Changing Adolescent Smoking Prevalence: Impact of Advertising Interventions

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INTRODUCTION The U.S. federal and state governments are increasingly using paid mass-media advertising to communicate with the U.S. public. The U.S. Congress has allocated $1.2 billion—$200 million per year for 5 years—to fund an advertising campaign to keep youths from using illicit drugs (Fairclough, 1999). The U.S. Census Bureau has, for the first time, used advertising to increase mail-in response rates to the dicennial census; its advertising budget was roughly $100 million (U.S. Census Bureau, 1999). The American Legacy Foundation (http://www.americanlegacy.org), which is funded by the national U.S. tobacco settlement, is overseeing an antismoking advertising and promotional campaign amounting to $300 million in expenditures per year. U.S. states are currently trying to decide if they should run state-level antismoking campaigns (Brull, 1999). Several states, including Arizona, California, Florida, and Massachusetts, have already begun multi-year campaigns. California spends roughly $0.40 per capita ($12 million) per year while Massachusetts spends considerably more, or roughly $2.33 per capita ($14 million), per year on campaigns (Pechmann, 1997; Pechmann and Reibling, 2000a; Goldman and Glantz, 1998). Many other states are currently trying to decide if they should run state-level antismoking campaigns and are uncertain that antismoking advertising will pay off in terms of reduced smoking prevalence and lower health care costs (Brull, 1999).

The goal of this chapter is to assist decision-makers in making informed decisions about using advertising for tobacco use prevention. The first part will address the question, "Should antismoking advertising be used? That is, will it work?" To answer this question, the chapter will review research on the impact of such advertising on adolescent smoking prevalences and on leading indicator beliefs and attitudes. The second part of the chapter will describe research on the most promising message types in order to address the issue of how antismoking advertising campaigns should be designed.

SHOULD ANTISMOKING ADVERTISING BE USED FOR TOBACCO USE PREVENTION? The question of whether antismoking advertising should be used for tobacco use prevention depends on both its effectiveness and its cost-effectiveness, but neither issue has been resolved as yet. To date, there is little conclusive evidence of a direct link between advertising-only interventions and reduced adolescent smoking prevalences. However, one can point to a triangulation of indirect evidence for the effectiveness of antismoking advertising. That evidence is reviewed below.

Research on Antismoking Advertising Plus School-Based Programs

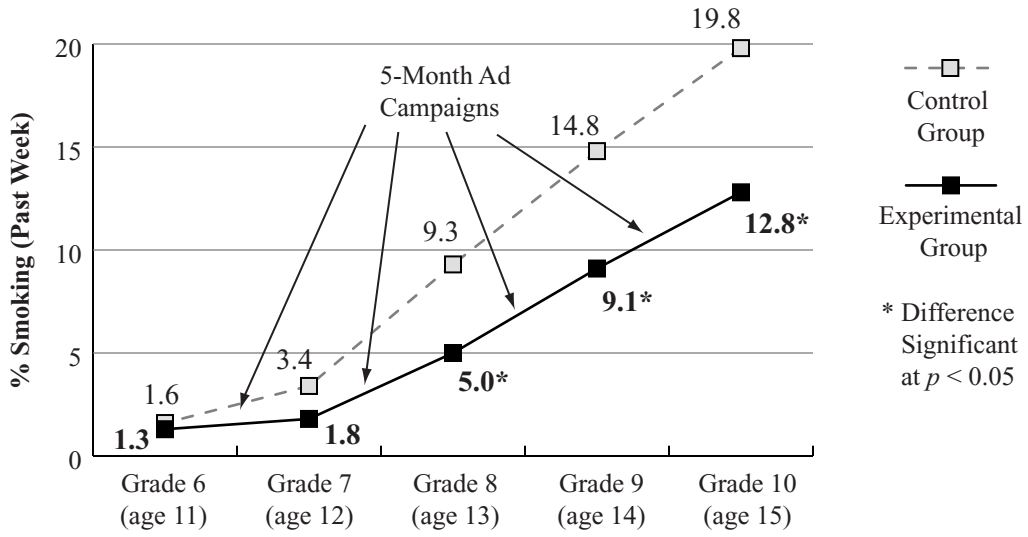
At least three studies have examined the efficacy of combining school-based tobacco use prevention programs with antismoking advertising, and the results look promising. In one study (Flynn *et al.*, 1992), students participated in a school-based program consisting of about four tobacco-specific classes per year for four years, spanning both middle school and high school. In addition, half of the students were exposed to a four-year antismoking advertising campaign. Each year, the advertising aired for five months and students saw roughly two antismoking spots per day; many students also assisted in the ad campaign design and evaluation (Worden *et al.*, 1988). By 10th grade, 12.8% of the students in the school-plus-advertising intervention group had smoked in the past week versus 19.8% in the school-only intervention group (Flynn *et al.*, 1992). This difference was significant and was sustained for at least 2 years after the program had ended (Flynn *et al.*, 1994).[1] In summary, the advertising and school program worked synergistically to lower adolescent smoking prevalences. However, there is no way of knowing how effective the advertising would have been on its own (Figure 10-1).

