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Smoking-Related Beliefs and Susceptibility among U.S. Youth Nonsmokers

Sherine El-Toukhy, Ph.D.¹ and Kelvin Choi, Ph.D., M.P.H.¹

¹Division of Intramural Research The National Institute on Minority Health and Health Disparities
The National Institutes of Health Bethesda, MD

Abstract

Purpose—To examine racial/ethnic disparities in smoking beliefs and susceptibility in a nationally representative sample of U.S. youth nonsmokers ($N = 21,931$).

Methods—Weighted regression models were used to examine smoking-related beliefs and susceptibility by race/ethnicity adjusting for demographics, exposure to pro-tobacco advertising and promotions, parental guidance against tobacco use, and peer norms.

Results—Compared to non-Hispanic Whites, racial/ethnic minority youth endorsed pro-smoking beliefs and were susceptible to smoking. Non-Hispanic Blacks, non-Hispanic Asians, and Hispanics embraced social benefits of smoking ($ps < 0.05$). Hispanics had lower perceptions of tobacco-related risks (AOR: 0.87) and were more susceptible to smoking (AOR: 1.56). Disparities in smoking beliefs and susceptibility persisted between minority and non-Hispanic White youth after adjusting for exposure to pro-tobacco advertising and promotions, parental guidance against tobacco use, and peer norms.

Conclusions—Smoking-related beliefs and susceptibility varied by race/ethnicity among youth nonsmokers after accounting for known predictors of youth smoking.

Implications and Contribution—Racial/ethnic disparities exist in smoking beliefs and susceptibility among youth nonsmokers. Endorsement of pro-smoking beliefs and smoking susceptibility lie beyond advertising, parental guidance, and peer norms. To reduce smoking initiation, examining and targeting individual and social factors associated with smoking beliefs and susceptibility among minority youth are warranted.

Keywords

adolescents; racial/ethnic disparities; smoking-related beliefs; smoking susceptibility

Corresponding Author: T.C. “Kelvin” Choi, PhD, MPH, Stadtman Investigator, Acting Head of the Social and Behavioral Group, Division of Intramural Research, NIMHD/NIH, Bldg. 3 Rm 5W05, 9000 Rockville Pike, Bethesda, MD 20892, Office: 301-496-3400, Kelvin.choi@nih.gov.

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Smoking remains a public health concern in the United States. There are 3.6 million (6.6%) middle- and high-school students who currently smoke.^{1, 2} Racial/ethnic disparities manifest in smoking prevalence starting early adolescence. Hispanic middle-school students have higher prevalence than non-Hispanic Whites (6.7% vs. 4.3%). Non-Hispanic White (22.5%) and Hispanic (18.0%) high-school students have the highest smoking prevalence; followed by American Indians, Alaska Natives, non-Hispanic Asians, Native Hawaiians, Pacific Islanders, and youth who identify with two or more races (16.5%); and non-Hispanic Blacks (9.5%).²

Less is known about disparities in smoking-related beliefs and susceptibility, which are precursors to smoking initiation.^{1, 2} Understanding smoking beliefs and susceptibility among youth is particularly important with 88.2% of adults who had ever smoked cigarettes daily trying their first cigarette by age 18.² This report examined racial/ethnic disparities in smoking-related beliefs around social benefits and perceived risks of smoking and smoking susceptibility among U.S. youth nonsmokers. Further, it examined whether pro-tobacco advertising and promotions,³ parental guidance,⁴ and peer norms⁵ explain disparities in smoking beliefs and susceptibility.

Methods

We used data from the 2012 *National Youth Tobacco Survey* (NYTS), a cross-sectional, school-based, self-administered survey of youth tobacco knowledge, attitudes, and use. NYTS utilized a multistage stratified cluster sample design, which yielded a nationally representative sample of U.S. middle- and high-school students ($N = 24,658$). First, 100 counties stratified by urban/non-urban status and minority concentration were randomly selected. Second, 228 schools were selected and stratified by school size and middle/high school. Lastly, classes/students were selected. Samples were drawn using probability proportional to size methods.⁶ Analyses were limited to nonsmokers (i.e., those who did not smoke during the past 30 days) ($N = 21,931$).

