

Original investigation

Point-of-Sale Cigarette Marketing, Urge to Buy Cigarettes, and Impulse Purchases of Cigarettes: Results From a Population-Based Survey

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Abstract

Aims: Our aim was to examine the association of exposure to point-of-sale (POS) cigarette marketing for one's regular brand, as well as any brand of cigarettes, with the urge to buy cigarettes and frequency of impulse purchases of cigarettes.

Methods: Nine hundred ninety-nine smokers in Omaha, Nebraska were interviewed via telephone. Cigarette marketing was measured by asking respondents questions about noticing pack displays, advertisements, and promotions such as discounts for their regular brand as well as any brand of cigarettes in their neighborhood stores. We measured urge to buy cigarettes with the question "When you are in a store in your neighborhood that sells tobacco products, how often do you get an urge to buy cigarettes?" We measured frequency of impulse purchases of cigarettes with the question "When you are shopping in a store in your neighborhood for something other than cigarettes, how often do you decide to buy cigarettes?" We estimated ordinary least squares linear regression models to address the study aim.

Results: Higher levels of POS marketing for one's regular brand and any brands of cigarettes were associated with more frequent urges to buy ($P < .001$ and $P < .001$, respectively) and impulse purchases of cigarettes ($P = .01$ and $P = .013$, respectively), after adjusting for covariates.

Conclusion: Exposure to POS marketing for one's own brand of cigarette as well as any brand is associated with urges to buy and impulse purchases of cigarettes.

Implications: Existing studies on the association of POS cigarette marketing with urge to buy and an impulse purchase of cigarettes only focus on cigarette pack displays, not on advertisements and promotions. Also, these studies make no distinction between marketing for the smokers' regular brand and any brand of cigarettes. This study found that Exposure to POS marketing for one's own brand of cigarette as well as any brand is associated with urges to buy and impulse purchases of cigarettes. Our findings can provide part of the evidence-base needed by the Food and Drug Administration or local authorities to regulate POS marketing.

Introduction

The 1998 Master Settlement Agreement (MSA) imposed strict prohibitions on tobacco marketing in the United States including advertising bans in most outdoor places. Such restrictions resulted in a significant shift of the tobacco industry's marketing to the point-of-sale (POS), where consumers are directly targeted at the location where they purchase tobacco.¹⁻³ In 2011, about 89% of the total \$8.4 billion tobacco industry expenditures for cigarette marketing was made at the POS⁴ in the following three distinct marketing areas: (1) product displays, (2) posting advertising and signage, and (3) promotional and price incentives to consumers.^{2,5} Today's POS marketing has been described as "carefully crafted, creatively executed, well-financed, well-researched" with strategies supervised by tobacco companies' senior management.⁶

As is the case with all product marketing, the main aim of POS tobacco marketing is to influence the purchasing behavior of customers. This can occur by stimulating an urge to buy and an impulse (ie, unplanned) purchase of cigarettes.⁷⁻⁹ Despite the ubiquity and large volume of POS tobacco marketing in the United States, relatively little research has addressed its impact on cigarette purchasing behavior of smokers during their visits to stores that sell tobacco. In a cross-sectional study in Australia, Carter et al.⁹ conducted intercept interviews with 206 adult daily smokers who were observed purchasing cigarettes from retail outlets featuring POS cigarette displays. About 22% of respondents indicated they did not plan to purchase cigarettes before entering the store. Furthermore, 20% indicated the cigarette pack display encouraged them to purchase cigarettes in that instance. In a separate cross-sectional study in Australia, Wakefield et al.⁷ conducted a survey of 526 adult current smokers and found that about 38% who had tried to quit in the past 6 months said that seeing pack displays in a store had given them an urge to buy cigarettes. The adjusted odds of reporting an urge to buy cigarettes was 3.9 (95% CI = 1.4% to 11.0%) times higher in those who at least sometimes noticed displays than those who rarely or never noticed displays in stores. The investigators also found that when shopping for something other than cigarettes, 25% of smokers at least sometimes decided to buy cigarettes as a result of seeing the cigarette pack displays. Compared to smokers who rarely or never noticed cigarette pack displays, the odds of making an impulse cigarette purchase was 2.5 (95% CI = 1.3% to 4.8%) times higher among those who at least sometimes noticed displays. Finally, in a qualitative study in New Zealand, Hoek et al.⁸ conducted semi-structured in-depth interviews with 20 respondents, who had attempted to quit smoking in the last 6 months. At the time of the interview, 12 were still smoke-free and eight had relapsed. In the interviews most smokers indicated that noticing tobacco displays promoted impulse purchase of cigarettes. Similarly, most quitters indicated that tobacco imagery reminded them of smoking and its perceived benefits and as such promoted impulse purchases.

