

# Interaction of Population-Based Approaches for Tobacco Control

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**OVERVIEW** This paper looks at program effectiveness results from data collected in 1996 and 1997 during Wave 1 of the Independent Evaluation of California's Tobacco Control, Prevention, and Education Program (IEC, 1998). The issues discussed in this paper are based on certain assumptions about the tobacco-control atmosphere in California. These assumptions are 1) that tobacco control programs and activities do not occur in isolation; 2) that adults and youths throughout California were exposed to more than one tobacco control program or activity; and 3) that the California tobacco control program delivers a consistent anti-tobacco message. Given these assumptions, the issue to be explored is whether exposure to multiple tobacco-control programs and activities will produce stronger anti-tobacco attitudes and beliefs than the effect of exposure to only one program or activity.

**BACKGROUND** California's Tobacco Control Program was developed in response to voters' actions in passing Proposition 99—the Tobacco Tax and Health Promotion Act of 1988. The Tobacco Control Program (TCP) Model utilizes a comprehensive integrated approach for preventing and reducing tobacco use. Throughout California, various program interventions are implemented through multiple modalities—*i.e.*, community programs, school programs, and a statewide media and public relations campaign.

From 1993 to the present, California's tobacco control efforts have concentrated on three priority areas:

1. Reducing exposure to environmental tobacco smoke (ETS);
2. Reducing youth access to tobacco via commercial and social sources; and
3. Countering pro-tobacco influences in the community.

One of the primary objectives of the comprehensive California program is to promote social norms that tobacco use and exposure to ETS are not acceptable.

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**FRAMEWORK FOR OUR STUDY** The conceptual framework for the evaluation is illustrated in Figure 11-1. The schematic presents a simplified view of the presumed relationships among TCP activities, intermediary outcomes, and ultimate outcomes. It shows that TCP activities are conducted independently and interactively through community programs, schools, and the statewide media and public relations campaign. Activities are directed towards tobacco-related social norm changes (*i.e.*, intermediary outcomes such as attitudes, beliefs, behaviors, and policies) within three program priority areas: (1) reducing youth and adult exposure to environmental tobacco smoke (ETS); (2) reducing youth access to tobacco products; and (3) countering pro-tobacco influences. In addition, school-based programs are directed toward changing tobacco-use mediators such as perceptions and refusal skills.

**INDEPENDENT EVALUATION METHODS** The Independent Evaluation conducted in California was designed to assess the effectiveness of tobacco control activities. The primary purpose of the evaluation was to gather information that would be used to provide feedback to help the California Department of Health Services and the California Department of Education to achieve their objectives.

As of this writing, the Independent Evaluation is beginning year 4 of a 5-year effort; it includes three sequential, cross-sectional waves of data collection. The first wave of data—used as the basis for this paper—was conducted from October 1996 to March 1997 and focused on a 2-year period of tobacco control activities in California—calendar years 1995 and 1996.

**SAMPLING SCHEMES** The sampling scheme for the Independent Evaluation sought to find a set of 18 counties that were representative of the entire state. Because a major intervention arm of the TCP is the statewide mass media, we pre-selected the five counties comprising the largest media markets in the state. We applied a cluster solution approach to the remaining 53 counties. The analysis was designed to form three clusters (strata) based on county population density (population per square mile) and percentage of rural area. We randomly selected 13 counties from these 3 strata. These 13 counties, plus the 5 media market counties, yielded the sample of 18 counties shown in Figure 11-2. These 18 counties represent 75 percent of the state's population, and data analytic results based on these 18 counties are generalized to the entire state.

The evaluation focused on assessing program implementation, exposure, and outcomes. Measures of program implementation were obtained from organizations that sponsored tobacco-control activities. Measures of program exposure were obtained from random samples of youths and adults in the 18 counties. Outcome measures were focused on intermediary outcomes of the tobacco control program, which included individual- and community-level indicators. Multiple data collection methods were used, including telephone interviews, school-based surveys, written surveys, and coding of archival records.