The intervention by Perry *et al.* (1992) targeted students in grades 6-8 with 6 to 10 tobacco-specific classes per year that were supplemented by antismoking advertising, health screenings, and community-based activities. By grade 8, the weekly smoking prevalences for the intervention group and the no-intervention control group began to diverge such that, by grade 10, the prevalence for the intervention group was half that of the control group (11 percent and 22 percent, respectively; Figure 10-2). Finally, Murray *et al.* (1992) studied middle school (junior high) students who were exposed to a less intensive school- and advertising-based intervention. The effects were weaker but nonetheless statistically significant. At the end of the study, the weekly smoking prevalence was 12 percent for the intervention group versus 16 percent for the no-intervention control group.

If states were to fund antismoking advertisements and school programs, however, they could not necessarily expect similar results. Both California and Massachusetts have used this dual-pronged approach, and neither state has produced sustained reductions in adolescent smoking prevalences (Goldman and Glantz, 1998; Pechmann, 1997; Pechmann and Reibling, 2000a; Popham *et al.*, 1994; Siegel and Biener, 1997). By splitting up limited funds between advertising and school programs, a state risks funding both programs inadequately (Pechmann and Reibling, 2000b). Indeed, California has been criticized for underfunding both its antismoking advertising campaign and its school-based initiatives (Pierce *et al.*, 1998; California Department of Education, 1995). Funding for California's antismoking school programming amounts to roughly $6 per student per year and experts say this amount should be at least doubled (California Department of Education, 1995).

1. Any effect that is described as significant is based on $p \leq 0.05$ unless otherwise specified.

Figure 10-1
Results of Flynn and Worden *et al.*'s (1992) Longitudinal Field Experiment