The existing studies on the association of POS cigarette marketing with urge to buy cigarettes and an impulse purchase of cigarettes have two weaknesses. First, in jurisdictions where all three aspects of marketing are allowed, the studies only focus on cigarette pack displays without regard for the other two aspects of POS marketing, that is, advertisements and promotions. Second, the studies make no distinction between marketing for the smokers' regular brand and any brand of cigarettes. It is logical that with its distinct familiar appearance, smokers would be more sensitive to noticing marketing of their own brands than any other brand of cigarettes. To address these weaknesses, our aim was to assess the association of urge to

buy cigarettes and impulse purchase of cigarettes with a scale of exposure to POS cigarette marketing (consisting of survey items on pack displays, advertisements, and promotions) for an individual's regular brand as well as any brand of cigarettes using a population-based sample of current smokers in Omaha, Nebraska.

Methods

Sample

Data for this study came from telephone interviews of 999 smokers in Omaha, Nebraska. Data collection took place from August 2013 to June 2014. Participants were recruited using random digit dialing and placement of local advertisements in places such as the major daily newspaper and Craigslist to recruit volunteers. Those included in the study spoke English, were 18 years of age or older, had smoked more than 100 cigarettes in their life, and smoked five or more cigarettes a day at the time of the recruitment. Those who responded "never" to the following question were excluded from the study: "How often do you visit the stores in the neighborhood where you live? By stores, we mean such places as convenience stores, gas stations, grocery stores, supermarkets, drug stores, liquor stores, and tobacco stores." Response options were 1 = never, 2 = sometimes, 3 = frequently, and 4 = always. The University of Nebraska Medical Center Institutional Review Board provided ethics approval for the study.

Measurement

Outcomes

We measured urge to buy cigarettes and impulse purchase of cigarettes using the following two questions adapted from previous studies^{7,10}: "When you are in a store in your neighborhood, how often do you get an urge to buy cigarettes?"; and "When you are in a store in your neighborhood to shop for something other than cigarettes, how often do you decide to buy cigarettes?" Possible response options were: 1 = never, 2 = rarely, 3 = sometimes, 4 = often, 5 = always.

Main Covariates—Exposure to POS Cigarette Marketing

We asked each respondent the following questions, which are adapted from previous studies^{7,10}: "When you are in a store in your neighborhood, how often do you notice tobacco ads?"; "When you are in a store in your neighborhood, how often do you notice tobacco promotions such as special prices, multi-pack discounts, or free gift with purchase of cigarettes?"; and "When you are in a store in your neighborhood, how often do you notice cigarette pack displays?" Possible responses to each question were: 1 = never, 2 = rarely, 3 = sometimes, 4 = often, 5 = always. These questions were about any brand of cigarettes. The same questions were asked about the respondents' regular brand of cigarettes. The responses to each set of three questions were summed to create a scale of exposure to POS cigarette marketing for any brand (Cronbach's alpha = 0.64) and for one's regular brand (Cronbach's alpha = 0.73). The score of the scales range from 3 to 15 with higher scores indicating a higher degree of exposure to POS marketing. The correlation between the two scales was $r = 0.68$.

Other Covariates

Other covariates that were included in the analyses were nicotine dependence, sex, age, race/ethnicity, household income, education, and frequency of visiting stores in one's neighborhood. Nicotine

dependence was measured using the Heaviness of Smoking Index (HSI).^{11,12} HSI scores range from 0 to 6 and were calculated by summing the points for time to first cigarette after waking and number of cigarettes smoked per day. Time to first cigarette is scored as follows: <5 minutes = 3 points; 6–30 minutes = 2 points; 31–60 minutes = 1 point; and >60 minutes = 0 point. Number of cigarettes smoked per day is scored as follows: 1–10 = 0 point; 11–20 = 1 point; 21–30 = 2 points; and >31 = 3 points. Higher HSI scores indicate higher nicotine dependence.

Statistical Analysis

In all analyses we omitted observations that had a missing value for any of the analysis variables. This constituted 5.5% of the total sample; only 0.9% of responses for urge to buy cigarettes and 0.3% of responses for impulse purchase of cigarettes were missing. The analysis sample size was 944. We used ordinary least squares regressions to model the effect of POS marketing and other covariates on the outcomes. Covariates whose *P* values were greater than 0.1 in the bivariate models were not included in the multivariable models. In addition to controlling for all aforementioned covariates, multivariable regressions controlled for method of recruitment into the study. In the models predicting impulse purchases of cigarettes, we included urge to buy cigarettes. We checked for the normality of residuals, linearity, multicollinearity, and heteroskedasticity and found no violation of ordinary least squares assumptions in any of the models.