Figure 11-1  
Conceptual Framework for the Independent Evaluation

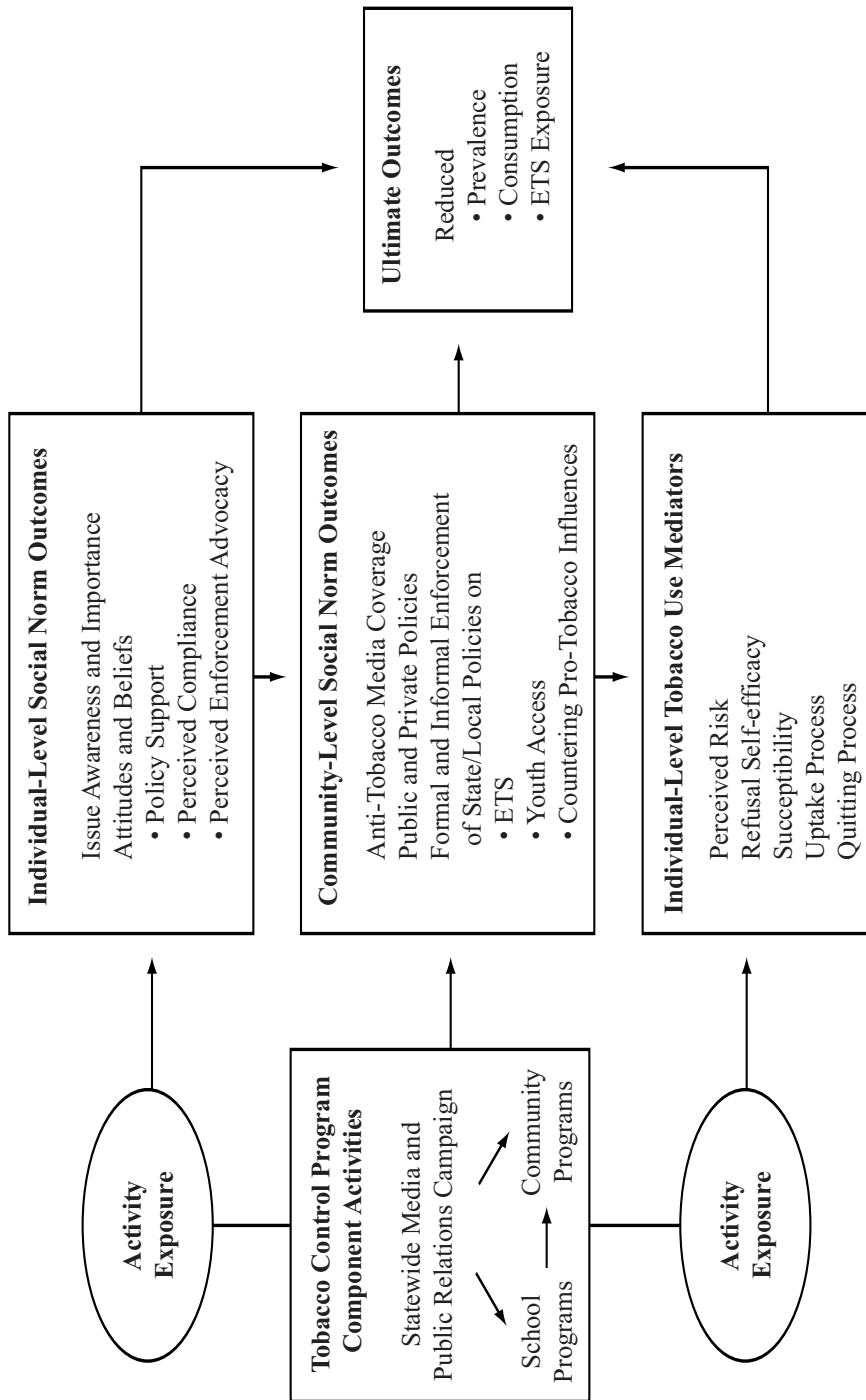


Figure 11-2  
**Eighteen Focal Counties**

**Media Markets Medium Density**

Fresno  
 Los Angeles  
 Sacramento  
 San Diego  
 San Francisco

Monterey  
 San Bernardino  
 Shasta  
 Yuba

**High Density**

Alameda  
 Contra Costa  
 Orange  
 San Mateo  
 Santa Clara

**Low Density**

Lake  
 Lassen  
 Mono  
 Plumas

A limitation of the Independent Evaluation approach is that linkages between program exposure and outcomes were observed at only one point in time—data from Wave 1. We point out that these baseline data provide a cross-sectional look at program effectiveness. Given our cross-sectional evaluation design, we are able to observe associations between program exposure and outcomes, but we cannot infer causal relationships.

**DATA COLLECTION METHODS**

Multiple data-collection methods were used to examine program activities in counties across the state, and individual- and community-level outcome indicators in the 18 counties. Information on implementation of tobacco control programs and activities was gathered from 12 different sources, including Local Lead Agency (LLA) progress reports; project director surveys and interviews; teacher surveys; school administrator surveys; surveys and interviews with media and public relations campaign contractors; and content analysis of statewide media campaign materials.

