everyday or some days, and 2) had used smokeless tobacco 20 or more times and were currently using smokeless tobacco everyday or some days.

Measures

Participants were asked if they smoked at least 100 cigarettes in their entire life, whether they used smokeless tobacco such as chewing tobacco, snuff, dip, or snus at least 20 times in their life and if they were currently smoking and using smokeless tobacco every day, some days, or not at all.

Three statements about smoking stigma were presented to all respondents with answers on a 5-point Likert scale ranging from 1 to 5 (Strongly Disagree to Strongly Agree). The questions corresponded to elements of other perceived Health Related Stigma scales[25]: Q1) (Discrimination) *People treat smokers badly*; Q2) (Secrecy) *Cigarette smokers keep their smoking a secret from important people in their lives*; Q3) (Guilt) *Cigarette smokers feel guilty about their smoking* (Cronbach's alpha = .63). Despite a somewhat low alpha, past research indicates the interconnectivity of different subdimensions of stigma with respect to smoking.[16] Considering this, and since our scale consisted of just three items, we thought it important to evaluate the effects of smoking stigma overall in addition to examining subcomponents.

Smokers were asked if they had made a quit attempt of at least 1 day in the past year and whether they intended to quit in the next month, in the next 6 months, in the future but not in the next 6 months, or never. We asked smokers (exclusive smokers and dual users) if they ever tried to quit smoking by switching to smokeless tobacco, with answers being "Yes"; "I considered it, but never tried it"; and "No, I have never even considered it." Smokers were also asked how many cigarettes they smoke per day. We assessed past 30-day e-cigarette use (yes/no) and gathered demographic data.

Statistical Analysis

Differences in the perception of smoking stigma and subcomponents of stigma (discrimination, secrecy and guilt) were assessed with ANOVAs by category (tobacco use group, sex, current e-cigarette use, trying to quit by switching to smokeless tobacco). Associations between perception of smoking stigma and continuous demographic variables (age, education, household income) were evaluated with Pearson's correlations. We used multivariate logistic regression to examine associations between making a quit attempt in the past year and: 1) smoking stigma, 2) Stage of Change quitting intentions, and 3) current tobacco use behaviors.

Results

Sample

Our sample was 47% women; 15% Hispanic, 42% White; mean age=41 (SD=15.5) (Table 1). Participants were non-smokers (n=483), smokeless tobacco users (“SLT” n=341), conventional cigarette smokers (“exclusive smokers” n=488), and smokeless tobacco and conventional cigarette dual users (“dual users” n=500).

Differences in Smoking Stigma by Tobacco Use and Demographics

To answer our first research question – how smoking stigma differs by tobacco product experience – we examined differences in the perceptions of stigma by the four categories of participants based on their tobacco use. Perceptions of smoking stigma varied significantly by tobacco product use with non-smokers perceiving the least smoking stigma, and dual users reporting the highest (Table 2). A Tukey post-hoc test revealed that every group was significantly different from every other group. Exclusive smokers reported perceiving the highest levels of discrimination, but conversely the lowest levels of secrecy. Dual users reported the highest levels of secrecy and guilt, and second-highest level of discrimination (Table 2).

Second, we examined the perception of smoking stigma based on demographics. Smoking stigma perceptions did not differ significantly by sex ($F_{1, 1794}$=.97, p=.33). In the overall sample, perceptions of smoking stigma were not significantly associated with age (Pearson r=-.20, p=.22), but were significantly associated with education (r=.09, p<.001) and household income (r=.08, p=.001).

Finally, looking only at smokers, perceptions of smoking stigma were significantly higher among those smokers who had tried to quit smoking by switching to smokeless tobacco (3.43) or those who considered it (3.27) as compared to those who had never considered it (3.06) ($F_{2,972}$=15.28, p<.001). Among smokers, those who used e-cigarettes in the past 30 days reported higher perception of stigma than those not currently using e-cigarettes (3.31 vs. 3.16; $F_{1, 979}$=6.09, p<.05).

Smoking Stigma and Quitting Attempts

A logistic regression among smokers with smoking stigma, user status (exclusive smoker and dual user), cigarettes per day, past 30 day e-cigarette use, and intentions to quit smoking

(Transtheoretical Stage of Change for smoking cessation[26]) as predictors of making a quit attempt in a past year was significant ($\chi^2(7)=221.12$, $p<.001$). Greater smoking stigma, fewer cigarettes per day, use of e-cigarettes in the past 30 days, and greater readiness to quit were associated with greater likelihood of making a quit attempt in the past year (Table 3). Dual users were 1.6 times more likely to have made a quit attempt in the last year, and current e-cigarette users were 2 times more likely, as compared to exclusive smokers.