Results

Table 1 shows the characteristics of the sample. The means of urge to buy and impulse purchase of cigarettes were 3 and 2.6, respectively. The means of exposure to POS marketing for one's regular brand of cigarettes and any brand of cigarettes were 7.1 and 9, respectively. The mean level of HSI was 3.3. The percentage of women was 57.5. The percentages of participants who were 18–24, 25–39, 40–45, and over 55 years old were 7.9, 21, 37, and 34.1, respectively. Participants who were non-Hispanic white comprised 65.9% of the sample. Mean income was about \$31 000 and 50% of the sample had education at or below the high school level. About 51.7% of respondents reported that they always visited stores in their neighborhoods. About 54.8% of the sample participants in the analyses were recruited through random digit dialing.

Table 2 shows the unadjusted and adjusted effect of self-reported exposure to POS marketing for one's regular brand and any brand of cigarettes on urge to buy cigarettes. Results for the effect of POS marketing for one's regular brand and any brand were remarkably similar. Data provided overwhelming evidence for the unadjusted ($P < .001$) and adjusted ($P < .001$) effect of POS marketing for one's regular brand, and the unadjusted ($P < .001$) and adjusted ($P < .001$) effect of any brand. Individuals who had a higher score on the scale of POS marketing for one's regular brand and any brand also had a higher frequency of urge to buy cigarettes ($\beta = 0.09$), after controlling for all other variables. Higher HSI, lower income, higher frequency of visiting stores, and recruitment through local advertisements were associated with higher frequency of urge to buy cigarettes. Sex, age, race/ethnicity, and education were not associated with the outcome in the adjusted models.

Table 3 shows the unadjusted and adjusted effect of self-reported exposure to POS marketing for one's regular brand and any brand of cigarettes on impulse purchase of cigarettes. Results for the effect of

Table 1. Sample Characteristics ($n = 944$)

Variables	% or mean (range)
Urge to buy cigarettes	3.02 (1–5)
Impulse purchase	2.58 (1–5)
POS marketing—regular brand	7.11 (3–15)
POS marketing—any brand	9.01 (3–15)
HSI	3.27 (1–6)
Sex	
Male	42.48
Female	57.52
Age	
18–24	7.94
25–39	20.97
40–54	36.97
≥55	34.11
Race/ethnicity	
Non-Hispanic white	65.89
Non-Hispanic black	24.15
Hispanic	3.07
Other	6.89
Income (\$1000)	30.97 (5–75)
Education	
Less than high school	10.17
High school graduate	39.72
Some college	36.86
College graduate	13.24
Frequency of visits to stores	
Sometimes	11.65
Frequently	36.65
Always	51.69
Method of recruitment	
Random digit dialing	45.23
Other	54.77

HSI = Heaviness of Smoking Index; POS = point-of-sale.

POS marketing for one's regular brand and any brand are remarkably similar. Data provided evidence for the unadjusted ($P < .001$) and adjusted ($P = .01$) effect of POS marketing for one's regular brand and any brand. Individuals who had a higher score on the scale of POS marketing for one's regular brand and any brand also had a higher frequency of impulse purchases of cigarettes ($\beta = 0.03$), after controlling for all other variables. Higher frequency of an urge to buy cigarettes, higher level of education, and recruitment through random digit dialing were associated with a lower frequency of an impulse purchase of cigarettes. HSI, sex, age, race/ethnicity, income, and frequency of visiting stores were not associated with the outcome in the adjusted models.

We have performed supplementary analyses to assess the association of each component of exposure to marketing (ie, exposure to displays, advertising, and promotions) separately with urge to buy cigarettes and impulse purchase of cigarettes. We found that the association of exposure to displays, advertising, and promotions with urge to buy cigarettes were very similar to the associations when a composite scale of exposure to marketing was used, both for one's regular brand and any brand of cigarettes. We also found that in relation to one's own brand of cigarettes there was little evidence of an association of exposure to advertising ($P = .071$) and promotion ($P = .051$), but some evidence of an association of exposure to displays ($P = .018$) with impulse purchase. In relation to any brand of cigarettes, there was some evidence of an association of exposure to advertising ($P = .022$) and displays ($P = .045$), but very little