Data on age (in years), gender (1 = *female*, 0 = *male*), race (non-Hispanic White, non-Hispanic Black, Hispanic, non-Hispanic Asian, American Natives), and living with tobacco users (1 = *yes*, 0 = *no*) were collected. Three questions assessed smoking-related beliefs: (1) “Do you think smoking cigarettes makes young people look cool or fit in?” (2) “Do you think young people who smoke cigarettes have more friends?” (3) “How strongly do you agree with the statement ‘All tobacco products are dangerous’?” Only a “definitely not” response to the first two questions was coded “no,” whereas “definitely yes,” “probably yes,” and “probably not” were coded “yes.” Likewise, only a “strongly agree” response to the third question was coded “yes,” whereas “agree,” “disagree,” and “strongly disagree” were coded “no.”

Three questions assessed smoking susceptibility: (1) “Do you think you will smoke a cigarette in the next year?” (2) “Do you think you will try a cigarette soon?” (3) “If one of your friends were to offer you a cigarette, would you smoke it?” Participants were classified as 1 = *susceptible to smoking* if they responded “definitely yes,” “probably yes,” or

“probably not” to any of these questions and 0 = *not susceptible* if they responded “definitely not” to all questions.

Exposure to pro-tobacco advertising via the internet, newspapers/magazines, point-of-sale, and television/movies (e.g., “When you are using the internet, how often do you see any ads or promotions for cigarettes or other tobacco products?”) was each dichotomized into “yes” for responses “always,” “most of the time,” and “sometimes” and “no” for responses “I do not use [medium],” “never,” and “rarely.” Tobacco promotions item (i.e., “During the past 30 days, did a tobacco company send you information (other than coupons) through ...?”) was coded “yes” if participants received promotions via 1+ medium (e.g., mail, email). Parental guidance (i.e., “During the past 12 months, have your parents or guardians talked with you, even once, about not using any type of tobacco products?”) was coded 1 = *yes* and 0 = *no*. Peer norms (i.e., “Out of every 10 students in your grade at school, how many do you think smoke cigarettes?”) gauged perceptions of smoking prevalence among grade-level students and were assessed as a continuous variable ranging from 0 – 10 students.

Data were analyzed using SPSS 22.0 Complex Samples (Armonk, NY: IBM Corp). We used weighted multivariate regression models to assess disparities in smoking-related beliefs and susceptibility by race.

Results

Adjusting for age, gender, and living with tobacco users, we found that, compared to non-Hispanic Whites, Hispanics and non-Hispanic Asians were less likely to deny that smoking made someone look cool. All racial/ethnic minority youth except Native Americans were less likely to deny that smokers had more friends. Further, Hispanics were less likely to acknowledge that all tobacco products were dangerous and were more susceptible to smoking ($ps < 0.05$) (Table 1: Block 1).

Compared to non-Hispanic Whites, all racial/ethnic minority youth were less likely to be exposed to point-of-sale advertising. Non-Hispanic Blacks, Hispanics, and American Natives were less likely to be exposed to television/movies advertising. Moreover, non-Hispanic Blacks were less likely to be exposed to internet advertising whereas Hispanics and non-Hispanic Asians were less likely to be exposed to magazines/newspaper advertising ($ps < 0.05$). Conversely, Hispanics and Native Americans were more likely to be exposed to tobacco promotions ($ps < 0.05$). Hispanics received more parental guidance against tobacco use whereas non-Hispanic Blacks received less guidance ($ps < 0.05$). All racial/ethnic minority youth except non-Hispanic Asians had high perceived peer norms of smoking prevalence among grade-level students ($p < 0.05$) (Table 2).

Disparities in smoking-related beliefs and susceptibility persisted after additionally adjusting for exposure to pro-tobacco advertising and promotions, parental guidance against tobacco use, and peer norms ($ps < 0.05$) (Table 1, Block 2).

Discussion

This report extended research on racial/ethnic disparities in smoking prevalence⁷ to smoking antecedents. Racial/ethnic disparities in smoking-related beliefs and susceptibility existed among a nationally representative sample of U.S. youth nonsmokers. Nonsmokers are particularly important for tobacco control because they can initiate smoking if they hold favorable beliefs toward cigarette smoking.¹

Racial/ethnic minority youth endorsed the social benefits of smoking. Hispanic youth nonsmokers had low perceived risks of tobacco products and a higher proportion of them were susceptible to smoking. These results are consistent with past research on racial/ethnic disparities in smoking onset and risk factors associated with intentions to use cigarettes.⁸⁻¹⁰ Additional analyses showed that smoking-related beliefs were positively associated with smoking susceptibility ($ps < 0.05$) and that race/ethnicity did not alter the direction of smoking beliefs – susceptibility relationship (data not shown).