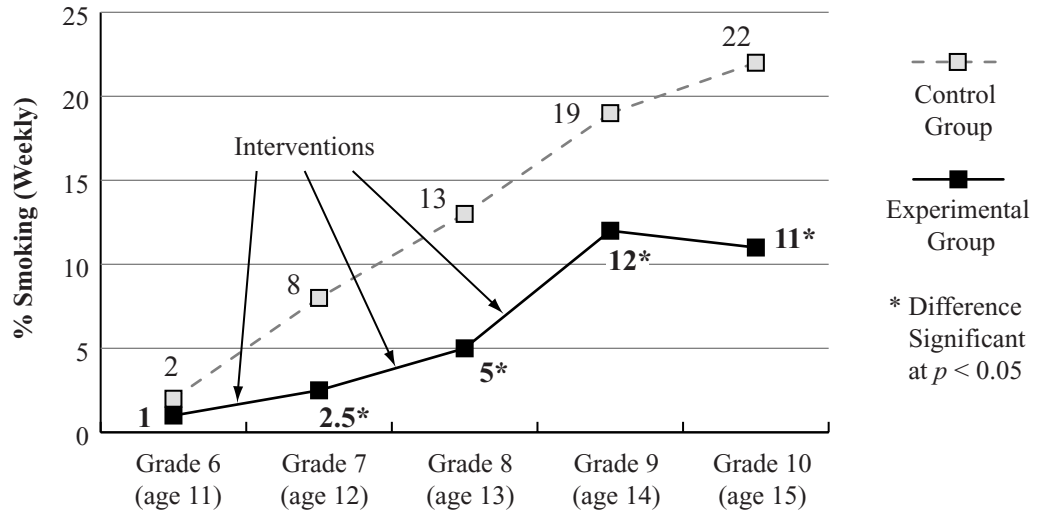


NOTES: 1. Each cohort group spanned 3 grades, so the grades listed are the medians (e.g., "Grade 6" represents the cohort group when in grades 5 - 7). Ages are approximate.
2. A similar pattern was observed for "Smoked yesterday" and "Smoked recently."
3. Flynn and Worden et al. (1994) found the effects were sustained 2 years hence (median grade = 12).

Further, it is often difficult to persuade schools to use the tobacco-specific programs that have been scientifically proven to work due to program length and intensity, teacher training requirements, and a general preference for locally produced, general drug programs (California Department of Education, 1995). Hence, while school-based programs combined with antismoking advertising could work, communities generally have been unable to implement this approach effectively. It would be easier to rely strictly on antismoking advertising, but more research is needed to determine whether advertising alone will work.

Research on Antismoking Advertising and Adolescents Two recent evaluations of state-based antismoking campaigns used longitudinal surveys of adolescents to ascertain whether there was a link between self-reported ad exposure and reductions in smoking initiation (Sly *et al.*, 2001) or progression to regular use (Siegel and Biener, 2000). The evaluations involved Massachusetts (Siegel and Biener, 2000) and Florida (Sly *et al.*, 2001). It was concluded that these states' antismoking television ads were effective in dissuading adolescents from taking up smoking (also see *MMWR*, 1999). Unfortunately, the contribution of this research is somewhat limited by the correlational nature of the data. The data clearly show that adolescents who reported seeing the antismoking ads later manifested a lower propensity to smoke, but

Figure 10-2
Results of Perry *et al.*'s (1992) Longitudinal Field Experiment



NOTES: 1. The intervention depicted was a 6 - 10 session/year school education program, but subjects in the experimental group were also exposed to a multi-year community health intervention involving mass media ads.
2. Ages are approximate.

these data could be interpreted in one of two ways. One possibility is that the antismoking ads reduced adolescent smoking. A rival explanation is that adolescents who had strong antismoking beliefs at the onset were more likely to pay attention to the antismoking ads and also were less likely to smoke in the future (Pechmann and Reibling, 2000b).

It is a well-established fact that consumers selectively attend to ads that support their prevailing product-related attitudes and behaviors, in part to avoid cognitive dissonance and preserve self-esteem (Alba and Hutchinson, 1987; Festinger, 1964; Frey, 1986). Hence, while there is generally a positive correlation between ad exposure and product beliefs and intentions, this seems to be due to reverse causality, to a large extent: beliefs and intentions drive exposure to advertising rather than exposure to advertising driving beliefs and intentions. Sly *et al*. (2001) and Siegel and Biener (2000) sought to control youths' prior smoking beliefs by including covariates in the analyses, such as age, sex, prior smoking status, and the smoking status of friends and parents; Siegel and Biener (2000) also controlled for the extent of television viewing. However, adolescents' preexisting smoking beliefs were not directly assessed and so it is difficult to draw any firm conclusions from the results.

Research on Antimarijuana Advertising and Adolescents

Some encouraging evidence that antimarijuana ads can reduce adolescents' propensity to use marijuana comes from a recent three-year, two-county study (Palmgreen *et al*., 2001). One county received two waves of antimarijuana television advertising while a second county received just the second wave, and each wave lasted four months. When the advertising was airing, it is estimated that 90+ percent of the adolescents saw three antimarijuana ads per week.

To measure the impact of the advertising, monthly surveys were conducted of 100 randomly selected youths from each county. The youths sampled were in grades 7-10 initially and the group sampled advanced to grades 10-13 (first year of college) at the end. Identical sampling and interview procedures were used throughout and the interviews were conducted at the youths' homes with the drug-related survey items being self-administered via laptop computer to ensure confidentiality. The results indicate that the ad campaign was highly effective. In each county, the prevalence of marijuana use among high-risk youths declined concurrently with the first wave of advertising. In the county that received a second wave of advertising, the initial declines in marijuana use were perpetuated. Overall, this study indicates that marijuana advertising alone can work, but it remains to be seen whether the results are applicable to antismoking advertising.