Discussion

This is the first study to compare perceptions of smoking stigma among different tobacco user types. As such, it provides seminal information about the perceptions of smoking stigma among smokers who use alternative tobacco products such as smokeless tobacco or e-cigarettes, and contributes to our understanding of the quantification of smoking stigma. Our results show smoking stigma to be related to both quit attempts and current use of alternative tobacco products, such that increased stigma and use of alternative tobacco products in addition to being in a later stage of change predict quit attempts. Although the cross-sectional nature of the data does not allow for the determination of causality in these relationships, the data indicate that the perception of stigma could motivate smokers to attempt cessation. However, higher perceived stigma might prevent smokers from seeking professional help and they might instead turn to alternative tobacco products as cessation aids.

Non-combustible tobacco products are aggressively marketed to smokers as an “alternative to quitting” or as cessation aids. For example, a direct mail piece available at the Trinkets and Trash repository (http://trinketsandtrash.org) called on smokers to “make a fresh start” in the New Year and achieve a “smoke-free resolution” with Camel snus.[27] E-cigarettes are frequently advertised as way to quit smoking; the Stanford SRITA archive of tobacco advertising (http://tobacco.stanford.edu/tobacco_main/index.php) currently houses over 230 e-cigarette ads tagged as “Helps You Quit.”[28] Despite these advertisements and some limited evidence that snus[29] and e-cigarettes[30-32] are comparable to nicotine replacement therapy, a meta-analysis of population-based studies show that when smokers use these products in general and uncontrolled situations, they do not increase their success rate of quitting.[33,34]

Previous accounts of smoking stigma have shown that increased stigma and devaluation are associated with keeping smoking a secret from healthcare providers.[15] With this in mind, our data demonstrating that dual users report the highest perception of smoker secrecy and guilt indicate a potential risk that dual users hoping to quit would not ask for help from physicians or other professionals who could help treat their addiction with best practices. Our study's secrecy item referred to keeping smoking secret from “important people” in smokers' lives, which might, or might not, include doctors. Future studies on perceived smoking stigma should explicitly ask participants about hiding tobacco use from their healthcare providers.

Dual users' high perceptions of secrecy may be an outgrowth of shame about their smoking status, which would potentially put them at additional risk for not quitting. Shame contrasts with guilt in that it is a judgment of bad acts as evidence of poor CHARACTER instead of

poor DECISIONS.[17] One result of shame is to hide or withdraw, in contrast to the positive behavioral changes that might be induced by experiences of guilt.[17] From communication science on health messages, there is initial evidence that guilt is more productive in behavior change than shame. One study of shame-free guilt messaging related to STD testing demonstrated that messages focusing on guilt while not also eliciting shame were more effective than shame or combined guilt/shame-focused messaging in producing positive behavior change.[35] Conversely, a tobacco control intervention reported greater recall of a shame-based social isolation messaging,[36] but problems with that study interfere with its ability to be generalized.[37] For instance, they did not measure shame or guilt in participants and the most memorable message was also the only novel message, creating a potential confound.

This study is limited in that it is a cross-sectional dataset. A longitudinal dataset is needed to determine if stigma helps or hinders long-term abstinence. We are also limited in our measures of stigma. Since this was an exploratory study within a larger study, we could devote only relatively little space and time to smoking stigma questions. One potential problem with this was that smoking stigma items were worded the same regardless of smoking status, so for smokers the items likely do reflect how they feel about their own behavior, but might not necessarily. This inference is partially based on the relationship we observed between items and other variables like quit attempts. In future studies, we hope to explore aspects of smoking stigma, particularly shame and guilt, in more detail, using a validated scale that is tobacco-user specific, such as the Internalized Stigma of Smoking Inventory.[16] Future studies should also examine exclusive e-cigarette users and their perceptions of social stigma.

This study demonstrates that dual users perceive the highest levels of smoking stigma, and that current e-cigarette users perceive greater smoking stigma than those who do not currently use e-cigarettes. We also show that in addition to intention to quit being a strong predictor of making a quit attempt in the past year, smoking stigma, dual use of cigarettes and smokeless tobacco, and current use of e-cigarettes predicted making a quit attempt in the last year. Our findings indicate that dual users experience greater smoking stigma, and that smoking stigma contributes to cessation behavior, perhaps through a mechanism whereby mitigation of stigma experiences motivates smokers to attempt cessation.

