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Publication Date

2018-07-06

DOI

10.4324/9781315805795-12

Peer reviewed

Chapter **12**

Does Antismoking Advertising Combat Underage Smoking? A Review of Past Practices and Research

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ABSTRACT

From 1967 to 1970, before the ban on broadcast tobacco advertising in the United States, broadcasters were required to air roughly one antismoking ad for every four cigarette ads. Smoking by youth declined markedly. Since then, the underage smoking rate has remained stable. One reason the rate has not declined further may be that, since 1970, expenditures on antismoking ads have been very low. Expenditures have increased recently, but only in three states. In 1995, Massachusetts spent \$2.33 per capita, California \$.40, and Michigan \$.20; in contrast, the tobacco industry spent \$3.76 per capita on cigarette ads. Nationally, the U.S. Centers for Disease Control and Prevention (CDC), and groups such as the American Cancer Society, distribute public service announcements (PSAs), but broadcasters tend to air the PSAs from midnight to 6 a.m. Field and lab experiments indicate that antismoking ads can reduce underage smoking. However, youth must see the ads when in grades 5–10. New ads must be created each year. The ads must be coordinated with intensive antismoking school programs. Finally, the ads must depict the short-term costs of smoking (e.g., bad breath), show youth how to refuse cigarette offers, and show that smoking is not the norm.

The U.S. surgeon general estimates that 3,000 youth begin smoking cigarettes every day in the United States and one third will die—10 or more years prematurely—of smoking-related disease (Collins, 1995). They will die of lung or throat cancer, heart disease, strokes, or other ailments directly related to their smoking, which results in substantial human, health care, and economic costs (Max & Rice, 1995). Currently, about 20% of

high school seniors smoke daily, which is nearly as high as the adult smoking rate of 26%, and increasingly younger people are smoking (Lynch & Bonnie, 1994; USDHHS, 1989). Although all states have laws that prohibit cigarette sales to minors, 85% of smokers take up the habit before they turn 18 years old (Lynch & Bonnie, 1994). It may be possible, then, to combat smoking simply by enforcing existing laws and, concurrently, reducing youths' demand for cigarettes.

Antismoking advertising may help to reduce youth's demand for cigarettes. This chapter examines advertising practices and research to determine the following:

1. Do U.S. youth see sufficient antismoking advertising for it to have any impact?¹
2. If youth saw sufficient antismoking advertising, could it reduce their smoking rates?
3. How does antismoking advertising reduce smoking rates; that is, how does it change beliefs, attitudes, and/or behavioral intent?
4. When does antismoking advertising reduce smoking rates? That is, which factors seem to enhance or detract from its impact?

YOUTH'S EXPOSURE TO ANTISMOKING ADS

This author conducted an informal telephone survey to identify groups that had disseminated antismoking ads in recent years in the United States and Canada. It was necessary to conduct a survey because no published information was available. The following groups were identified as disseminators of antismoking ads for youth:²

1. The Health Departments of five U.S. states: California, Massachusetts, Michigan, Minnesota, and Maryland.
2. Health Canada, a Canadian federal government organization.
3. Two organizations within the U.S. Department of Health and Human Services: the Centers for Disease Control and Prevention and the Center for Substance Abuse Prevention.
4. Three nongovernment health organizations: the American Cancer Society, the American Lung Association, and the American Heart Association.

¹For parsimony, the term *antismoking advertising* (or ad) refers to advertising placed in paid media as well as to PSAs placed in donated media.

²Groups known to use antismoking ads were contacted and asked to identify other such groups. The final list may not be fully comprehensive, but it should be reasonably complete.

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5. The R. J. Reynolds Tobacco Company.

A spokesperson from each group was interviewed and asked to provide the group's annual budgets for antismoking ads for the years 1990-1996. The budgets typically included production, media, evaluation, and public relations. When budgets were unavailable, data were obtained on the number of antismoking ads produced. The information obtained from these surveys is summarized in Table 12.1 and is discussed later.³

The subsequent discussion distinguishes between groups that purchase media time for their antismoking ads and those that rely on broadcasters and publishers to run the ads free of charge as PSAs. Whether a group can afford to purchase media time is perhaps the most important factor that affects whether youth will see its ads. The Federal Communications Commission no longer requires broadcasters to air specified numbers of PSAs, and broadcasters receive large numbers of PSA requests, many of which are not honored. The CDC tracked its Nic (a teen) antismoking PSA for 11 months in 1992-1993 (Arian, Lowe, Travis, & Gusick, 1993). The three networks aired the PSA 312 times (a \$1.5 million value), and 147 network affiliates aired it 3,529 times (a \$400,000 value); cable participation was very low. Unfortunately, 81% of the airings occurred when youth would not be watching (56% late night, 7% late fringe and 18% daytime). By purchasing media, groups can ensure its antismoking ads are placed in programs and publications that will be seen by young people.⁴

³It would have been ideal to obtain information on reach (the number of youth exposed to each ad) and frequency (the number of times youth were exposed to each ad), but that information generally was unavailable. The information reported here was obtained from the following officials and their staff assistants:

California Health Dept.	Colleen Stevens
Massachusetts Health Dept.	Greg Connolly
Michigan Health Dept.	Dianne May
Minnesota Health Dept.	Arlene Thornton
Maryland Health Dept.	Joan Stine
Centers for Disease Control	Jeff McKenna
Center for Substance Abuse Prevention	Bob Vollinger
American Cancer Society	Elizabeth Bridgers
American Lung Association	Ruth Kasloff
American Heart Association	Greg Hunicutt
Health Canada	James Mintz, Neville Layne

⁴It is beyond the scope of this chapter to examine in detail if PSAs are an effective method of exposing youth to antismoking messages. The reader can contact the U.S. Ad Council (contact: Luana Lewis) for general information on the amount of free air times PSAs receive, criteria for success, and case histories that indicate PSAs can have statistically significant attitudinal and behavioral effects. The ad council has produced and disseminated PSAs for over 50 years, but it has yet to release any antismoking PSAs.

TABLE 12.1
Recent Expenditures on Antismoking Ads Targeted at Youth (approximate amounts)

Source of Funds	1990	1991	1992	1993	1994	1995	1996
CA Health Dept.*		28.6 mil		16 mil	15 mil	12 mil	12 mil
Massachusetts Health Dept.*							13 mil
Michigan Health Dept.*				.5 mil	16 mil	14 mil	1.9 mil
Minnesota Health Dept.*	1.6 mil	1.6 mil	.6 mil	.3 mil	.4 mil	1.9 mil	1.9 mil
Maryland Health Dept.				Smoking Drags You Down PSAs (TV, radio, bus)	.05 mil	.05 mil	
US Health and Human Services Centers for Disease Control and Prevention		Smoking Is Out TV & print PSAs, Bug Spray print PSA, Performance Edge PSA** (.7 mil)	Nic (a teen)/ Butthead print radio & TV PSAs (re-release, .2 mil)	Richard Marx TV PSA	Surgeon General's Kids Report (magazine; .4 mil)	Cartoon print PSAs, Performance Edge II**, Baseball spit tobacco TV PSAs (.9 mil)	
American Cancer Society***		Tar Lady TV PSA			Sports Celebs TV PSA	2 PSAs with MusicTV (Audition, Obsession)	
American Lung Association	The Dance TV PSA					You Smoke I Choke TV PSA	
American Heart Association				Shape Up TV & movie theater PSAs		2 Ricky Martin TV PSAs (1 Spanish, FHP)	
Health Canada****		.75 mil	.75 mil	0	1.6 mil	4.5 mil	3.6 mil

Note: PSAs (Public Service Announcements) were distributed to broadcasters to be run voluntarily, free of charge (except in Michigan; see text).
*The budgets generally covered production, media placements, evaluations, and public relations, and the moneys were used to reach several target audiences—not just youth. Michigan's budgets for 1993–1994 included other health PSAs.