Although racial/ethnic minority youth differ in smoking initiation and progression patterns,¹ we found that disparities in smoking beliefs and smoking susceptibility lie beyond protective (e.g., decreased exposure to pro-tobacco advertising, parental guidance against tobacco use) and risk (e.g., receipt of tobacco promotions, peer norms) factors examined in this report. This warrants studies that examine sociocultural factors potentially associated with racial/ethnic minority groups (e.g., discrimination). Results also suggest the need for culturally tailored prevention and cessation communications that convey smoking-related risks and confront perceived social benefits of smoking to racial/ethnic minority youth.⁹ Public health educators should integrate alternative and/or complementary channels to traditional mass media to reach minority youth.

Reducing smoking initiation among racial/ethnic minority youth is a pillar of U.S. public health policy.⁷ With 3,200 youth smoking their first cigarette each day and 5.6 million projected premature deaths among < 18 years old,¹ it is important to curb tobacco-use initiation among at-risk groups. Our results suggest a shift in racial composition of future smokers where Hispanics bear the highest tobacco burden. Resources should be directed to combat tobacco epidemic among racial/ethnic minority groups in light of their limited resources.

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References

- [1]. The Health Consequences of Smoking – 50 Years of Progress: A Report of the Surgeon General. U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health; Atlanta, GA: 2014.
- [2]. Preventing Tobacco Use among Youth and Young Adults: A Report of the Surgeon General. U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National

Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health; Atlanta, GA: 2012.

- [3]. Lovato C, Linn G, Stead LF, Best A. Impact of tobacco advertising and promotion on increasing adolescent smoking behaviours. *Cochrane Database Syst Rev*. 2003; 3 Art. No.: CD003439. DOI: 10.1002/14651858.CD003439.
- [4]. Komro KA, McCarty MC, Forster JL, et al. Parental, family, and home characteristics associated with cigarette smoking among adolescents. *Am J Health Promot*. 2003; 17:291–299. DOI: <http://dx.doi.org/10.4278/0890-1171-17.5.291>. [PubMed: 12769043]
- [5]. Olds RS, Thombs DL. The relationship of adolescent perceptions of peer norms and parent involvement to cigarette and alcohol use. *J Sch Health*. 2001; 71:223–228. DOI: 10.1111/j.1746-1561.2001.tb01322.x. [PubMed: 11512489]
- [6]. Centers for Disease Control and Prevention. [Accessed November 24, 2014] National Youth Tobacco Survey (NYTS). Available at http://www.cdc.gov/tobacco/data_statistics/surveys/nyts/
- [7]. Tobacco use among U.S. racial/ethnic minority groups – African Americans, American Indians and Alaska Natives, Asian Americans and Pacific Islanders, and Hispanics: A report of the Surgeon General. U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health; Atlanta, GA: 1998.
- [8]. Ellickson PL, Orlando M, Tucker JS, Klein D. From adolescence to young adulthood: Racial/ethnic disparities in smoking. *Am J Public Health*. 2004; 94:293–299. [PubMed: 14759945]
- [9]. Halpern-Felsher BL, Biehl M, Kropp RK, Rubinstein ML. Perceived risks and benefits of smoking: Differences among adolescents with different smoking experiences and intentions. *Prev Med*. 2004; 39:559–567. DOI: 10.1016/j.ypmed.2004.02.017. [PubMed: 15313096]
- [10]. Song AV, Morrell HE, Cornell JL, et al. Perceptions of smoking-related risks and benefits as predictors of adolescent smoking initiation. *Am J Public Health*. 2009; 99:487–492. [PubMed: 19106420]

