Bridging the Gap

Research Informing Practice for Healthy Youth Behavior

The Relationship Between Youth Smoking and the Retail Environment: Preliminary Results

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Introduction

- Tobacco use is considered to be the single most preventable cause of disease and death in the United States (USDHHS, 1994) accounting for one of every five American deaths (Mokdad et al., 2004).

- Tobacco remains one of the least regulated consumer product in the United States (Kluger, 1996).

- Research shows that youth smokers are much more responsive to advertising than adult smokers (Pollay, 1996)

- Research shows initiation of daily smoking among youth appears to increase in years of high promotional activity by the tobacco industry (Redmond, 1999)

- Surveys indicate that teenagers believe access to tobacco in retail outlets is easy (Clark et al., 2000)
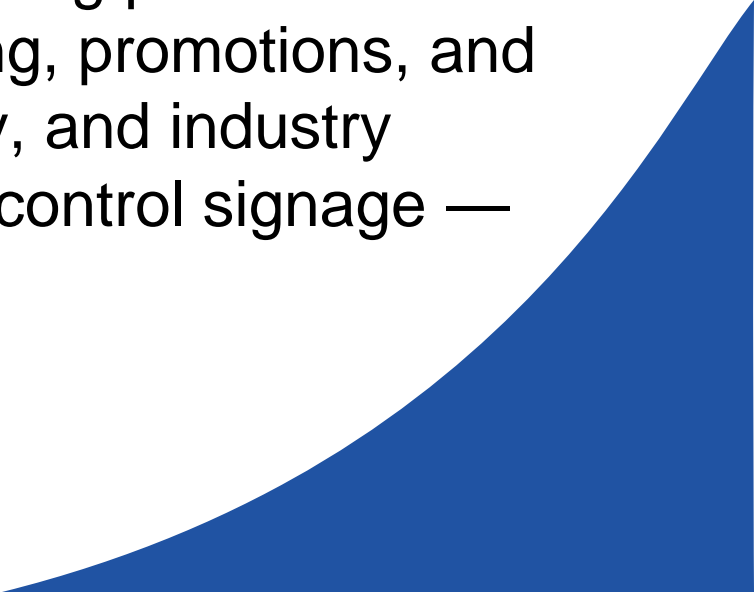
Introduction Cont'd.

- The tobacco industry may be eliminating some of its more traditional forms of advertising in the wake of the MSA. However, there is evidence that the tobacco industry is turning more and more to retail stores as outlets for its marketing efforts (Wakefield et al. 2002).

- In 2002, the Tobacco Industry spent a total of $9.66 billion on promotional allowances to facilitate the sale or placement of cigarettes (i.e., price discounts, promotional allowances paid to retailers, promotional allowances paid to wholesalers, and other promotional allowances). This accounts for 77.5 percent of all 2002 advertising and promotional spending (FTC 2004 Cigarette Report).

Introduction Cont'd.

- Much of the previous research studying the impact of tobacco industry marketing practices on youth tobacco use focus on a community, group of communities, or statewide sample.

- This study uses nationally representative samples of 8th, 10th and 12th grade students to examine what association exists between tobacco industry marketing practices — such as cigarette placement, advertising, promotions, and prices, as well as tobacco store density, and industry sponsored and health-related tobacco control signage — and youth smoking behavior.

Data and Methods

➤ Data are from two primary sources: 1) the ImpacTeen Project, a component of Bridging the Gap, conducted by the University of Illinois at Chicago's Institute for Health Research and Policy and funded by The Robert Wood Johnson Foundation, and 2) the Monitoring the Future (MtF) study, the nation's longest running survey of youth substance use and abuse, conducted by the University of Michigan's Institute for Social Research and funded by the National Institute on Drug Abuse (NIDA).

➤ BTG is a multi-disciplinary, multi-site collaborative endeavor developed to substantially expand existing knowledge on the conditions in the larger social environment that can influence the use of tobacco, alcohol, and illicit drugs by adolescents.