**Performance Edge is cosponsored by the Center for Substance Abuse Prevention, and is primarily a video with give-away magazines.

***In addition, 4 PSAs will be distributed for the 1995 Great American Smokeout: 3 from California and Tar Lady.

****The budgets are in US \$ (1 US = 1.35 Canadian). The youth ads started in 1986. Since 94/95, adults have also been targeted.

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**YOUTH'S EXPOSURE TO ANTISMOKING ADS
(IN PAID MEDIA)****Minnesota**

Minnesota was the first state to launch a multifaceted statewide program aimed at discouraging tobacco use (Murray et al., 1992). Minnesota commenced this initiative in 1986, using funds generated by a tobacco surtax. As part of its multifaceted program, it purchased media time to run antismoking ads. Minnesota spent roughly \$1 million through 1989 on antismoking ads; it spent \$1.6 million in both 1990 and 1991 (\$.36 per capita). Since that time, though, funds have been cut due to statewide budget reductions; now, the annual budget is only \$.05 million. Minnesota no longer produces antismoking ads for TV or radio. Instead, previously produced ads are occasionally broadcast free of charge as PSAs. Minnesota's pioneering efforts have had an impact beyond its state lines, however: Seventy-two entities have used Minnesota's ads to promote nonsmoking in other states and countries.

California and Massachusetts

In 1990 and 1993, respectively, California and Massachusetts began purchasing media time for antismoking ads with funds generated by tobacco surtaxes, as mandated by voter propositions. Each state has spent about \$14 million a year on campaigns targeted at both youth and adults. In 1995, California spent roughly \$.40 per capita, and Massachusetts \$2.33. As an example of how the moneys are spent, in 1996, Massachusetts will spend \$8 million on media, \$3 million on production (\$180,000 per TV spot), \$.5 million on research, and \$1.5 million on public relations.

Michigan

In the early 1990s, Michigan operated with a small annual budget of about \$.45 million a year (\$.05 per capita). Lacking funds to purchase media, it developed an innovative distribution plan referred to as "hybrid" PSAs. It pays the Michigan Broadcasters Association a nominal sum and is guaranteed a certain number of spots in each part of the day (e.g., in 1993, it paid \$.5 million for 8 TV and 8 radio spots per station per month, 25% in each day part). In 1994, Michigan passed its own tobacco surtax, and a portion of the revenues are to be spent on health education. As a result, Michigan now spends about \$1.9 million annually on antismoking ads, or \$.20 per capita.

Canada

Canada's federal government has been purchasing media to run English and French antismoking ads since 1986. Initially, Canada spent only about US \$.75 million a year, or US \$.03 per capita. It tried to use the money prudently by focusing strictly on youth and by persuading private sector marketers with expertise in reaching youth (e.g., Musique TV and Peugeot Bicycles) to cosponsor antismoking activities. In 1994, Canada expanded its target audience to include adults, and it now spends about US \$3.6 million a year or US \$.12 per capita.

YOUTH'S EXPOSURE TO ANTISMOKING PSAs (IN DONATED MEDIA)

The U.S. Centers for Disease Control and Prevention (CDC)

The CDC, a unit of the federal government's Department of Health and Human Services, has produced several antismoking PSAs for youth (refer back to Table 12.1). From 1990 to 1995, the CDC spent roughly \$370,000 a year producing such materials, or \$.001 per capita. The CDC initially focused on disseminating PSAs to traditional media, but it was disappointed with the results. It now produces more targeted communications such as PSAs for school newspapers. It also produces educational videos and giveaway magazines for schools, as in its Performance Edge program, which is cosponsored by the Center for Substance Abuse Prevention. Finally, the CDC provides a public service by cataloging and distributing other groups' antismoking ads.

Nongovernment Health Groups

The American Cancer Society, American Heart Association, and American Lung Association (as well as the state of Maryland and perhaps a few other states and entities) periodically release antismoking PSAs for youth. (Again, see Table 12.1.) These groups have become increasingly innovative in reaching youth. The American Cancer Society arranged for Music TV (MTV) to produce two antismoking PSAs, which ensured the ads would appeal to youth and would be aired in youth programs. (The CDC is now engaged in a similar joint venture with MTV.) The American Lung Association persuaded the largest chain of U.S. movie theaters, United Artists, to run a pro-health antismoking PSA for youth during an entire month in 1994.

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R. J. Reynolds Tobacco Company

Finally, the R. J. Reynolds Tobacco Company disseminates antismoking wall posters to junior high and middle schools on an ongoing basis (Osmon, 1995). The color posters are designed for 12- to 15-year-olds (grades 6-9) and contain messages such as "If You Think Smoking Makes You Fit In, Think Again" and "How Can Smoking Be the Thing to Do, If Most of Your Friends Aren't Doing It?" Each semester, schools on the distribution list receive two new posters and brochures. The materials are part of school program to teach youth to make appropriate lifestyle decisions regarding smoking and drinking. The program includes teaching materials for six classes, covering decision making, responsibility, refusal skills, conflict resolution, and values.

LEVEL OF ANTISMOKING ADVERTISING NEEDED TO REDUCE UNDERAGE SMOKING

Necessary Ratio of Antismoking Ads to Cigarette Ads

To evaluate whether youth in the United States and Canada receive adequate exposure to antismoking advertising, it is necessary to first determine the minimum level needed. A useful approach is to consider the antismoking to cigarette ad ratio, because antismoking ads must have adequate "share of voice" to break through ad clutter, attract attention, and persuade (Kotler, 1991; Lavidge & Steiner, 1961). According to research by Lewit, Coate, and Grossman (1981), a ratio of one antismoking ad for every four cigarette ads may be needed. In 1967, the Federal Communications Commission (FCC) interpreted its Fairness Doctrine to require broadcasters to air one antismoking ad for every three cigarette ads and roughly a one to four ratio was attained (Schuster & Powell, 1987). Lewit et al. (1981) determined that during the Fairness Doctrine Period, the underage smoking rate was 3 percentage points smaller than in the 16-month period just prior to the Fairness Doctrine Period.⁵

⁵Lewit et al. (1981) analyzed cross-sectional field data (a discussion of such quasi-experiments is provided later). Specifically, Lewit et al. analyzed survey data collected by the National Center of Health Statistics who, from 1966 to 1970, contacted a random sample of 6,768 youths between the ages of 12 and 17 years old to assess health behaviors. During the 16 months prior to the Fairness Doctrine Period, 14.6% of the youth were current smokers; during the 3-year Fairness Doctrine Period, 12.4% were current smokers. A regression that controlled for price and several other factors revealed the coefficient for the experimental (Fairness Doctrine) vs. control (pre Fairness Doctrine) variable was $-.03$, indicating a 3% drop in smoking for the experimental vs. control group, which occurred in the first year.

In 1970, the tobacco industry agreed to a ban on cigarette ads on TV and radio that commenced on January 1, 1971. This ban eliminated the need for broadcasters to air antismoking ads, so airings declined precipitously and the drop in smoking was retarded (Lewit et al., 1981; Pollay, 1994; Schneider, Klein, & Murphy, 1981). It is unclear to what extent results from 1970 generalize to the present day. Also, it is difficult to draw conclusions about the impact of advertising on tobacco consumption based on cross-sectional data, because uncontrolled variables also may have affected consumption. Nevertheless, given the dearth of other data, a 1 to 4 ratio of antismoking ads to cigarette ads seems reasonable for present-day efforts.