Implications for Health Behavior or Policy

Although one interpretation of our results is that stigma may be a potential lever for cessation, we caution policymakers and public health organizations against using smoking stigma, discrimination or shame in anti-tobacco messages. Messages aimed at evoking shame in particular may lead smokers away from seeking help from healthcare and other supporters to quit and stay abstinent, in turn pushing smokers towards alternative tobacco products like smokeless tobacco and e-cigarettes, which are associated with higher toxicant exposures compared to nicotine replacement therapy,[29] and are also not proven as smoking cessation aids.[33,34] Instead, other anti-tobacco messages effective in increasing cessation should be considered, such as ones that expose tobacco industry manipulations.[38]

Acknowledgments

This research was supported by the National Cancer Institute and National Heart, Blood and Lung Institute; National Institutes of Health (grants R01-CA141661, K99CA187460, 5T32HL007034-39). Note: The article contents are solely the responsibility of the authors and do not necessarily represent the official views of the National Cancer Institute and National Heart, Blood and Lung Institute; National Institutes of Health.

References

1. Schroeder SA, Morris CD. Confronting a neglected epidemic: tobacco cessation for persons with mental illnesses and substance abuse problems. Annu Rev Public Health. 2010; 31:297–314. [PubMed: 20001818]
2. Prochaska JJ, Shi Y, Rogers A. Tobacco use among the job-seeking unemployed in California. Preventive Medicine. 2013; 56(5):329–332. [PubMed: 23415765]
3. Thompson L, Pearce J, Barnett JR. Moralising geographies: stigma, smoking islands and responsible subjects. Area. 2007; 39(4):508–517.
4. Wigginton B, Lee C. A story of stigma: Australian women's accounts of smoking during pregnancy. Critical Public Health. 2012; 23(4):1–16.
5. Graham H. Smoking, stigma and social class. J Soc Policy. 2012; 41(01):83–99.
6. Stuber J, Galea S, Link BG. Stigma and smoking: the consequences of our good intentions. Soc Serv Rev. 2009; 83(4):585–609.
7. Brodsky JL, Cataldo JK. Lung cancer stigma, anxiety, depression and symptom severity. Oncology. 2013; 85(1):33–40. [PubMed: 23816853]
8. Brown-Johnson CG, Brodsky JL, Cataldo JK. Lung cancer stigma, anxiety, depression, and quality of life. J Psychosoc Oncol. 2014; 32(1):59–73. [PubMed: 24428251]
9. Peretti-Watel P, Legleye S, Guignard R, et al. Cigarette smoking as a stigma: evidence from France. Int J Drug Policy. 2014; 25(2):282–290. [PubMed: 24315503]
10. McCool J, Hoek J, Edwards R, et al. Crossing the smoking divide for young adults: expressions of stigma and identity among smokers and nonsmokers. Nicotine Tob Res. 2012; 15(2):552–556. [PubMed: 22949576]
11. Ritchie D, Amos A, Martin C. “But it just has that sort of feel about it, a leper”- stigma, smoke-free legislation and public health”. Nicotine Tob Res. 2010; 12(6):622–629. [PubMed: 20453042]
12. Farrimond HR, Joffe H. Pollution, peril and poverty: a British study of the stigmatization of smokers. Journal of Community & Applied Social Psychology. 2006; 16(6):481–491.
13. Greaves L, Oliffe JL, Ponic P, Kelly MT, Bottorff JL. Unclean fathers, responsible men: smoking, stigma and fatherhood. Health Sociology Review. 2010; 19(4):522–533.
14. Stuber J, Galea S, Link BG. Smoking and the emergence of a stigmatized social status. Soc Sci Med. 2008; 67(3):420–430. [PubMed: 18486291]
15. Stuber J, Galea S. Who conceals their smoking status from their health care provider? Nicotine Tob Res. 2009; 11(3):303–307. [PubMed: 19246431]
16. Brown-Johnson CG, Cataldo JK, Orozco N, et al. Validity and reliability of the Internalized Stigma of Smoking Inventory: an exploration of shame, isolation, and discrimination in smokers with mental health diagnoses. Am J Addict. 2015; 24(5):410–418. [PubMed: 25930661]
17. Tangney, JP.; Dearing, RL. Shame and Guilt. New York, New York: The Guilford Press; 2002.
18. Wills TA, Knight R, Williams RJ, et al. Risk factors for exclusive e-cigarette use and dual e-cigarette use and tobacco use in adolescents. Pediatrics. 2015; 135(1):e43–e51. [PubMed: 25511118]
19. Etter J. Electronic cigarettes: a survey of users. BMC Public Health. 2010; 10(1):231. [PubMed: 20441579]
20. Foulds J, Veldheer S, Berg A. Electronic cigarettes (e-cigs): views of aficionados and clinical/public health perspectives. Int J Clin Pract. 2011; 65(10):1037–1042. [PubMed: 21801287]
21. Etter J, Bullen C. Electronic cigarette: users profile, utilization, satisfaction and perceived efficacy. Addiction. 2011; 106(11):2017–2028. [PubMed: 21592253]