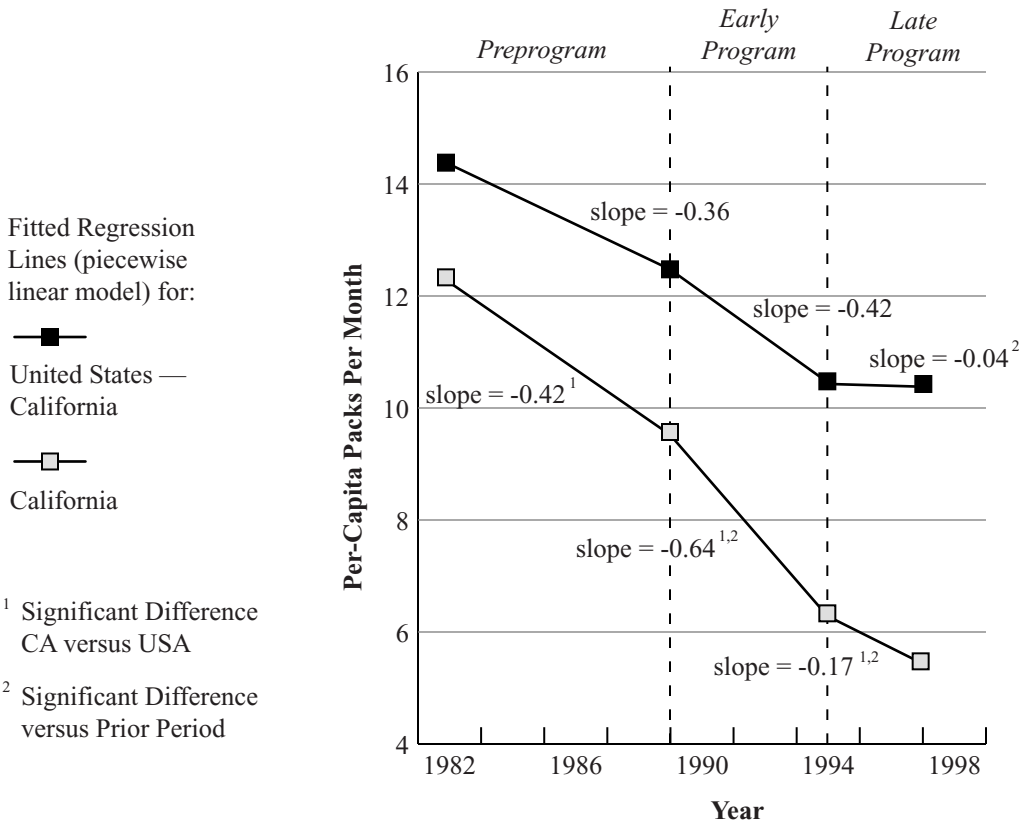
Research on Antismoking Advertising and Adult Smoking

Pierce *et al.* (1998) assessed the efficacy of the California tobacco control program that commenced in 1989 and included antismoking advertising (18 percent of total dollar expenditures), school-based programs (32 percent), and community-based antismoking efforts (40 percent). The advertising and community interventions targeted both adolescents and adults. In the preprogram years, per capita cigarette consumption was declining in both the United States and California, but more so in California. In the early program years (1989-1993), the rate of decline intensified significantly in California relative to both the previous trend in that state and the U.S. trend at that time. In the later program years (1994-1997), both California and the United States experienced a significant weakening in the rate of decline relative to the prior period (Figure 10-3). The researchers attribute the reduced efficacy of the California program to a 40-percent decrease in annual tobacco control expenditures from early to later program years. In conclusion, the Pierce *et al.* (1998) study suggests that well-funded tobacco control programs can be effective. It does not, however, partition out the effects of antismoking advertising relative to California's other tobacco control activities, such as tax-induced increases in cigarette prices. Nor does it address the specific issues of adolescent-focused advertising or adolescent smoking prevalences.