Table 1

Smoking-related Beliefs and Susceptibility among U.S. Youth Nonsmokers

		Smoking-related beliefs						Smoking susceptibility	
		Denied that smoking makes someone cool		Denied that smokers have more friends		Strongly agreed that “All tobacco products are dangerous”			
		% (95% CI)	AOR (95% CI)	% (95% CI)	AOR (95% CI)	% (95% CI)	AOR (95% CI)	% (95% CI)	AOR (95% CI)
Block 1	Non-Hispanic White	78.2 (77.0 – 79.4)	1.00	52.9 (51.4 – 54.5)	1.00	69.9 (68.1 – 71.6)	1.00	32.9 (31.6 – 34.1)	1.00
	Non-Hispanic Black	76.0 (73.7 – 78.1)	0.88 (0.76 – 1.02)	42.9 (41.0 – 44.9)	0.66 (0.59 – 0.72)*	67.9 (65.8 – 69.9)	0.89 (0.79 – 1.01)	32.3 (29.9 – 34.7)	0.96 (0.83 – 1.10)
	Hispanic	75.9 (73.7 – 78.0)	0.84 (0.74 – 0.96)*	44.6 (42.2 – 47.1)	0.70 (0.63 – 0.77)*	67.6 (65.8 – 69.4)	0.87 (0.78 – 0.97)*	41.9 (39.6 – 44.3)	1.56 (1.38 – 1.77)*
	Non-Hispanic Asian	74.3 (70.2 – 77.9)	0.74 (0.59 – 0.92)*	45.0 (39.7 – 50.5)	0.70 (0.57 – 0.87)*	71.9 (66.7 – 76.5)	1.05 (0.83 – 1.33)	30.3 (25.2 – 35.8)	0.94 (0.71 – 1.24)
	American Natives	80.2 (75.2 – 84.5)	1.17 (0.89 – 1.54)	51.8 (43.9 – 59.6)	1.00 (0.74 – 1.36)	70.7 (64.4 – 76.2)	1.11 (0.77 – 1.59)	30.9 (26.3 – 35.9)	0.91 (0.70 – 1.19)
Block 2	Non-Hispanic White		1.00		1.00		1.00		1.00
	Non-Hispanic Black		0.92 (0.78 – 1.09)		0.68 (0.62 – 0.75)*		0.90 (0.80 – 1.02)		0.92 (0.78 – 1.04)
	Hispanic		0.87 (0.76 – 0.99)*		0.71 (0.63 – 0.79)*		0.88 (0.78 – 0.98)*		1.57 (1.35 – 1.72)*
	Non-Hispanic Asian		0.69 (0.55 – 0.88)*		0.64 (0.52 – 0.77)*		1.08 (0.86 – 1.36)		1.01 (0.75 – 1.36)
	American Natives		1.18 (0.90 – 1.55)		0.96 (0.71 – 1.30)		1.12 (0.78 – 1.62)		0.87 (0.65 – 1.16)

Unweighted ns: non-Hispanic White 11651, non-Hispanic Black 3035, Hispanic 5016, non-Hispanic Asian 1129, American Natives 428.

The Hispanic category included Mexicans, Mexican Americans, Chicanos, Puerto Ricans, Cubans, Cuban Americans, and other Hispanics. The American Natives category included American Indians, Alaska Natives, Native Hawaiians, and Pacific Islanders.

Block 1: Adjusted for age, gender, and living with tobacco users.

Block 2: Adjusted for age; gender; living with tobacco users; exposure to pro-tobacco advertising and promotion via the internet, magazines and newspapers, point-of-sale, movies and television, and promotions; parental guidance against tobacco use; and peer norms.

*
 $p < 0.05$

Within race percentages and confidence intervals are shown.

AOR: Adjusted odds ratio, CI: Confidence interval.

Table 2

Factors Associated with Smoking Susceptibility

	Exposure to pro-tobacco advertising and promotions				Parental guidance		Peer norms
	Internet	Magazines	Point-of-sale	Movies	Promotions		
	AOR (95% CI)	AOR (95% CI)	AOR (95% CI)	AOR (95% CI)	AOR (95% CI)	AOR (95% CI)	M (95% CI), MD
Non-Hispanic White	1.00	1.00	1.00	1.00	1.00	1.00	3.12 (2.92 – 3.32) (Ref)
Non-Hispanic Black	0.81 (0.72 – 0.91)*	0.93 (0.82 – 1.05)	0.65 (0.56 – 0.74)*	0.83 (0.73 – 0.95)*	1.22 (0.99 – 1.50)	0.87 (0.79 – 0.97)*	4.60 (4.26 – 4.94)*
Hispanic	0.93 (0.83 – 1.04)	0.88 (0.80 – 0.96)*	0.68 (0.59 – 0.78)*	0.88 (0.78 – 0.99)*	1.55 (1.13 – 2.13)*	1.19 (1.09 – 1.29)*	4.09 (3.82 – 4.36)*
Non-Hispanic Asian	0.78 (0.60 – 1.01)	0.70 (0.54 – 0.91)*	0.44 (0.34 – 0.58)*	0.90 (0.71 – 1.14)	1.05 (0.71 – 1.55)	0.83 (0.62 – 1.11)	2.75 (2.31 – 3.19)
American Natives	0.91 (0.63 – 1.31)	0.84 (0.68 – 1.04)	0.51 (0.38 – 0.69)*	0.61 (0.46 – 0.80)*	1.63 (1.06 – 2.51)*	1.10 (0.88 – 1.37)	4.22 (3.82 – 4.62)*

*
 $p < 0.05$

Adjusted for age, gender, and living with tobacco users.

AOR: Adjusted odds ratio, CI: Confidence interval, M: Mean, MD: Mean difference