22. Dockrell M, Morison R, Bauld L, et al. E-cigarettes: prevalence and attitudes in Great Britain. Nicotine Tob Res. 2013; 15(10):ntt057.
23. Pepper JK, Ribisl KM, Emery SL, et al. Reasons for starting and stopping electronic cigarette use. Int J Environ Res Public Health. 2014; 11(10):10345–10361. [PubMed: 25286168]
24. Baha M, Le Faou AL. Smokers' reasons for quitting in an anti-smoking social context. Public Health. 2010; 124(4):225–231. [PubMed: 20371089]
25. Cataldo JK, Slaughter R, Jahan TM, et al. Measuring stigma in people with lung cancer: psychometric testing of the cataldo lung cancer stigma scale. Oncol Nurs Forum. 2011; 38(1):E46–54. [PubMed: 21186151]
26. DiClemente CC, Prochaska JO, Fairhurst SK, et al. The process of smoking cessation: an analysis of precontemplation, contemplation, and preparation stages of change. J Consult Clin Psychol. 1991; 59(2):295. [PubMed: 2030191]
27. Reynolds, RJ. Camel Snus. [Accessed July 30, 2015] Make a Fresh Start in 2012. 2012. [paper advertisement]Available at: http://trinketsandtrash.org/viewImage.php?file_name=213602.jpg
28. Stanford Research into the Impact of Tobacco Advertising. [Accessed July 30, 2015] Electronic Cigarettes ≫ Helps You Quit. 2015. [images]Available at: http://tobacco.stanford.edu/tobacco_main/subtheme_ecigs.php?token=fm_ecigs_mt043.php
29. Hatsukami DK, Severson H, Anderson A, et al. Randomised clinical trial of snus versus medicinal nicotine among smokers interested in product switching. Tob Control. 2015 tobaccocontrol-2014-052080.
30. Brown J, Beard E, Kotz D, Michie S, West R. Real-world effectiveness of e-cigarettes when used to aid smoking cessation: a cross-sectional population study. Addiction. 2014; 109(9):1531–1540. [PubMed: 24846453]
31. Biener L, Hargraves JL. A longitudinal study of electronic cigarette use among a population-based sample of adult smokers: association with smoking cessation and motivation to quit. Nicotine Tob Res Feb. 2015; 17(2):127–133.
32. Bullen C, Howe C, Laugesen M, et al. Electronic cigarettes for smoking cessation: a randomised controlled trial. The Lancet. 382(9905):1629–1637.
33. Grana R, Benowitz N, Glantz SA. E-cigarettes a scientific review. Circulation. 2014; 129(19): 1972–1986. [PubMed: 24821826]
34. Grana R, Benowitz N, Glantz S. Response to letter regarding article,“Electronic cigarettes: a scientific review”. Circulation. 2015; 131(6):e342–e342. [PubMed: 25815391]
35. Boudewyns V, Turner MM, Paquin RS. Shame-free guilt appeals: testing the emotional and cognitive effects of shame and guilt appeals. Psychology & Marketing. 2013; 30(9):811–825.
36. Amonini C, Pettigrew S, Clayforth C. The potential of shame as a message appeal in antismoking television advertisements. Tob Control. 2015 tobaccocontrol-2014-051737.
37. Brown-Johnson CG, Prochaska JJ. Shame-based appeals in a tobacco control public health campaign: potential harms and benefits. Tob Control. 2015 in press.
38. Davis, RM.; Gilpin, EA.; Loken, B.; Viswanath, K.; Wakefield, MA., editors. Tobacco Control Mongraph 19: The Role of the Media in Promoting and Reducing Tobacco Use. National Cancer Institute, National Institutes of Health, US Department of Health and Human Services; 2008. 19NCI Tobacco Control Monograph Series

Health Behav Policy Rev. Author manuscript; available in PMC 2017 January 01.

