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The association between exposure to tobacco coupons and predictors of smoking behaviors among US youth

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Abstract

Introduction—A recent report showed that 13.1% of US middle and high school students were exposed to tobacco coupons in the past 30 days in 2012. The current study reanalyzed data from the National Youth Tobacco Survey 2012 to examine the associations between exposure to tobacco coupons in the past 30 days and predictors of smoking among US youth by smoking status.

Methods—24658 middle and high school students were asked if and where they had received tobacco coupons in the past 30 days. Demographics, smoking behaviors, smoking-related beliefs, susceptibility to smoking, and confidence in quitting smoking were assessed. Analyses were stratified by smoking status (never smokers, experimenters, and current smokers). Data were weighted to be representative of US youth.

Results—Exposure to tobacco coupons was associated with lower likelihood of denying the social benefits of cigarette smoking and believing all tobacco products are dangerous, higher likelihood of being susceptible to smoking (among non-smokers), lower likelihood to feel confident in quitting cigarettes completely (among current smokers) and higher likelihood to intend to purchase cigarettes in the next 30 days (among experimenters and current smokers; $p < 0.05$).

Conclusions—Tobacco coupons may promote smoking and hinder smoking cessation among youth. Regulating tobacco coupons may reduce youth smoking in the US. Further research is needed to determine the effect of tobacco coupons on youth tobacco use globally.

Keywords

Youth; smoking; advertising and promotion; coupon; psycho-social predictors

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INTRODUCTION

Tobacco use continues to be a leading cause of preventable deaths worldwide. Tobacco advertising and promotion are directly related to smoking in youth. [1–3] In the US, despite the advertising restrictions imposed by the 1998 Master Settlement Agreement (established between major tobacco companies and the states) and the 2009 Family Smoking Prevention and Tobacco Control Act, tobacco companies remain capable of reaching their target markets through less prominent channels, such as providing coupons for tobacco products that offer price discounts (e.g., US\$0.50 off per pack of cigarettes, buy-one-get one free). In 2011, tobacco companies spent US\$208 million to provide these coupons (2.4% of the total marketing budget for 2011). [4, 5]

Data from the 2012 US National Youth Tobacco Survey (NYTS) showed that 13.1% of US middle and high school students were exposed to tobacco coupons in the past 30 days, through the mail (6.0%), digital communication (e.g. text messages; 7.4%), and tobacco packages (3.7%). [6] Additionally, tobacco use status, living with tobacco users, and being receptive to tobacco marketing were positively associated with exposure to tobacco coupons in the past 30 days in US youth. However, previous studies on tobacco coupons among youth [6–9] did not explore the associations between exposure to tobacco coupons and smoking-related beliefs, susceptibility to cigarette smoking among never smokers, and intention to purchase cigarettes in the future, which are known predictors of youth smoking behaviors.[2] Therefore, in this current analysis, the author reanalyzed the 2012 US NYTS data to investigate the associations between exposure to tobacco coupons and these psychosocial predictors of smoking behaviors among US youth.

METHODS

Study population

Details of the sampling approach can be found elsewhere. [10] Briefly, the 2012 US NYTS survey used a stratified three-stage cluster sampling approach. At the first stage, school districts (primary sampling units, PSUs) were categorized into 16 strata defined by racial/ethnic composition and urban vs. non-urban status, and 100 PSUs were selected from these strata with probabilities proportional to total number of students enrolled in eligible public and private schools. At the second stage, 284 schools were randomly selected from the 100 PSUs. At the third stage, one to two classes per grade were chosen for participation. School participation was voluntary (228 participated, 80.3%), and participating schools used either active or passive parental consent for students' participation. Participating students completed a pencil-and-paper self-administered scanable questionnaire between February and June 2012 (n=24658, participation rate=91.7%: overall school × student participation rate=73.6%).