Table 2. Regression of Urge to Buy Cigarettes on Point-of-Sale (POS) Marketing for One's Regular Brand and any Brand of Cigarettes and Other Covariates ($n = 944$)

	POS marketing for regular brand				POS marketing for any brand			
	Unadjusted		Adjusted ^a		Unadjusted		Adjusted ^a	
	$\hat{\beta}$	<i>P</i>	$\hat{\beta}$	<i>P</i>	$\hat{\beta}$	<i>P</i>	$\hat{\beta}$	<i>P</i>
POS marketing	0.13	<.001	0.09	<.001	0.14	<.001	0.09	<.001
HSI	0.10	.039	0.11	.009	0.10	.039	0.11	.011
Sex		.923				.923		
Male	-0.01				-0.01			
Female	0				0			
Age		<.001		.046		<.001		.0623
18–24	0		0		0		0	
25–39	-0.26		-0.13		-0.26		-0.16	
40–54	-0.37		-0.10		-0.37		-0.11	
≥55	-0.86		-0.34		-0.86		-0.33	
Race/ethnicity		<.001		.450		<.001		.151
Non-Hispanic white	0		0		0		0	
Non-Hispanic black	0.49		0.06		0.49		0.13	
Hispanic	0.83		0.34		0.83		0.44	
Other	0.34		0.13		0.34		0.18	
Income (\$1000)	-0.01	<.001	-0.01	<.001	-0.01	<.001	-0.01	<.001
Education		<.001		.770		<.001		.568
Less than high school	0		0		0		0	
High school graduate	-0.24		-0.03		-0.24		-0.09	
Some college	-0.45		-0.11		-0.45		-0.18	
College graduate	-0.77		-0.08		-0.77		-0.11	
Frequency of visits to stores		<.001		.002		<.001		.003
Sometimes	0		0		0		0	
Frequently	0.51		0.28		0.51		0.26	
Always	0.77		0.44		0.77		0.42	
Method recruitment		<.001		.012		<.001		.009
Random digit dialing	-0.72		-0.22		-0.72		-0.24	
Other	0		0		0		0	
\bar{R}^2			0.18				0.19	

HSI = Heaviness of Smoking Index.

^aAdjusted for all covariates and method of recruitment in the study.

evidence of an association of exposure to promotions ($P = .190$) with impulse purchase.

In other supplementary analyses, we examined the interaction of covariates with exposure to “marketing” in all the models and found no evidence of such interaction. The P values for the test of interactions ranged from .058 (for the interaction of race and marketing for any brand of cigarettes in their effects on impulse purchase) to .986 (for the interaction of income and exposure to marketing for one's own brand in their effects on impulse purchase).

Discussion

In this study we used population-based data from a sample of smokers in Omaha, Nebraska, to examine the association of exposure to POS cigarette marketing for one's regular brand, as well as any brand of cigarettes, with the urge to buy cigarettes and impulse purchase of cigarettes while visiting a store in one's neighborhood. We found that greater exposure to POS marketing for one's regular brand and any brand of cigarette were associated with more frequent urges to buy and impulse purchases of cigarettes.

Our results substantially strengthen those of previous studies.^{7–9,13} These studies were mostly conducted in jurisdictions without POS

advertising and therefore focused on pack displays as the sole dimension of POS cigarette marketing. However, we developed a scale that included items on the extent of cigarette advertising and promotions as well as pack displays, thereby making results applicable to the many jurisdictions that have all three forms of POS marketing. Furthermore, while previous research examined POS marketing for cigarettes in general, we developed measures of marketing for a smoker's regular brand as well as any brand of cigarettes in general. We note that the association of POS marketing for any brand and one's regular brand with the outcomes were nearly identical. The fact that smokers respond to marketing of any brand and not just their own brand is important. Tobacco companies maintain that the purpose of their marketing is not to increase overall consumption of tobacco, but to encourage brand switching, promote choice of and increase market share of a brand.^{9,14,15} However, our results indicate that tobacco marketing might increase the overall demand for cigarettes and not merely demand for the marketed brand. This is consistent with Saffer and Chaloupka's economic analysis which showed that tobacco marketing increases overall tobacco consumption.¹⁶

A limitation of the study is that the sample was not a probability sample and hence might not be representative. However, we note that the sociodemographic distribution of the sample was similar to the

Table 3. Regression of Impulse Purchase of Cigarettes on Point-of-Sale (POS) Marketing for One's Regular Band and Any Brand of Cigarettes and Other Covariates (*n* = 944)