➤ Selection of ImpacTeen communities was determined by the location of MtF's separate nationally representative school samples of 8th, 10th, and 12th grade students.

➤ The study covers five years 1999 through 2003 in which students were administered surveys that included questions on youth smoking behavior.

➤ For each index school, a catchment area, or community, was defined, reflecting the area from which the school draws its students.

Data and Methods Cont'd.

➤A list of all likely tobacco and alcohol retailers located within the specified area was then generated. From that list a random sample of up to 30 tobacco or alcohol retail outlets was selected for on-site observation (if less than 30 a census of retailers was selected, this was the case in approximately 82 percent of the catchment areas visited).

➤Information on cigarette placement, price for premium brand cigarettes, promotions, advertising, and tobacco control signage was collected by on-site observation in the Spring and Summer of 1999, 2000, 2001, 2002, and 2003 and extracted from the retailer sampling data set.

➤There are a total of 966 sites and 17,476 stores in our sample, with an average of 18.1 (st. dev. 9.9) stores per site. Range: 1 to 31 stores per community (some catchment areas may have 31 stores because observers were instructed to add the store closest to the school if it was not included in the random sample of 30).

➤Control variables come from the MtF surveys, except for urbanicity, which was extracted based on the location of the school from the National Center for Education Statistics database.

Analysis

➤ Store data were aggregated to the site level with the mean score calculated for each variable giving us a sample size of 966 catchment areas.

➤ Store Count variables are summed for each site.

➤ Store data were then merged with the youth data at the individual level (see descriptive table for sample sizes).

➤ Ran OLS and logistic regression analyses with weighted data using SAS v8.e. All analyses controlled for student grade, gender, race/ethnicity, whether the student lives with both parents, students' income, father's and mother's level of education (college or more), urbanicity, and year of data collection.

Analysis Cont'd.

➤**Created three outcome variables**:

1. Overall 30-day prevalence measure for smoking by 8th, 10th and 12th Graders.

Prevalence is a dichotomous measure of the responses to current smoking that reflect having smoked in the last 30 days. Those who responded they have never smoked=0 (79 percent) and those who said they smoked at all in the past 30 days=1 (21 percent).

2. Average number of cigarettes smoked in the past 30 days by 8th, 10th and 12th Graders.

Average consumption per smoker ranges from less than one cigarette a day up to 40 or more cigarettes a day. The natural log of this variable was used in empirical analyses.

3. Smoking Uptake Measure for 8th, 10th and 12th Graders.

Three MTF questions are used to create the uptake measure: 1) ever smoking, 2) smoking in past 30 days, and 3) intention to smoke in 5 years. The uptake measure Includes the following categories: 1) never smoker; 2) puffer; 3) non-recent experimenter; 4) former established smoker; 5) recent experimenter; and, 6) current established smoker. *(Note: intention to smoke is measured only on a subset of respondents, so the N's are smaller)*

Analysis Cont'd.

➤ **Explanatory variables**:

1. <u>Placement variable</u>—dummy variable: 1=clerk assist only, 0= any self assist. Aggregated up to the site level, this variable can be interpreted as the proportion of stores in a site that have clerk assist only placement.

2. <u>Advertising Scale Variable</u>—includes several variables: 1) advertising on the property/parking lot, 2) advertising on the exterior of the store, and 3) interior store advertising. The three advertising variables have four levels (no ads, some ads, moderate amount of ads, and store is covered in ads). Each individual variable represents the proportion of stores in a site that have that level of property, exterior or interior advertising. Created an advertising scale variable (sum of the three advertising variables). Range: 0, i.e., no advertising up to 12, i.e., the store was covered in tobacco ads.

3. <u>Promotions variable</u>—information was collected differently in 1999 than in other years. To create a comparable measure, we created a dummy variable for any vs. no promotions. Aggregated up, this variable can be interpreted as the proportion of stores in a community that have any promotions or the level of promotions found in a community.