Measures

Participants were asked “During the past 30 days, did you receive coupons from a tobacco company through...” with seven response options: the mail, e-mail, the Internet, social network (such as Facebook and Twitter), a text message, on a cigarette pack or other

tobacco product, and “I did not received coupons from a tobacco company. Participants were asked to choose all the options that applied to them. Participants were also asked whether smoking cigarettes makes young people look cool or fit in, and whether young people who smoke cigarettes have more friends (definitely yes, probably yes, probably not, definitely not). Those who responded “definitely not” were classified as denying the social benefit of smoking, consistent with the classification of the smoking susceptibility scale. [11] Additionally, participants were asked to indicate how strongly they agreed with the statement that all tobacco products are dangerous (strongly agree, agree, disagree, strongly disagree). Those who responded “strongly agree” were classified as agreeing with the statement. Participants were asked if they thought they would smoke a cigarette in the next year; if they would try a cigarette soon; and if they would smoke a cigarette offered by a best friend (definitely yes, probably yes, probably not, definitely not). Participants who responded anything other than “definitely not” in any of these three items were classified as susceptible to cigarette smoking. [11] Participants were asked to report how likely they would purchase cigarettes in the next 30 days (very/somewhat likely vs. somewhat/very unlikely). Current smokers reported how likely they would succeed if they decided to quit cigarettes for good, and responses were dichotomized into very/somewhat likely vs. somewhat/very unlikely.

Information on demographics (age, gender, and race), exposure to tobacco advertising (through the Internet, in newspapers or magazines, at a convenience store/supermarket/gas station, and on an outdoor billboard), exposure to smoking depictions in movies, and living with someone who uses tobacco were collected. Smoking status was determined by self-reported ever tried cigarette smoking (even one or two puffs) and number of days smoked in the past 30 days. A current smoker was defined as smoking 1 days in the past 30 days, an experimenter was defined as having tried cigarette smoking but not smoking in the past 30 days, and a never smoker was defined as having never tried cigarette smoking.

Statistical analysis

Data were weighted to represent the US youth population. Analyses were stratified by smoking status. Logistic regression models were used to assess the associations between reported receipt of tobacco coupons and smoking-related outcomes: smoking-related beliefs, susceptibility to cigarette smoking (among never smokers), perceived likelihood of success in smoking cessation (among current smokers), and likelihood of purchasing cigarettes in the next 30 days (among experimenters and current smokers), while adjusting for demographics, living with tobacco users, and exposure to tobacco advertising and smoking depictions in movies. Analyses were performed in SAS® 9.3, [12] using PROC SURVEYLOGISTIC.

RESULTS

Of the 24658 participants, 51.1% were male; 58.8% were non-Hispanic White, 14.6% were non-Hispanic Black, 21.7% were Hispanic, 3.9% were Asian, and 1.0% were American Indian /Alaska Native/ Native Hawaiian/ Pacific Islander; 9.5% were current smoker, 16.0% were experimenter, and 74.5% were non-smokers (all estimates were weighted). Participants

aged between 9–19 years. Youth who had reported that they received tobacco coupons in the past 30 days had higher odds than those who did not receive tobacco coupons in the past 30 days to deny that smoking cigarettes makes young people look cool or fit in, regardless of smoking status ($p < 0.05$; Table 1). Youth never smokers who reported receiving these coupons in the past 30 days, when compared to those who did not report receiving these coupons in the past 30 days, had higher odds to deny that young people who smoke cigarettes have more friends, and less likely to agree that all tobacco products are dangerous ($p < 0.05$). Youth never smokers who reported receiving tobacco coupons in the past 30 days had twice the odds as those who did not report receiving tobacco coupons in the past 30 days to be susceptible to cigarette smoking ($p < 0.05$). Youth current smokers who reported receiving tobacco coupons in the past 30 days had lower odds than those who did not report receiving these coupons in the past 30 days to feel that they would succeed in quitting cigarettes for good ($p < 0.05$). Youth experimenters and current smokers who reported receiving tobacco coupons in the past 30 days had at least twice the odds as those who did not report receiving these coupons in the past 30 days to report that they were likely to purchase cigarettes in the next 30 days ($p < 0.01$).