Current Ratios of Antismoking to Cigarette Advertising

In 1993, the last year for which complete data are available, the U.S. tobacco industry spent \$2.16 per capita on mass media cigarette ads, which included ads on billboards, buses, and kiosks and in magazines and newspapers. Overall, on cigarette ads, including point-of-purchase ads, the industry spent \$3.76 per capita in 1993 (see Table 12.2). It is important to include point-of-purchase ads because these are heavily utilized. An average store that sells cigarettes in California has 26 tobacco point-of-purchase materials (posters, displays, and the like) (Hilts, 1995). It could be argued that premiums (give away items such as Marlboro t-shirts) and event sponsorships are also forms of advertising, and, including these, total U.S. cigarette advertising expenditures in 1993 amounted to \$7.12 per capita.

In contrast, in the vast majority of U.S. states, expenditures on antismoking ads amount to essentially \$0 per capita. Antismoking ads are prevalent in just 3 of the 50 states: California (12% of the U.S. population), Michigan (4%), and Massachusetts (2%). Further, only Massachusetts appears to have an adequate ratio of antismoking to cigarette ads, at 1 to 1.4. The ratios in Michigan (1 to 20) and even California (1 to 9.4) could be too low (again, see Table 12.2). If a 1 to 4 ratio is needed across the United States to combat underage smoking, antismoking ad expenditures clearly are insufficient.⁶

Ratio of Antismoking to Cigarette Advertising Under Clinton Proposal

In 1995, based on recommendations by the U.S. Food and Drug Administration (FDA), President Clinton proposed that the tobacco industry spend \$150 million a year on antismoking education for youth (Purdum, 1995).

⁶When Minnesota had a large budget for antismoking ads in the late 1980s, its antismoking to cigarette ad ratio was very roughly 1:6.

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TABLE 12.2
Comparison of Expenditures on Cigarette Versus Antismoking Advertising and Related Activities in United States (approximate amounts)

<i>Expenditures on Antismoking Advertising and Related Activities: Key States (1995)</i>			
	<i>Massachusetts</i>	<i>California</i>	<i>Michigan</i>
Total	\$14 million	\$12 million	\$1.9 million
Per Capita	\$2.33	\$40	\$20
<i>Expenditures on Cigarette Advertising and Related Activities (1993)</i>			
	<i>Media Ads</i>	<i>All Ads (Media + Point of Purchase)</i>	<i>Ads + Premiums + Sponsorships</i>
Total	\$54 billion	\$94 billion	\$1.78 billion
Per Capita	\$2.16	\$3.76	\$7.12
<i>Breakdown by State: Antismoking Versus Cigarette Expenditures</i>			
	<i>Antismoking</i>	<i>Cigarette</i>	<i>Ratio: Antismoking to Cigarette</i>
Massachusetts	\$14 million	\$19 million*	1 to 1.4
California	\$12 million	\$113 million*	1 to 9.4
Michigan	\$1.9 million	\$38 million*	1 to 20

Notes: Per capita expenditures were calculated using 1990 population census figures: U.S. population = .25 billion; Massachusetts = 6 million (.02 of United States); California = 29.8 million (.12 of United States); Michigan = 9.3 million (.04 of United States).

Domestic cigarette expenditures were provided by the Federal Trade Commission; 1993 was the most recent year for which complete data were available. In total, in 1993, tobacco companies spent \$6.03 billion in cigarette marketing, and \$119 million on smokeless tobacco marketing (including \$23 million on advertising smokeless tobacco).

Assumptions underlying calculations of cigarette expenditures by state:

(1) It is assumed the tobacco industry spent roughly the same amount on cigarette advertising in 1995 as in 1993 (1995 was used as the base to incorporate the most current data available on antismoking expenditures).

(2) It is assumed that cigarette advertising expenditures in each state are proportional to the population in that state (i.e., that per capita expenditures are constant across states).

*Based on U.S. total of \$.94 billion.

If the money were spent exclusively on antismoking advertising, it would amount to \$.59 per capita and the ratio of antismoking to cigarette advertising would be very roughly 1 to 6. This ratio represents a very substantial increase over current levels. Although it falls below the target of 1 to 4, it might still be adequate. During the Fairness Doctrine era when a 1 to 4 ratio of antismoking to cigarette ads reduced underage smoking (Lewit et al., 1981), the antismoking ads were not targeted solely at youth; under the Clinton proposal the ads would target youth.

However, the Clinton proposal is under attack by the tobacco industry and many advertisers (Collins, 1995). The final FDA ruling on tobacco and

youth, which is expected to be issued in 1996, may be challenged in court. Thus, it is unclear when or if the tobacco industry will be required to fund antismoking education for youngsters. In the near future, therefore, antismoking advertising is likely to remain unfunded in most U.S. states.

COULD ANTISMOKING ADS WORK? WHEN AND HOW?

If youth could be exposed to sufficient antismoking advertising, could the advertising lower underage smoking rates? This section examines studies that address this question (see Table 12.3 for study descriptions). To ascertain when success is likely, conditions in which the ads worked versus did not work will be compared. Finally, this section examines why antismoking ads might reduce smoking, that is, how the ads might impact beliefs, attitudes, and/or behavioral intent. Four types of studies are reviewed:

1. Longitudinal field experiments sponsored by the U.S. National Institutes of Health (Bauman, LaPrelle, Brown, Koch, & Padgett, 1991; Flynn et al., 1992; Perry, Kelder, Murray, & Klepp, 1992).
2. Cross-sectional field tracking of adolescent smoking rates by California (the IOX, 1991 and Pierce et al. 1990-94 surveys), Minnesota (the Legislative Reports from 1987, 89, and 91), and Canada (Making a Difference I and II and Still Making a Difference Reports, 1991-93).⁷
3. Controlled laboratory experiments (Pechmann & Ratneshwar, 1994; Pechmann & Knight, 1996).
4. Qualitative studies to obtain youths' and experts' opinions of antismoking ads (Worden et al., 1988; Bauman et al., 1988; McKenna & Williams, 1993).

This review focuses on research on antismoking ads targeted at youth in the United States and Canada. Readers may want to review related studies of antismoking ads targeted at Dutch youth (Baan, 1990) and U.S. adults (Wewers, Ahijevych, & Page, 1991; Campion, Owen, McNeill, & McGuire, 1994).

⁷Most of the groups that use antismoking ads (listed in Table 12.1) did not evaluate or have not reported whether the ads affected adolescent smoking rates; thus, they are not listed in Table 12.3 or discussed later. Massachusetts has released data only on adult smoking rates and ad exposure levels (see Abt Independent Evaluation, 1995). Michigan's primary effort has been to track calls to its tobacco help line. The CDC and other health groups obtain, at best, very rough estimates of the media value of their PSAs.