Research on Advertising's Impact on Adolescents' Beliefs and Behavioral Intentions

More direct evidence of the causal effect of antismoking advertising on youth has been provided by randomized experimental trials that are typically called "copytests." Typically, in such copytests, hundreds of adolescents who are representative of the U.S. population in terms of gender, ethnicity, and socioeconomic status are randomly assigned to view either antismoking advertising or control advertising (unrelated to smok-

Figure 10-3
Trends in per-Capita Cigarette Consumption in California and the Rest of the United States (Pierce *et al.*, 1998)



ing), after which they complete surveys. If the youths in the antismoking advertising (versus control) condition report significantly less favorable smoking-related beliefs or intentions, it is concluded that the advertising is efficacious. These measures have been shown to be leading indicators of adolescents' later smoking behaviors (Aitken and Eadie, 1990; Aitken *et al.*, 1991; Pierce *et al.*, 1995; Pierce *et al.*, 1996).

Pechmann and her colleagues have copytested a large number of youth-oriented advertisements that seek to de-normalize smoking by portraying teenage smokers as uncool, unwise, and misguided. The results are encouraging (Table 10-1). Pechmann and Ratneshwar (1994) found that the antismoking advertising lowered 6th graders' perceptions of a smoker's common sense, personal appeal, maturity, and glamour. Pechmann and Knight (2000) showed that just one antismoking ad was able to offset the impact of three cigarette ads that would otherwise have enhanced 9th graders' perceptions of a smoker's social stature, popularity, and vitality. Pechmann and Shih (1999) assessed 9th graders' reactions to a PG-rated feature film that depicted highly intelligent and attractive young movie stars smoking in one-third of the scenes. The findings suggest that the film enhanced

Table 10-1
Copytest Research Findings on Impact of Antismoking Ads on Adolescents' Beliefs about Teenagers who Smoke

Pechmann and Ratneshwar's (1994) Study of 6th Graders					
Teenage smokers' common sense, personal appeal, maturity, and glamour	control ads 3.6	>	antismoking ads 3.1		
Pechmann and Knight's (2000) Study of 9th Graders					
Teenage smokers' social stature, popularity, and vitality	cigarette ads 4.1	>	cigarette + anti-smoking ads 3.2	=	control ads 2.9
Pechmann and Shih's (1999) Movie Study with 9th Graders					
Teenage smokers' social stature	smoking scenes 3.9	>	antismoking ad before smoking scenes 3.3	=	control scenes 3.1

Note: Higher numbers indicate more favorable beliefs. The symbol " >" indicates statistically significant mean difference ($p \leq 0.05$).

youths' perceptions of a smoker's social stature, but that showing a 30-second antismoking ad immediately before the film prevented youths from being as influenced by the film's content. As a follow-up, "market test evaluation" studies should be conducted (Palmgreen *et al.*, 2001) to show a direct link between antismoking advertising and reductions in adolescent smoking prevalence.

HOW SHOULD ADVERTISING CAMPAIGNS BE DESIGNED?

When designing an advertising campaign, at least four important issues must be addressed: the message content (what to say), the executional style (how to say it), the target audience (whom to say it to and, hence, which media to choose), and the budget. In the interests of brevity, this section will focus on research regarding message content. For information on the other topics, readers can refer to the following articles and resources: *Best Practices for Comprehensive Tobacco Control Programs* (CDC, 1999); Everett and Palmgreen, 1995; Donohew *et al.*, 1991; Lorch *et al.*, 1994; Palmgreen *et al.*, 1991; Pechmann, 1997; Pechmann and Reibling, 2000a & 2000b; Worden *et al.*, 1988.

Focus Group Studies on Antismoking Advertising Messages

Several small-scale studies have utilized the focus group method to assess adolescents' reactions to different antismoking messages. Focus groups are structured and monitored group discussions that typically involve from 6 to 12 people. Most of these studies were conducted informally by advertising agencies to assist them in selecting specific ads for state-level campaigns and, as such, the results have not been published or widely disseminated. One exception is a study that was spearheaded by the Centers for Disease Control and Prevention (CDC), in which groups of adolescents were asked to comment on ten representative antismoking ads from various states (Teenage Research Unlimited, 1999). One hundred and twenty adolescents participated in the research and they reportedly preferred ads that dramatized the serious physical consequences of smoking. Many of the youths were critical of the Philip Morris "Think. Don't Smoke" ads, indicating that the ads did not give them any compelling reasons not to smoke.