DISCUSSION

Findings from the current analysis revealed two potential mechanisms of which tobacco coupons can influence youth smoking behaviors. First, marketing theories suggest that through lowering the cost of products to consumers, coupons can induce initial trial of a product among non-users, and can shape repeated purchasing behaviors among current users. [13] This hypothesis is supported by the current findings that exposure to tobacco coupons was positively associated with susceptibility to cigarette smoking among youth never smokers and with intention to purchase cigarettes in the future among youth experimenters and current smokers. Lowering of cigarettes costs also may provide disincentives for youth to quit smoking, given one of the most cited reasons for smoking cessation is cigarette costs. [14] This hypothesis is supported by the current finding that youth current smokers who were exposed to these coupons were less likely than those who were unexposed to these coupons to be confident in quitting cigarettes for good. Second, tobacco coupons may shape tobacco-related beliefs. The current study suggests that exposure to tobacco coupons may promote positive tobacco-related beliefs in youth, which are predictive of smoking behaviors among young people. [2, 15]

Some may argue that these coupons may be targeting adults in the households. While this may be true, the most common source of tobacco coupons among youth was digital communications (i.e., the Internet, emails, and text messages). [6] Regardless of the source, tobacco coupons influence youth smoking behaviors, and current tobacco advertising restrictions are not enough to protect youth from tobacco coupon marketing. This is not unique to the US: currently, 82 countries (42% of all countries and regions) have placed a complete ban on tobacco advertising on television, on radio, in magazines and newspapers, and on billboards. [16] Of these, 50 countries (61%; 26% of all countries and regions) have a complete ban on promotional discounts such as coupons. [16] Countries that do not prohibit tobacco coupons or other promotional discounts allow tobacco companies to reach youth through direct-to-consumer strategies (including coupons) to promote tobacco use.

One policy option to combat the influence of tobacco coupons is to prohibit redemption of tobacco coupons (instead of the distribution of coupons, which could violate the First Amendment that protects the right to commercial speech). [17] This option is particularly relevant to youth since the most common source of tobacco coupons was digital communication, which is very difficult to regulate. Recently, Providence, RI and New York City, NY have passed regulations that prohibit redemption of tobacco coupons, and were challenged by the tobacco companies. In both cases, the US courts upheld the regulations. This showed that states and localities can prohibit redemption of tobacco coupons to protect youth.

Given that NYTS 2012 only sampled youth who were in schools, findings from this analysis may not be generalizable to youth who are not in schools. The cross-sectional study design limits the author's ability to make causal inference. Despite these limitations, this study shows that exposure to tobacco coupons is associated with predictors of smoking initiation and cessation among youth. Future longitudinal studies (e.g., national prospective cohort studies to assess the effect of receiving and redeeming tobacco coupons on tobacco use behaviors) are needed to understand the effect of this tobacco promotional strategy in youth in the US and internationally.

WHAT THIS PAPER ADDS

A previous report based on data from the 2012 US National Youth Tobacco Survey showed that an unacceptably high proportion of youth (13.1% overall; 34% among those who currently use tobacco and 9.3% among those who do not currently use tobacco) were exposed to tobacco coupons in the past 30 days. However, it did not examine the associations between exposure to tobacco coupons and psychosocial predictors of smoking behaviors. The current analysis found that exposure to these coupons was associated with more positive smoking-related beliefs, susceptibility to smoking, intention to purchase tobacco in the future, and lack of confidence in quitting smoking. Future longitudinal studies are needed to further examine the impact of tobacco coupons on youth.

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References

1. National Cancer Institute. Tobacco Control Monograph No. 19. Bethesda, MD: U.S. Department of Health and Human Services, National Institutes of Health, National Cancer Institute; 2008. The Role of the Media in Promoting and Reducing Tobacco Use.
2. U.S. Department of Health and Human Services. Preventing Tobacco Use Among Youth and Young Adults: A Report of the Surgeon General. Atlanta, GA: 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; 2012.
3. Lovato C, Watts A, Stead LF. Impact of tobacco advertising and promotion on increasing adolescent smoking behaviours. *Cochrane Database of Systematic Reviews*. 2011; (10):1–45.
4. Federal Trade Commission. Cigarette Report for 2011. Washington, DC: Federal Trade Commission; 2013.