Table 1

Sample characteristics by tobacco product use status

Characteristic	N	%	Non-Smoker (n=483), %	Exclusive Smoker (n=488), %	Smokeless User (n=341), %	Dual User (n=500), %
Sex						
Men	954	52.6	44.1	39.3	72.7	60.2
Women	858	47.4	55.9	60.7	27.3	39.8
Age, years						
18-29	520	28.7	17.2	16.0	41.1	43.8
30-44	588	32.5	27.3	28.3	37.5	38.0
45-59	411	22.7	28.8	30.1	16.4	13.8
60+	293	16.2	26.7	25.6	5.0	4.4
Race						
White	755	41.7	53.0	48.8	56.9	13.4
Black or African American	500	27.6	20.1	26.8	19.1	41.4
American Indian or Alaska Native	70	3.9	2.7	4.5	2.9	5.0
Asian	353	19.5	18.6	11.9	14.7	31.0
Native Hawaiian or Pacific Islander	47	2.6	.8	2.3	2.3	4.8
Multiple Races	51	2.8	4.3	3.1	1.2	2.2
Unknown	36	2.0	.4	2.7	2.9	2.2
Ethnicity						
Hispanic	266	14.7	8.7	13.9	12.6	22.6
Not Hispanic	1535	84.7	90.7	85.5	87.4	76.6
Education						
High school or less	397	21.9	19.7	24.8	24.3	19.6
Some college	503	27.8	21.9	27.0	38.7	26.6
Bachelor's degree or higher	912	50.3	58.4	48.2	37.0	53.8
Income per year						
<25K	501	27.6	24.6	28.9	24.3	23.8
25-59.9K	726	40.1	40.0	41.6	38.7	40.8
>60K	585	32.3	35.4	29.5	37.0	35.4
Region						
Northeast	343	18.9	16.4	18.4	15.8	24.0

Characteristic	N	%	Non-Smoker (n=483), %	Exclusive Smoker (n=488), %	Smokeless User (n=341), %	Dual User (n=500), %
Midwest	363	20.0	20.5	19.3	22.0	19.0
South	687	37.9	37.5	37.7	43.7	34.6
West	419	23.1	25.7	24.6	18.5	22.4

Table 2

Levels of smoking stigma and its subcomponents by participant category based on tobacco use

Stigma	Nonsmokers (N=483)Mean (SD)	Exclusive smokers (N=488)Mean (SD)	SLT (N=341)Mean (SD)	Dual users (N=500)Mean (SD)	Test of difference (F)
Smoking stigma	2.77 (0.82) a	3.14 (0.85) c	2.97 (0.84) b	*3.30 (0.96) d*	32.21***
Discrimination	2.85 (1.12) a	*3.58 (1.04) c*	3.13 (1.08) b	3.47 (1.13) c	44.65***
Secrecy	2.79 (1.22) a	2.65 (1.22) a	2.75 (1.14) a	*3.11 (1.28) b*	12.50***
Guilt	2.68 (1.10) a	3.20 (1.20) bc	3.04 (1.06) b	*3.33 (1.17) c*	29.03***

Note: Groups (nonsmokers, exclusive smokers, SLT, and dual users) with different subscripts (a, b, c, d) are different from each other at p<.05 (repeated measures ANOVAs with Tukey's honestly significant difference post hoc multiple comparisons). Italic font indicates the highest smoking stigma.

Table 3

Predictors of making a quit smoking attempt in the last year

Predictor	OR (95% CI)
Smoking stigma	1.29 (1.09, 1.52)
Exclusive smoker	ref
Dual user	1.64 (1.2, 2.23)
Cigarettes per day	0.94 (0.92, 0.96)
Quit smoking intentions (Stage of Change)	
Never plan to quit	ref
Precontemplation (not planning to quit in next 6 months)	2.75 (1.77, 4.27)
Contemplation (planning to quit in next 6 months)	6.64 (3.96, 11.13)
Preparation (planning to quit in next month)	21.71 (9.34, 50.44)
Current e-cigarette use	2.09 (1.51, 2.87)