TABLE 12.3
Recent Studies of Antismoking Ads Targeted at Youth

<i>Study Type</i>	<i>Researchers(s) (Publication Yr.)</i>	<i>Main Study Sponsor</i>	<i>Sample Geo-Demographics</i>	<i>Sample Size (Contact Method)</i>
Longitudinal field experiment	Flynn et al. (1992, 1994)	U.S. National Cancer Institute	5th-11th grade students in Vermont and Montana	2,086 in 6 waves (school surveys plus phone when needed)
Longitudinal field experiment	Perry et al. (1992)	U.S. National Heart, Lung & Blood Institute	6th-12th grade students in Minnesota, Dakotas	2,401 in 7 waves (school surveys)
Longitudinal field experiment	Bauman et al. (1991)	U.S. National Cancer Institute	12-16 yr. olds from 10 metro areas in SE United States	1,637 in 2 waves (home interviews)
Cross-sectional field tracking	IOX Assessments Associates (Executive Reports 1990-1991)	California (Health Dept.)	California public school students (4th-12th grade)	29,000 in 4 waves (school surveys)
Cross-sectional field tracking	Pierce et al. Evaluation (Technical Reports 1990-1993)	California (Health Dept.)	California youth (12-17 yrs old)	600,000 in 3 waves (phone surveys)
Cross-sectional field tracking	Minnesota Legislative Reports (1987, 1989, 1991)	Minnesota (Health Dept.)	Minnesota 9th graders	5 survey waves (details not provided)
Cross-sectional field tracking	Health Canada (Making a Difference Reports 1991, 1992, 1993)	Canada (Health Promotion Directorate)	Canadian youth (11-17 yrs old)	1,500+ youths/survey; 1,000+ English-speaking (home surveys distributed by Gallup in 1987; then by Creative Research)
Lab experiment	Pechmann & Ramneshwar (1994)	California (Tobacco-Related Disease Research Program)	California 7th graders	300 (school survey)
Lab experiment	Pechmann & Knight (1996)	California (Tobacco-Related Disease Research Program)	California 9th graders	700 (school survey)
Qualitative research	Worden & Flynn et al. (1988)	U.S. National Cancer Institute	5th-9th graders from 2 U.S. regions	190 (focus groups)
Qualitative research	Bauman et al. (1988)	U.S. National Cancer Institute	12-15 year olds from 15 U.S. schools	1,000 (focus groups)
Qualitative research	McKenna & Williams (1993)	U.S. Centers for Disease Control	U.S. teens (10-15 years old) in 9 cities	240 (focus groups)

National Institutes of Health Longitudinal Field Experiments

Overview of Method. Three major studies on antismoking interventions have been funded by units within the U.S. National Institutes of Health, specifically, the National Cancer Institute (Bauman et al., 1991; Flynn et al., 1992) and the National Heart, Lung and Blood Institute (Perry et al., 1992). These studies were longitudinal in that the same youth ("cohort groups") were followed as they grew older. The studies were also true experiments: Subjects in the experimental group were exposed to mass media antismoking ads in their communities, subjects in the control group were not, and the communities were selected at random from a larger set of possible candidates. By comparing smoking rates across these groups over time, the impact of extraneous factors was removed and the impact of the antismoking ads could be ascertained.

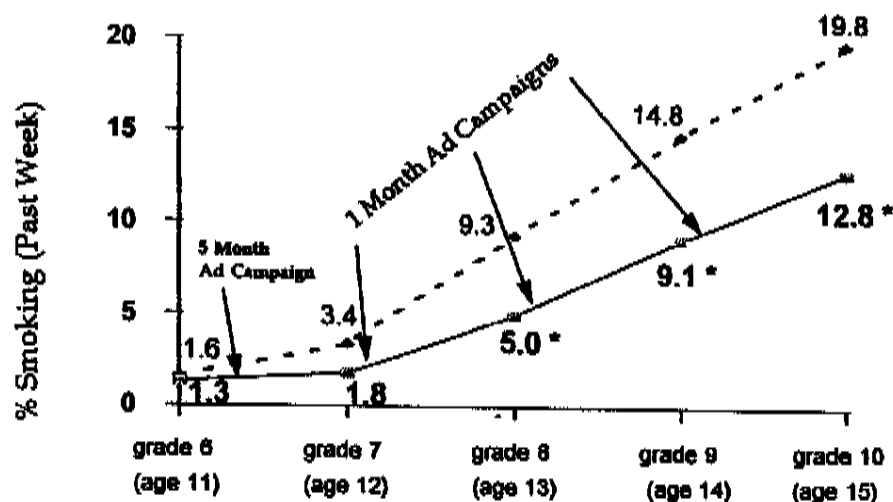
Expected Pattern of Results. As youngsters grow older (e.g., as they are followed from 6th to 10th grade), the percentage that smoke will almost inevitably increase, because smoking is highly correlated with age and grade (USDHHS, 1989). However, if the antismoking ads are successful, there should be a slower rate of increase in the percentage of smokers in the experimental (ad) group versus the control (no ad) group.

Flynn et al. field experiment (1992, 1994). This experiment suggests that antismoking ads combined with special school interventions can reduce underage smoking. Approximately 2,000 students from four communities were tracked, beginning in grades 5-7, for 6 years. All students attended three or more special antismoking classes per year at their schools. However, the experimenters aired antismoking ads in only two of the four participating communities (one community in Vermont, one in Montana). Students who lived in these two communities were in the experimental group. The other students, from matched communities in the same states, constituted the control group.

Students in the experimental group saw an initial antismoking ad campaign that lasted 5 months and three annual "reminder" campaigns that lasted 1 month each (see Fig. 12.1). The ads ran on TV and radio, and media time was purchased. Several ads were used each year, and they were improved continually based on student surveys. The ads highlighted the short-term costs of smoking (e.g., smelly breath and clothes). The ads also showed youth how to refuse offers of cigarettes (Donaldson, Piccinin, Graham, & Hansen, 1995; Tanner, Hunt, & Eppright, 1991). Finally, the ads stressed that smoking is not the norm to ensure the ads did not inadvertently imply underage smoking was prevalent (Donaldson et al., 1995).

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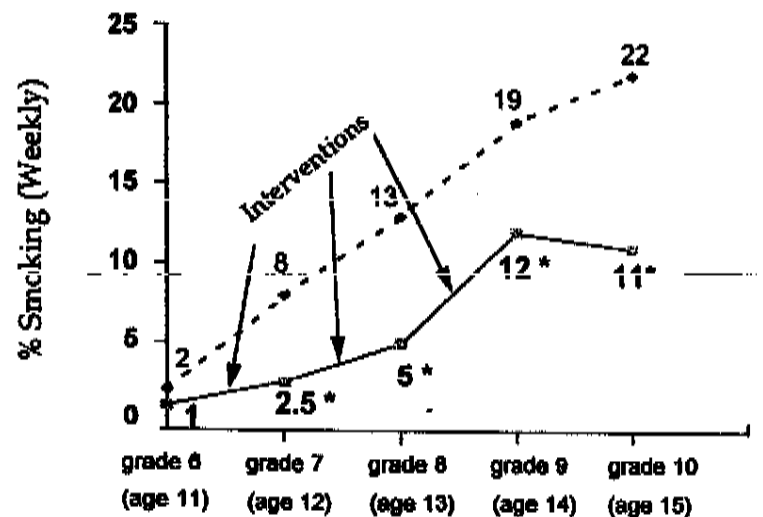


KEY: - - - Control Group — Experimental Group * Difference significant at $p < .05$

FIG. 12.1. Results of Flynn et al.'s (1992) longitudinal field experiment. Each cohort group spanned 3 grades, so the grades listed are the medians (e.g., "grade 6" represents the cohort group when in grades 5-7). Ages are approximate. A similar pattern was observed for "smoked yesterday" and "smoked recently." Flynn et al. (1994) found the effects were sustained 2 years hence (median grade = 12).

The researchers found the school program plus ad (i.e., multifaceted) intervention was far more effective than the school program alone (i.e., single faceted) intervention. Before the interventions had commenced, when the subjects' median grade was 6 (median age = 11), approximately 1% of subjects had smoked in the past week. As the subjects grew older, though smoking rates increased, rates increased significantly less in the experimental (vs. control) group. Four years later, when the ad campaign ended, 12.8% of experimental group subjects had smoked in the past week versus 19.8% of control group subjects (refer again to Fig. 12.1). Six years later (see Flynn et al., 1994), smoking rates among experimental (vs. control) subjects remained significantly lower. Additional findings suggest the ads lowered smoking rates by persuading youth that smoking is not the norm and the disadvantages outweigh the advantages, thereby lowering overall attitudes toward smoking.