5. Federal Trade Commission. Smokeless Tobacco Report for 2011. Washington, DC: Federal Trade Commission; 2013.
6. Tessman GK, Caraballo RS, Corey CG, et al. Exposure to tobacco coupons among U.S. middle and high school students. *Am J Prev Med*. 2014; 47 Suppl 1(2):S61–S68. [PubMed: 25044197]
7. MacFadyen L, Hastings G, MacKintosh AM. Cross sectional study of young people's awareness of and involvement with tobacco marketing. *BMJ*. 2001; 322(7285):513–517. [PubMed: 11230063]
8. Soneji S, Ambrose BK, Lee W, et al. Direct-To-Consumer Tobacco Marketing and Its Association With Tobacco Use Among Adolescents and Young Adults. *The Journal of adolescent health : official publication of the Society for Adolescent Medicine*. 2014
9. Choi K, Forster J. Tobacco direct mail marketing and smoking behaviors in a cohort of adolescents and young adults from the u.s. Upper midwest: a prospective analysis. *Nicotine & tobacco research : official journal of the Society for Research on Nicotine and Tobacco*. 2014; 16(6):886–889. [PubMed: 24532353]
10. Centers for Disease Control and Prevention. National Youth Tobacco Survey (NYTS). Atlanta, GA: Centers for Disease Control and Prevention; 2014.
11. Pierce JP, Choi WS, Gilpin EA, et al. Validation of susceptibility as a predictor of which adolescents take up smoking in the United States. *Health Psychol*. 1996; 15(5):355–361. [PubMed: 8891714]
12. SAS/STAT Software. Cary, NC: SAS Institute, Inc.; 2004.
13. Rothschild ML, Gaidis WC. Behaviorial Learning Theory: Its Relevance to Marketing and Promotions. *Journal of Marketing*. 1981; 45(2):70–78.
14. McCaul KD, Hockemeyer JR, Johnson RJ, et al. Motivation to quit using cigarettes: a review. *Addict Behav*. 2006; 31(1):42–56. [PubMed: 15916861]
15. Cengelli S, O'Loughlin J, Lauzon B, et al. A systematic review of longitudinal population-based studies on the predictors of smoking cessation in adolescent and young adult smokers. *Tobacco control*. 2012; 21(3):355–362. [PubMed: 21846777]
16. World Health Organization. WHO report on the global tobacco epidemic, 2013: enforcing bans on tobacco advertising, promotion and sponsorship. Geneva, Switzerland: World Health Organization; 2013.
17. Tobacco Control Legal Consortium. Tips and Tools. St. Paul, MN: Public Health Law Center; 2011. Tobacco Coupon Regulations and Sampling Restrictions.

Table 1

Associations between receipt of tobacco coupons in the past 30 days, beliefs about tobacco, susceptibility to cigarette smoking, cessation belief and intention to purchase cigarettes, NYTS 2012.

Variables	Never smokers			Experimenters			Current smokers		
	% among those received	% among those not received (ref.)	AOR (95% CI)	% among those received	% among those not received (ref.)	AOR (95% CI)	% among those received	% among those not received (ref.)	AOR (95% CI)
Beliefs about tobacco									
Denied that smoking cigarettes makes young people look cool or fit in (n=23931)	68.2%	81.8%	0.54 (0.46, 0.64)	54.7%	65.1%	0.69 (0.50, 0.95)	39.3%	50.7%	0.65 (0.51, 0.82)
Denied that young people who smoke cigarettes have more friends (n=23834)	41.6%	52.8%	0.78 (0.67, 0.91)	31.6%	39.7%	0.80 (0.61, 1.04)	27.3%	31.5%	0.77 (0.57, 1.02)
Agreed that all tobacco products are dangerous (n=23532)	66.6%	73.5%	0.79 (0.66, 0.94)	52.9%	53.5%	1.05 (0.77, 1.43)	30.6%	33.6%	0.99 (0.82, 1.21)
Susceptible to cigarette smoking (n=17823)									
	43.6%	26.1%	1.90 (1.65, 2.19)	--	--	--	--	--	--
Cessation belief									
Felt likely to succeed in quitting cigarettes for good (n=1900)	--	--	--	--	--	--	68.1%	84.7%	0.37 (0.29, 0.48)
Reported likely to purchase cigarettes in the next 30 days (n=6025)									
	--	--	--	6.4%	3.0%	2.07 (1.22, 3.52)	69.4%	45.4%	3.09 (2.38, 4.00)

AOR=Adjusted odds ratio, CI=confidence interval. The associations between each variable and receipt of tobacco coupons were estimated in separate models, adjusting for age, gender, race, living with tobacco users, and exposure to tobacco advertising through the internet, magazines and newspapers, billboards, point of sale, and exposure to smoking images in television and movies. Bolded estimates are statistically significant ($p<0.05$).