4. <u>Premium price variable</u>— represents the average price of Marlboro and Newport cigarettes across all stores in a site.

Analysis Cont'd.

➤ **Explanatory variables Cont'd**:

5. <u>Store Density Variable</u>—represents the number of tobacco retail stores located per square mile in a catchment area.

6. <u>Industry-sponsored and Health-related Tobacco Control Signage</u>—dummy variable for any vs. no tobacco control signage. Variables represent the proportion of stores within a catchment area that have any industry-sponsored and/or health-related tobacco control signage.

7. <u>Smoke-Free Air Index accounting for Preemption</u>—Sum of nine separate restrictions (i.e., restrictions on smoking in private worksites, restaurants, recreational facilities, shopping malls, health facilities, etc.). These restrictions take on a value depending on the strength of the regulation. The index is derived by adding up the restriction ratings for each of the nine restrictions.

8. <u>Possession-Use-Purchase Index</u>—Sum of 'Minors' possession, use, and purchase prohibited' variables. This index represents the number of possession, use, and/or purchase laws (PUP laws) present for a given state and year (possible values: 0 = no PUP laws; 1 = 1 PUP law present; 2 = 2 PUP laws present; 3 = all 3 PUP laws present).

Descriptive Table of Variables

	Mean/Proportion	Standard Deviation	Range	N
Outcome Variables				
Smoking Prevalence	0.21	0.40	0 – 1	106,375
Consumption	5.92	8.31	0.5-40	21,892
Smoking Uptake	1.25	1.78	0 – 5	34,658
Explanatory Variables				
Advertising Scale	2.62	0.76	0 – 5	109,177
Placement	0.83	0.21	0 – 1	109,260
Any vs. No Promotions	0.47	0.27	0 – 1	109,248
Premium Priced Cigarettes	3.83	0.64	2.49 – 7.19	109,084
Store Density Measure	2.52	5.67	0.002-69.93	108,933
Industry Counter Ads	0.64	0.29	0 – 1	85,477
Health-related Counter Ads	0.04	0.10	0 – 1	85,477
Grade 8*	0.37	0.48	0 – 1	109,308
Grade 10	0.32	0.46	0 – 1	109,308
Grade 12	0.31	0.46	0 – 1	109,308
Male	0.48	0.49	0 – 1	104,628
Urban	0.25	0.43	0 – 1	109,308
Suburban	0.41	0.49	0 – 1	109,308
Town	0.12	0.32	0 – 1	109,308
Rural*	0.22	0.42	0 – 1	109,308
Student Income	57.33	59.29	0 – 292.27	104,736
Lives with Both Parents	0.73	0.45	0 – 1	105,866
Father's Education	0.55	0.49	0 – 1	93,575
Mother's Education	0.59	0.49	0 – 1	98,452
Percent Black Population	0.14	0.35	0 – 1	103,718
Percent White Population*	0.63	0.48	0 – 1	103,718
Percent Hispanic Origin	0.12	0.33	0 – 1	103,718
Percent Asian Population	0.04	0.18	0 – 1	103,718
Percent Other Race Population	0.06	0.23	0 – 1	103,718
SFAPREEMP Index	13.47	12.15	-22.5 – 51	109,308
PUP Index	1.77	1.05	0 – 3	109,308
Year	2001	1.41	1999 – 2003	109,308

Summary of Descriptives

- Overall prevalence 21 percent

- Daily consumption 5.92 cigarettes per day

- Average smoking uptake measure (1.25) falls between puffer and non-recent experimenter

- Overall mean advertising score: 2.62, i.e., most communities had low levels of ads

- 17 percent of stores had some type of self-assist placement

- 47 percent of stores had some type of tobacco promotion

- Average premium cigarette price $3.83 US

- Overall mean store density: 2.52 tobacco retail stores per square mile

- 64 percent of stores had Industry-sponsored tobacco control signage vs. only 4 percent with Health-related tobacco control signage