Perry et al. field experiment (1992). Perry et al. (1992) evaluated a multifaceted antismoking intervention targeted at youth: an intensive school program combined with a community heart health intervention. The special school program addressed short-term negative consequences, social and advertising influences, norms, and refusal skills; it began in grade 6, lasted for 3 years, and consisted of 6 to 10 classes a year. The community



KEY: - - - Control Group — Experimental Group * Difference significant at $p < .05$

FIG. 12.2. Results of Perry et al.'s (1992) longitudinal field experiment: The intervention depicted was a 6–10 session/year school education program, but subjects in the experimental group were also exposed to a multiyear community health intervention involving mass media ads. Ages are approximate.

heart health intervention included mass media advertising, health screening and education, and numerous other community activities.

Youths in the experimental group were exposed to both the special school intervention and the mass media/community intervention; youths in the control group did not receive either intervention. It was found that the experimental (vs. control) group youths were much less likely to take up smoking. In fact, Perry et al. (1992)'s results are strikingly similar to those reported by Flynn et al. (1992) (see Fig. 12.2).

Bauman et al. field experiment (1991). The Bauman et al. study cautions that antismoking ads targeted at youth may fail if short-lived, underfunded, and divorced from special school programs. Bauman et al.'s 800+ experimental subjects saw only 6 months of antismoking ads, most ads were on radio (vs. TV), and the ads did not start until subjects were about 13 years old (median grade = 8). Schools did not hold special antismoking school classes, and the antismoking ads did not show youth how to reject cigarette offers. Before the ads commenced, 3% of the subjects had smoked in the past week. A year and a half after the ads ended, 13% of the experimental versus 14% of the control group subjects had smoked in the past week. The difference between groups was insignificant (Fig. 12.3). However, the ads lowered beliefs about the benefits of smoking.

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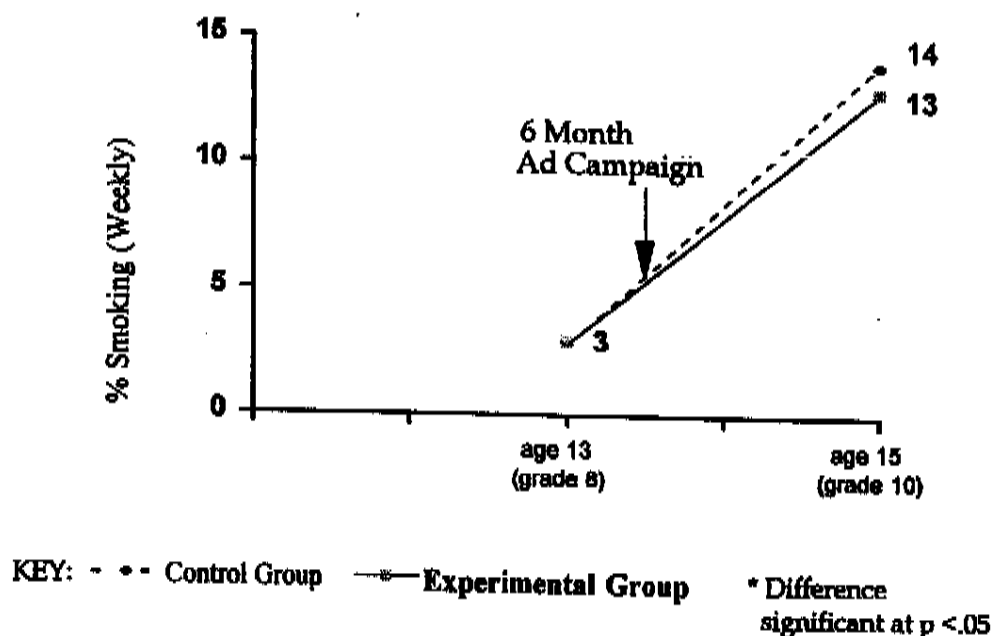


FIG. 12.3. Results of Bauman et al.'s (1991) longitudinal field experiment. Each cohort group spanned 3 years, so the ages listed are the medians (e.g., "age 13" represents the cohort group when 12–14 years old. Grades are approximate.

Stand-alone antismoking school programs, involving no advertising. Research suggests it may be possible to lower adolescent smoking rates with carefully designed school programs and no antismoking advertising (cf. Flynn et al., 1992; see Armstrong, de Klerk, Shean, Dunn, & Dolin, 1990; Best, Thomson, Santi, Smith, & Brown, 1988; Botvin, 1986; Coe, Crouse, Cohen, & Fisher, 1982; Flay, 1985; Shean, de Klerk, Armstrong, & Walker, 1994; Snow, Gilchrist, & Schnicke, 1985). However, some seemingly stand-alone programs could conceivably have been multifaceted (as in Perry et al., 1992). Program sponsors might have wanted to do all they could to combat underage smoking. Also, it is often advantageous to combine school programs with ads and community activities to reduce the amount of classroom time that must be spent on antismoking education.

Also, to be effective, school programs must meet stringent criteria such as those advocated by the National Cancer Institute (Gynn, 1989). Schools must provide several hours of antismoking instruction (perhaps 5+ hours/year) over several years starting in junior high (Bell, Ellickson, & Harrison, 1993), and they must address short-term costs, social norms and influences, and refusal skills (Bruvold, 1993; Flay, 1985; Glynn, 1989). Many programs also allow youth to create antismoking ads, and teach youth how to avoid being influenced by cigarette ads. Schools should not focus strictly on long-term health effects, because most youth think they will quit smoking before suffering health effects (USDHEW, 1979).

When Antismoking Ads Work: A Comparison of Field Experiments. It appears Flynn et al. (1992) were successful because they applied what they learned from an earlier field experiment. They initially tried a brief antismoking ad campaign that had no school component (Worden et al., 1988, p. 532). Within 12 months, the ads had lowered youth's intent to smoke, but the effect dissipated by the 18th month. Worden et al. (1988) speculated that to be successful they had to structure their ad campaign as described here and, later, they were successful with such a campaign:

1. There must be a coordinated school education program (e.g., one strongly endorsed by state education departments with free materials for schools).
2. Students must be exposed to the ads by the time they are in the sixth grade (11 years old).
3. The ads must be continued for several years.
4. To maintain student interest, a portfolio of ads must be used, and there must be a new portfolio each year.
5. The ads must stress the short-term costs of smoking, show how to refuse offers of cigarettes, and demonstrate that smoking is not the norm.

Cross-sectional Field Tracking

Overview of Method. Large-scale (e.g., statewide) interventions are often evaluated using cross-sectional field tracking. Researchers contact random samples of youth to assess smoking rates at several points, ideally prior to, during, and after the ad campaign. The studies are quasi-experiments because subjects are not randomly assigned to experimental (ad) versus nonexperimental (no ad) condition (Cook & Campbell, 1979). Thus, it is difficult to factor out the impact of other variables that may affect smoking rates.

For instance, the interventions in California, Massachusetts, Michigan, and Minnesota were large in scale and highly publicized. These interventions may possibly have elicited reactions from one or more tobacco manufacturers or retailers, who may have tried to counter the interventions by increasing tobacco advertising or promotions, or by dropping prices (Hu, Sung, & Keeler, 1995). Such retaliatory measures are costly but, when confined to one state, could seem economically viable and important strategically.⁸ These factors make it difficult to evaluate the effects of the states' antismoking advertising.

⁸Cross-sectional data are difficult to interpret in other contexts as well (Kotler, 1991). When a firm test markets a new product, for instance, competitors may reduce prices and/or increase advertising, to undermine the success of the test market and dissuade the firm from introducing the product nationwide.