	POS marketing for regular brand				POS marketing for any brand			
	Unadjusted		Adjusted ^a		Unadjusted		Adjusted ^a	
	$\hat{\beta}$	<i>P</i>	$\hat{\beta}$	<i>P</i>	$\hat{\beta}$	<i>P</i>	$\hat{\beta}$	<i>P</i>
POS marketing	0.11	<.001	0.03	.01	0.11	<.001	0.03	.013
Urge to buy cigarettes	0.46	<.001	0.37	<.001	0.46	<.001	0.37	<.001
HSI	0.03	.458			0.03	.458		
Sex		.849				.849		
Male	0.02				0.02			
Female	0				0			
Age		<.001		.077		<.001		.09
18–24	0		0		0		0	
25–39	–0.11		0.02		–0.11		0.00	
40–54	–0.36		–0.09		–0.36		–0.1	
≥55	–0.82		–0.22		–0.82		–0.23	
Race/ethnicity		<.001		.123		<.001		.056
Non-Hispanic white	0		0		0		0	
Non-Hispanic black	0.56		0.2		0.56		0.22	
Hispanic	0.77		0.2		0.77		0.23	
Other	0.28		0.04		0.28		0.06	
Income (\$1000)	–0.01	<.001	0.00	.394	–0.01	<.001	0.00	.304
Education		<.001		.028		<.001		.021
Less than high school	0		0		0		0	
High school graduate	–0.45		–0.28		–0.45		–0.30	
Some college	–0.54		–0.26		–0.54		–0.28	
College graduate	–0.95		–0.43		–0.95		–0.44	
Frequency of visits to stores		<.001		.169		<.001		.180
Sometimes	0		0		0		0	
Frequently	0.46		0.11		0.46		0.11	
Always	0.67		0.19		0.67		0.19	
Method of recruitment		<.001		<.001		<.001		<.001
Random digit dialing	–0.75		–0.28		–0.75		–0.28	
Other	0		0		0		0	
\bar{R}^2			0.30				0.30	

HSI = Heaviness of Smoking Index.

^aAdjusted for all covariates and method of recruitment in the study.

subsample of smokers in the center city of Nebraska Metropolitan Statistical Area in the Behavioral Risk Factor Surveillance System.¹⁷ For example, the percentage of males in our sample and Behavioral Risk Factor Surveillance System were identical, the mean age was 47.8 years in our sample and 53 years in Behavioral Risk Factor Surveillance System, and the percentage of respondents with a high school diploma or a lower level of education was 49.9 in our sample and 46.3 in Behavioral Risk Factor Surveillance System. Another limitation of the study is that because of its cross-sectional nature, the results cannot be used to establish causality. For example, while it is plausible that noticing POS cigarette marketing can promote an urge to buy cigarettes, it is also possible that a person who has an urge to buy cigarettes would be more likely to also notice the presence of cigarette marketing. Finally, another limitation of the study is that the measurement of key variables may be subject to recall bias. For example, we relied on recalled exposure to POS marketing instead of the actual amount of POS marketing. It is important to examine the actual marketing amount because conscious recognition of marketing is not the only influence on consumer decisions; environmental influences that are not consciously perceived by the consumer can lead to decision processes that take place completely outside of awareness.^{18–21}

Our study is significant especially in regard to the 2009 Family Smoking Prevention and Tobacco Control Act, which provided the Food and Drug Administration the authority to regulate tobacco marketing and allows state and local jurisdictions to enact tobacco marketing restrictions without being preempted by the federal government. To the extent that the urge to buy cigarettes and an impulse purchase of cigarettes can increase cigarette consumption or be a potential barrier to smoking cessation,^{8,10,22} our findings can provide part of the evidence-base needed by the Food and Drug Administration or local authorities to follow the lead of countries such as Australia, Canada, and Ireland and ban POS tobacco marketing.

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Declaration of Interests

All authors have completed the Unified Competing Interest form (available on request from the corresponding author) and declare that there were no

financial relationships with any organizations that might have an interest in the submitted work in the previous 3 years, neither did we have other relationships or activities that could appear to have influenced the submitted work.

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We assure that all authors included in the article fulfill the criteria of authorship. All have contributed in the conception and design, analysis and interpretation of data, drafting of the article and revising it critically for important intellectual content, and final approval of the version to be published. In addition, we also assure that there is no one else who fulfills the criteria but has not been included as an author. Institutional Review Board at University of Nebraska Medical Center provided the ethical approval for this study.

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