Multivariate Models: Cigarettes Smoked in the Past 30 Days and Smoking Uptake

	Smoking Prevalence	Cigarette Consumption	Smoking Uptake
Advertising Scale	-0.03	-0.005	**0.07****
	(0.03)	(0.02)	(0.03)
Promotions	**0.15****	0.05	**0.14***
	(0.07)	(0.07)	(0.08)
Placement	**-0.21****	-0.10	-0.14
	(0.09)	(0.09)	(0.09)
Premium Price	**-0.30*****	**-0.17****	**-0.18****
	(0.08)	(0.06)	(0.08)
Store Density	-0.008	-0.001	-0.003
	(0.006)	(0.004)	(0.004)
Industry Counter Ads	-0.10	0.06	-0.12
	(0.08)	(0.07)	(0.09)
Health-Related Counter Ads	-0.12	0.03	0.02
	(0.17)	(0.16)	(0.02)

***$p<.001$; **$p<.05$; *$p<.10$.   Standard errors in parentheses

All Models control for: grade, gender, race/ethnicity, whether student lives with both parents, students' income, father's and mother's level of education (college or more), urbanicity, and year of data collection.

Multivariate Models Including State-Level Tobacco Control Policies

	Smoking Prevalence	Cigarette Consumption	Smoking Uptake
Advertising Scale	-0.02	-0.003	**0.07****
	(0.03)	(0.02)	(0.03)
Promotions	**0.16****	0.05	**0.15***
	(0.08)	(0.07)	(0.08)
Placement	**-0.21****	-0.09	-0.13
	(0.09)	(0.09)	(0.09)
Premium Price	**-0.14***	**-0.16****	-0.09
	(0.08)	(0.07)	(0.09)
Store Density	-0.008	-0.002	-0.003
	(0.006)	(0.004)	(0.004)
Industry Ctr Ads	-0.08	0.06	-0.11
	(0.08)	(0.07)	(0.09)
Health Ctr Ads	-0.20	-0.007	-0.05
	(0.17)	(0.16)	(0.20)
SFApremp Index	**-0.01*****	-0.002	**-0.006****
	(0.002)	(0.002)	(0.002)
PUP Index	-0.02	-0.02	-0.03
	(0.01)	(0.01)	(0.02)

***p<.001; **p<.05; * p<.10.   Standard errors in parentheses

All Models control for: grade, gender, race/ethnicity, whether student lives with both parents, students' income, father's and mother's level of education (college or more), urbanicity, year of data collection, and state-level tobacco control policies.

Summary of Preliminary Results

Multivariate Model without State-level Tobacco Control Policies

•The presence of cigarette promotions in stores has a significant positive effect on both smoking prevalence and uptake.

•No self-service cigarette placement (clerk assist only vs. self) has a significant negative effect on smoking prevalence.

•The level of tobacco advertising has a significant positive effect on smoking uptake.

•Cigarette price has a significant negative effect on all three outcome variables.

Multivariate Model with State-level Tobacco Control Policies

•The presence of cigarette promotions in stores has a significant positive effect on both smoking prevalence and uptake.
•No self-service cigarette placement (clerk assist only vs. self) has a significant negative effect on smoking prevalence.
•The level of tobacco advertising has a significant positive effect on smoking uptake.
•Cigarette price has a significant negative effect on consumption and prevalence. However, price now has a weaker effect on prevalence and no effect on uptake.
•The Smoke Free Air index has a significant negative effect on both prevalence and uptake.
•The PUP index has no effect on any of our three outcome variables.

Study Limitations and Discussion

•Data are currently unavailable to account for the presence of local tobacco policies for the communities or state-level youth access policies. Once these data are available, they should be included in the analysis.

•This is one of the first studies to examine the association of these point-of-purchase marketing strategies on youth smoking behavior.

•Results provide evidence that tobacco point-of-purchase marketing strategies influence youth smoking.

• Additional analyses are needed to further explore these results in order to provide policy makers, advocates and researchers with increased knowledge about what effect the retail environment has on youth smoking behavior to help improve policy development.

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