Expected Patterns of Results. Antismoking ads may affect the underlying trend in smoking rates; for instance, smoking rates could start to drop 1% a year (26%, 25%, etc.). If rates drop steadily, public and legislative support of the ads may continue. However, because there is no control group, one cannot be sure the change in rates is due to the ads; other factors—such as general attitudes, prices, or the economy—could be involved. Likewise, if the antismoking ads result in stable smoking rates, this could be viewed as a failure, though it might be a success if rates increased elsewhere.

Alternatively, antismoking ads may result in a one time change (or “shock”) in smoking rates, without affecting any underlying trend (Lewit et al., 1981). For instance, if a state commences antismoking advertising and smoking rates have been stable, rates could drop 3% and then stabilize. If effects are one-time, public and legislative support for continuing the campaign may wane. However, if the campaign were terminated, rates could jump back up. These are only a few of the complex scenarios that could arise. Thus, to reiterate, cross-sectional field data must be interpreted with caution.

California's Field Tracking (1990–1995). California's antismoking ads led very quickly to a one-time drop in underage smoking, but the underlying trend was unaffected. California's initial campaign ran in 1990–1991, and expenditures were \$28.6 million (nearly \$1 per capita). The campaign was evaluated by an independent educational research firm, IOX Assessment Associates (Popham et al., 1994), who repeatedly surveyed youth in grades 4–12 (approximate ages 9–17). The percent of youth that had smoked 1+ cigarettes in the past 30 days dropped significantly from 12.8% 1 month before the campaign to 10.3% 2 months after it started. The survey data indicates the ads created negative attitudes toward smoking, which then lowered youth's intent to smoke. But, for the rest of this campaign, the smoking rate remained quite stable, ending at 10.9%.

Additional campaigns have run in California, but no further decline in underage smoking rates has been documented. Pierce et al. (1994) tracked the percent of 12- to 17-year-olds who smoked “last month” concurrent with the 1990–1991 campaign, in 1991–1992 when the campaign was on hold (due to political and budget problems), and concurrent with the 1992–1993 and 1993–1994 campaigns. The data show that underage smoking in California (and in the United States as a whole; see *Consumer Reports*, 1995) has been fairly stable: 9.1% in 1990–1991, 8.7% in 1991–1992, 9.1% in 1993–1994, and 10.9% in 1994–1995. Smoking among various age groups has fluctuated moderately and sporadically; for example, from 1990–1993, smoking among 16- to 17-year-olds varied from 17.1% to 15.4% to 16.1%, and smoking among 14- to 15-year-olds varied from 7.7% to 9.8% to 9.1%

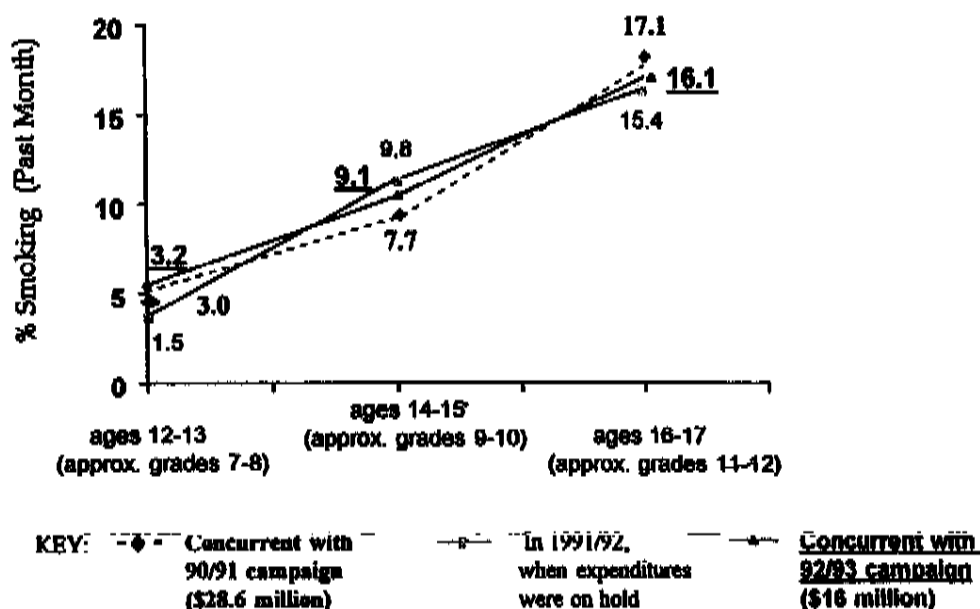


FIG. 12.4. Results from California's later field tracking (from Pierce et al.'s 1990-1993 technical reports. It was not reported if any differences were statistically significant.

(see Fig. 12.4).⁹ In contrast, the smoking rate among the California adult population has been declining steadily: It was 27% in 1988, 22% in 1990, 20% in 1992, 19% in 1993, 17% in 1994, and 16% in the first half of 1995. California has experienced a steeper drop in adult smoking than the United States at large, based on surveys by the National Center for Health Statistics (CDC, 1994).

Why has California not been more successful at reducing underage smoking? It is possible that California has had limited success with youth because it has focused primarily on adults and communities. Each year, several youth ads have been aired in youth programming (e.g., MTV shows). However, most ads have been targeted at adults, because the campaign has three primary goals: to increase awareness and reduce tolerance of second-hand smoke, to increase awareness of the tobacco industry's role in promoting smoking, and to obtain support for policies that would reduce youths' access to tobacco, and for smoke-free policies. Because the media campaign has focused on adults and communities, it has not coordinated special antismoking school programs, and there have been no systematic or comprehensive changes in school programs. California has not, therefore, employed the coordinated advertising plus school education model endorsed by Flynn et al. (1992). Finally, California simply may not have spent enough money to offset tobacco marketing in that state (Hu et al., 1995).

⁹Pierce reported somewhat less smoking than IOX Assessments, despite focusing on older youth. The difference in findings may be attributable to the method (home vs. school surveys).

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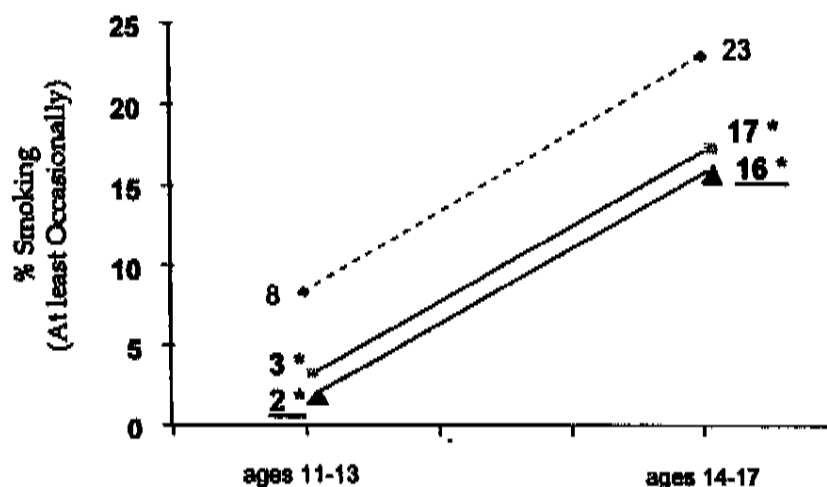
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Minnesota's Field Tracking (1987-1991). Minnesota also had limited success in reducing underage smoking with its antismoking ads (see 1991 Minnesota Legislative Report; also Murray et al., 1992). The ads ran from 1986 to 1990, and annual expenditures were about \$1 million. Fifteen percent of ninth graders (roughly, 14-year-olds) smoked weekly in year one of the campaign (1986), 15% in year three (1988), and 14% in year five (1990). There was a larger drop in the percentages of ninth graders that "ever smoked," from 60% in year one to 55% in year five. But, each year in between, the "ever smoked" rate fluctuated substantially; it was 58% in year two, 56% in year three, and 58% in year four. Therefore, the drop in year five may have been sporadic rather than signaling a clear downward trend, and no statistical tests of trends were reported.