Another published study, by Goldman and Glantz (1998), reviewed transcripts of focus groups that were conducted to develop antismoking advertisements for California, Massachusetts, and Michigan. The study concluded that the most compelling advertisements addressed second-hand smoke or tobacco industry manipulation. However, several researchers have disputed these conclusions (Worden *et al.*, 1998; Balch and Rudman, 1998). Since focus group researchers typically obtain qualitative data from small numbers of people and do not statistically analyze these data, definitive conclusions are difficult to reach.

Copytest Study on Antismoking Advertising Messages

A large-scale, two-part copytest study has been recently completed by Pechmann *et al*. (2000). The researchers identified the seven most common types of antismoking advertising messages used in recent years and evaluated the efficacy of each message type. The ads were obtained from several different U.S. states and health groups, Canada, and Australia, and represented a variety of executional styles. Close to 3,000 7th and 10th graders participated in the research. Roughly half of the youths were used to classify nearly 200 antismoking television ads into 7 distinct message types. The remaining youths participated in a copytest that assessed the impact of each message type (versus control messages) on their smoking-related knowledge, beliefs, and intentions. The copytest used eight randomly selected ads to represent each of the seven message types, or, in other words, assessed advertising "flights" or mini campaigns. Youths were randomly assigned to view just one ad type in order to obtain uncontaminated measures of persuasiveness. If an ad type significantly lowered adolescents' intention to smoke, it was considered to be efficacious; otherwise, it was not (Azar, 1999; Pierce *et al.*, 1995 & 1996).

"Disease and Death" ads emphasized the long-term physical effects of smoking, such as cancer, lung and heart disease, and death. "Cosmetics" ads claimed that smokers risk social rejection due to their bad breath and smelly clothes and hair. "Endangers Family" ads stressed that smokers can hurt their families with their second-hand smoke and untimely deaths. "Smokers' Negative Life Circumstances" ads associated smoking with negative loser imagery to imply an unattractive, undesirable, unhealthy lifestyle. "Refusal Skills Role Model" ads portrayed attractive, popular role models proudly and confidently resisting peer pressure to smoke. "Marketing Tactics" ads disclosed the tactics used to market cigarettes, such as image ads and the targeting of vulnerable groups. "Selling Disease and Death" ads stated that tobacco firms use manipulative and deceptive marketing tactics to sell a deadly product. All seven ad types apparently utilized principles from Protection Motivation Theory (Rogers, 1975 & 1983), which is a popular, well-substantiated theory of how people are persuaded to adopt risk-reduction behaviors, such as not smoking (Sturges and Rogers, 1996).

Pechmann *et al.* (2000) found that three of the seven message types were efficacious in terms of reducing adolescents' intention to smoke: "Endangers Family", "Smokers' Negative Life Circumstances", and "Refusal Skills Role Model". These ads were effective for precisely the same reason:

they enhanced adolescents' perceptions that smoking poses severe social risks, in that it could lead to social rejection and/or social sanctions, whereas nonsmoking could lead to social acceptance and respect. The "Disease and Death" and "Selling Disease and Death" messages made the physical risks of smoking seem more severe, but had no impact on intentions, presumably because youths perceived themselves to be invulnerable to the long-term physical risks. The "Selling Disease and Death" and "Marketing Tactics" messages increased youths' knowledge of marking tactics, but, again, there was no impact on intentions. Finally, the "Cosmetics" messages were the least effective of all; they produced no statistically significant effects.

CONCLUSION There is evidence that antismoking advertising can help to deter adolescents from smoking cigarettes. But, to date, all of the evidence is indirect. Also, research seems to suggest that certain types of advertising messages work better than others, but additional studies must be conducted before any definitive conclusions can be drawn. Since the funding that is available for tobacco use prevention is unprecedented, a portion of that money should be allocated to research on program development and evaluation, with a particular emphasis on advertising. Controlled experimental studies, including advertising copytests, should be an integral part of the research so that statistical analyses can be conducted and scientifically valid conclusions can be drawn. Proper research is essential for ensuring program success and for documenting that success.

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