Murray et al. (1992) evaluated Minnesota's intervention using a different method and obtained similar, but slightly more promising, results. Ninth graders were surveyed in both Minnesota and Wisconsin ($n = 3,600$ students/state/year) from 1986 to 1990. Smoking was expected to be lower in the Minnesota treatment group (1988 to 1990 ninth graders) versus the Minnesota control group who had missed out on the newly instituted antismoking junior high program (1986-1988 ninth graders). Smoking was also expected to be lower in the Minnesota treatment group versus the Wisconsin control group. Instead, 13% of the treatment subjects had smoked in the past week versus 13% of the Minnesota control subjects and 16% of the Wisconsin control subjects, and the 3% interstate difference was not statistically significant. Murray et al. (1992) also tracked a separate group of Minnesota 1990 treatment subjects who had received especially intensive antismoking school instruction. Smoking among those treatment subjects (12%) was significantly lower than among Wisconsin control subjects (16%). These findings suggest Minnesota's multifaceted (ad plus school) intervention might have produced significant effects statewide if schools had provided more intensive antismoking education.

Canada's Field Tracking (1990-1993). Canada is perhaps best compared to California, because they both have diverse populations of roughly 30 million, and manage large-scale and complex interventions. Canada spends far less than California on antismoking ads; from 1990 to 1996, Canada will spend US \$11.2 million, and California will spend \$86.6 million. Nevertheless, Canada has been the more successful at reducing underage smoking. From 1987 to 1990, smoking among English-speaking 11- to 13-year-olds dropped from 8% to 2%, and smoking among 14- to 17-year-olds declined from 23% to 16% (see Fig. 12.5).¹⁰ Similar successes were obtained with

¹⁰Canadian officials believe these percentages can be directly compared. However, it should be noted that, after the 1987 survey, the research firm changed (from Gallup to Creative Research), and the question changed (from smoking "daily" to "at least occasionally"—which includes daily).



KEY: - - - first year of campaign (1987) — fourth year of campaign (1990) —▲— one year after campaign (1993) * Difference (vs. 1987) significant at $p < .05$

FIG. 12.5. Results from Canada's field tracking (from Health Canada's "Making a Difference" reports. The initial ad campaign ran from 1987–1992 (approximate annual expenditures = \$.75 million in U.S. \$). These results are for English-speaking youth (75% of population). Similar declines were observed from French-speaking youth (25% of population) who started out with higher smoking rates.

French-speaking youth, who started out with higher smoking rates. From 1990 to 1993, there were no further drops in underage smoking, but the initial drops were maintained. (Current data have yet to be released.)

To what can we attribute Canada's success with youth? A key difference between the Canadian and Californian antismoking ad campaigns is that Canada, until recently, focused strictly on youth. Not surprisingly, then, whereas the underage smoking rate was dropping in Canada from 1987 to 1990, the adult rate remained fairly stable at about 30%. The opposite pattern was attained in California, where the focus has been on adults: The adult smoking rate has been dropping, but not the youth rate. Also, Canada has adopted the Flynn et al. (1992) ad plus school program model. Federal and provincial governments have worked together to create and endorse an antismoking school program for grades 5–8+ (11- to 13+-year-olds) that has been adopted by most schools. The multisession program, frequently implemented by trained volunteers, provides peer support for nonsmoking, training in refusal skills and—since 1994–1995—training in how to resist the persuasive impact of tobacco marketing. In addition, Canada seems to have placed more focus on youth activities, such as antismoking poster and lyric contests. It has also received appreciable private

sector support from marketers who are experts in reaching youth (e.g., Peugeot Bicycles and Musique Plus-TV).¹¹

Two other factors must also be considered. From 1987 to 1990, Canada raised the price of cigarettes substantially, and youth may have opted not to smoke because it was too expensive (Hu et al., 1995). Also, in 1989, Canada banned ads promoting tobacco products (Turner, 1995). Thus tobacco companies were precluded from offsetting antismoking ads with cigarette ads, though they could sponsor and promote events (sports, concerts).¹² Many or all of these factors may have contributed to Canada's success.

When Antismoking Ads Work: A Comparison of Field Tracking Results. Based on field tracking, some further recommendations can be made about targeting youth: hold complementary events to promote nonsmoking, preferably co-sponsored by marketers with the resources and expertise to reach youth (e.g., MTV); and select ads and media geared strictly at youth; do not expect to reach both youth and adults with the same ads and media.

Lab Experiments

Overview of Method. In lab experiments, youth are randomly exposed either to antismoking ads (the experimental group) or to unrelated-to-smoking ads (the control group). Then, youth are asked about their attitudes and beliefs regarding smoking and/or their intent to smoke. Youth are not tracked to determine whether they subsequently smoke, because youth do not receive sufficient exposure to the antismoking ads to expect changes in smoking rates. However, any effects of the ads on smoking attitudes, beliefs, and/or intent are considered meaningful because, based on past research, these variables are leading indicators (precursors) of changes in smoking rates (Dinh, Sarason, Peterson, & Onstad, 1995). A prime advantage of lab experiments is that it is far easier to assign individuals at random to treatment versus control group, which maximizes group comparability and facilitates between-group comparisons. Also, because data collection is efficient and economical, researchers can study different groups of youth (e.g., low vs. high risk youth) as well as distinct types of antismoking ads (e.g., various themes and spokespeople).

¹¹Canada's aggressive antismoking campaign may be motivated, in part, by its need to keep health costs down, because it provides universal health care.

¹²In 1995, the Canadian Supreme Court ruled the country's cigarette advertising ban was unconstitutional and negotiations are now underway to develop different restrictions (Turner, 1995).

Notwithstanding, very few lab experiments have examined the causal effects of antismoking ads. A few researchers have examined antismoking *warning labels*. Fischer, Richards, Berman, and Krugman (1989) found 44% of adolescents ignored the surgeon general's warning on cigarette ads, and Beltramini (1988) and Ho (1994) found people disbelieved the warning. Krugman, Fox, and Fletcher (1994) found youth paid more attention to novel warnings; similarly, Loken and Howard-Pitney (1988) reported specific warnings can reduce the attractiveness and persuasiveness of cigarette ads. Finally, Monismith, Shute, Pierre, and Alles (1981) reported 60% of youth opined antismoking ads seem effective. Relevant experiments are reported later.

Pechmann and Ratneshwar Lab Experiment (1994). This experiment helps to explain why it might be advantageous to use both antismoking ads and school programs to combat underage smoking. The study examined 300 California seventh graders who had already received antismoking health education at school and, perhaps, also at home, and therefore already believed smoking was unhealthy and unwise. These youth were, nonetheless, uncertain about whether smoking might make them look glamorous or mature, so they were still vulnerable to pro-smoking influences (e.g., cigarette ads and peer pressure). The antismoking ads were beneficial because they persuaded the youth that smoking was not only unhealthy but also unattractive and uncool. Thus, it appears the ads complemented teachers; teachers conveyed the health effects of smoking such as cancer, and the ads conveyed the social drawbacks such as smelly clothes and breath.

Pechmann and Knight Lab Experiment (1996). This experiment, conducted two years after Pechmann and Ratneshwar (1994), examined California ninth graders (though not the same students that participated in the 1994 study). The ninth graders had received antismoking schooling plus, by now, they had seen extensive antismoking ads. Thus, these youth were fairly "inoculated" against smoking: They believed it was unhealthy, unattractive, and uncool. Pechmann and Knight (1996) found that these youth were not swayed by cigarette ads alone, nor by peer smoking alone. However, when the youths were shown four cigarette ads and then a short video of peers smoking, despite the prior "inoculation," the combination caused youth to have more favorable beliefs about smokers (Pechmann & Knight, 1996). In effect, the cigarette ads and peer smoking worked synergistically: The ads showed highly attractive smoker images, and the peer smoking personalized the images, making the images seem realistic and relevant to youths' lives. Importantly, though, in this lab context, just one antismoking ad offset the effects of the cigarette ads plus the peer smoking video; that is, that one antismoking ad prevented youths from forming more favorable beliefs about smokers.

Conclusions Based on Lab Experiments. The aforementioned experiments further support the conclusions drawn from other research, namely, that antismoking ads should be used in tandem with school programs, and it is beneficial to expose youth to antismoking ads not only in junior high (e.g., sixth grade) but also in high school (e.g., ninth grade). In junior high, the ads can complement health education by showing that smoking has undesirable social, as well as health, consequences. Later, the ads can help to negate or neutralize pro-smoking influences such as cigarette ads and peer pressure.

Qualitative Research

Overview of Method. Many qualitative studies were conducted in which small groups of youth (6-10) were interviewed to obtain their ideas about smoking and their reactions to antismoking ads. Groups of ad experts also were interviewed for advice on ad content and media placement. The interviews were conducted in the formative stages of research, generally prior to implementing longitudinal field experiments (Bauman et al., 1988; Worden et al., 1988) or cross-sectional field tracking (Minnesota 1989, 1991). In addition, the CDC and others conducted qualitative research simply to develop more effective antismoking ads and PSAs (McKenna & Williams, 1993). Across the group interviews or "focus groups," there was a high degree of consensus about the components of effective antismoking ad campaigns. However, the results must be interpreted with caution, because the method is qualitative in nature. More specifically, too few people were interviewed for the data to be analyzed statistically or for the findings to be regarded as generalizable.

Conclusions Based on Qualitative Research. The following recommendations stem from past qualitative research:

1. Advice on Ad Content

Use short messages that youth will find credible and informative. To contradict notions that smoking helps youth fit in and look grown up, stress the negative social and personal consequences of smoking.

Discuss grooming (bad breath, smelly clothes), social issues (that smoking is not the norm and smokers do not fit in), the excessive expense, and smoking as an addiction.

Stress that youth should make their own decisions, that they are in control.

It is unclear whether ads that attack the tobacco industry can dissuade young people from smoking.

Focus on the negatives of smoking and smokers.

Do not try to glorify nonsmokers because most people are nonsmokers, hence, generalizations about them may lack credibility. Avoid inadvertently promoting smoking by creating sympathy for smokers (e.g., by attacking smokers unjustly).

Do not focus on the long-term health effects of smoking.

This approach could backfire and suggest smoking is okay in the short run.

Also, most youth already know the long-term health effects and many do not care because they expect to quit later or they feel invincible.

Avoid showing smoking, because this might inadvertently suggest it is the norm, make smoking look exciting or attractive, or provide a smoking model for youth to emulate.

2. Advice on Ad Style (e.g., Spokesperson and Tone)

Do not present an adult viewpoint, lecture, or use exhortations (e.g., "be smoke free").

Sound conversational and casual, not overly sincere.

Do not highlight that the ad comes from the government or other authority.

Use self-confident, attractive actors that look slightly (e.g., 2 years) older than the target audience.

Do not show high risk youth in a negative light, because you may turn them off and thus fail to reach them.

Do not talk over students' heads or talk down to them.

To maintain interest, vary the spokespeople, themes, and slogans within campaigns and also for each new campaign.

3. Advice on Media Placements

Run ads on network television, after school on weekdays and during prime time (e.g., from 4 p.m. to 9 p.m.).

Place the ads in youth-oriented situation comedies and perhaps in special event youth programming (e.g., concerts, sports).

Also use cable television, such as MTV, which is far less expensive than network television.

Run complementary radio ads, avoiding school hours (e.g., run the ads from 3 p.m. to 11 p.m.).

Choose stations that youth listen to (e.g., contemporary rock).

CONCLUSIONS

Very small-scale test programs of antismoking ad campaigns and school programs have shown that these methods can reduce underage smoking (Flynn et al., 1994; Perry et al., 1992). Unfortunately, the four states (Cali-

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formia, Massachusetts, Michigan, Minnesota) that have implemented these methods on a large scale have been less successful. Canada apparently succeeded in reducing underage smoking from 1987 to 1990 but, since then, no further reductions have been documented. Also, it is unclear to what extent Canada's apparent success from 1987 to 1990 is attributable to its antismoking ads and school programs or to its high cigarette prices and ban on cigarette ads.

One important conclusion that can be reached based on past research is that health officials should not try to rely exclusively on antismoking ads to combat underage smoking. It seems necessary to employ a multifaceted approach involving antismoking ads, special school programs and youth activities, enforcement of laws that prevent youth from purchasing cigarettes, and added restrictions that prevent youth from smoking in or around schools and popular hangouts (e.g., convenience stores, malls, and fast food restaurants). Further, policy officials should determine expenditures on antismoking advertising in a strategic manner. Expenditures should be based on, and adequate to offset, tobacco marketing. For instance, policy officials may want to strive for a 1 to 4 ratio of antismoking ads to cigarette ads (Lewit et al., 1981). Correspondingly, policy officials may want to increase antismoking ad expenditures over time to offset increases in tobacco marketing expenditures. In the past, antismoking ad expenditures have tended to decrease over time (see Table 12.1), which could be counterproductive. Finally, public health officials may need more training in implementing antismoking ad campaigns, particularly in hiring ad agencies and running strategically focused campaigns. This is the beginning of the road to stopping underage smoking with mass media antismoking advertising and a great deal still needs to be learned.

ACKNOWLEDGMENTS

The author sincerely thanks Marvin Goldberg for his advice and encouragement, and Eric Freund, John Mastrorilli, Susan Knight, and Greta Brooks for their technical assistance. She also thanks the government and nongovernment health officials and staff members who participated in interviews and sent materials about their antismoking advertising.

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Social Marketing

Theoretical and Practical Perspectives

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LAWRENCE ERLBAUM ASSOCIATES, PUBLISHERS
1997 Mahwah, New Jersey London

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Lawrence Erlbaum Associates, Inc., Publishers

10 Industrial Avenue

Mahwah, New Jersey 07430

Library of Congress Cataloging-in-Publication Data

Social marketing : theoretical and practical perspectives / edited by Marvin E. Goldberg, Martin Fishbein, Susan E. Middlestadt.

p. cm. — (Advertising and consumer psychology)

Papers presented at the Role of Advertising in Social Marketing Conference held in Atlanta, Ga., May 17-19, 1995.

Includes bibliographical references and index.

ISBN 0-8058-2499-5 (cloth : alk. paper)

1. Social marketing. I. Goldberg, Marvin E. II. Fishbein, Martin. III. Middlestadt, Susan E. IV. Role of Advertising in Social Marketing Conference (1995 : Atlanta, Ga.) V. Series.

HF5415.122.S637 1997

658.8—dc21

96-36833

CIP

Books published by Lawrence Erlbaum Associates are printed on acid-free paper, and their bindings are chosen for strength and durability.

Printed in the United States of America

10 9 8 7 6 5 4 3 2 1