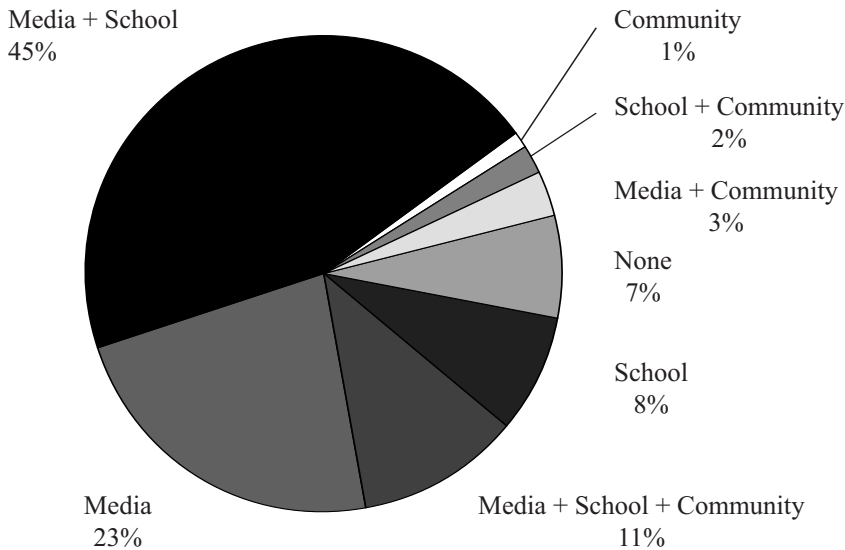
Data on program outcomes were obtained from 11 different sources, including adult computer-assisted telephone interviews ( $n = 6,985$ ); school-based youth surveys with students in 5th, 8th, and 10th grades ( $n = 3,139$  5th-graders, 5,870 8th-graders, and 6,929 10th-graders); telephone surveys of opinion leaders in the focal counties; and data on enactment of local policy.

**APPROACH**

Our hypothesis suggests that if the various tobacco control program modalities deliver consistent messages, they may reinforce and enhance one another. If this occurs, Californians exposed to multiple tobacco control program modalities may show even stronger anti-tobacco attitudes and beliefs than those exposed to only one program.

We first looked at the percentage of the populations of interest exposed to the different program modalities. Then we explored the differences in tobacco-related attitudes and behaviors among those Californians exposed

Figure 11-3

**Percentage of Youth Exposed to Different Combinations of TCP Activity**

to one type of TCP activity with those exposed to more than one TCP activity. For clarity of the results, we define exposure to a tobacco control activity as 1) for community: recall of at least one local community program; 2) for media: validated recall of at least one tobacco control program media ad; and 3) for schools: recall of at least one in-school lesson or school-wide activity.

**RESULTS** Ninety-three percent of California 10th-grade youths were exposed to at least one modality of the California Tobacco Control Program.

Most California youths reported exposure to more than one tobacco control modality. Figure 11-3 shows the percentage of youths that were exposed to different combinations of tobacco control program modalities. Only 7 percent of youths were not exposed to any activity.

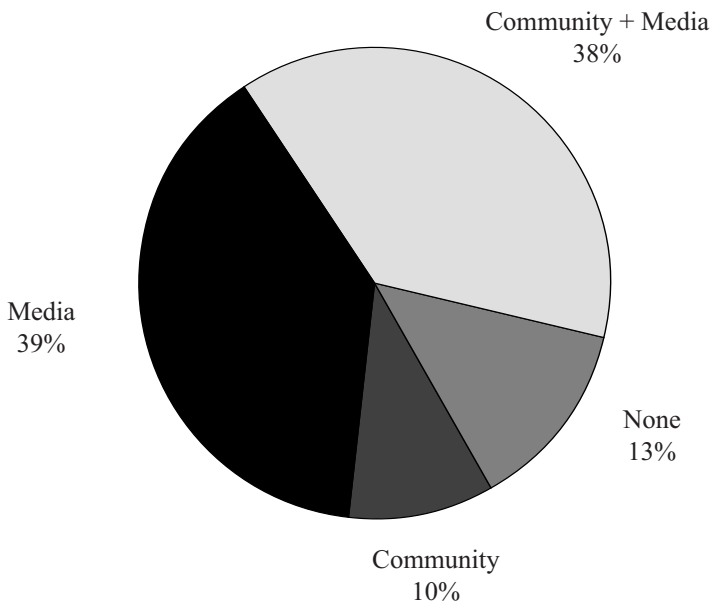
**Adults**

Eighty-seven percent of California adults were exposed to at least one tobacco control program activity. Figure 11-4 shows the percentage of adults who were exposed to tobacco control community and media programs. Over one-third (38 percent) were exposed to both community and media programs.

Exposure to each tobacco control program component was associated with tobacco-related knowledge, attitudes, and beliefs, even after accounting for the respondents' exposure to other tobacco control program components. We evaluated the associations between tobacco control program exposure and tobacco-related outcome variables, while controlling for the respondents' level of exposure to other tobacco control program modalities.

Figure 11-4

**Percentage of Adults Exposed to Different Combinations of TCS-Funded Programs**



These results evaluate how strongly each tobacco control program component (*i.e.*, community programs, media campaign, and school-based programs) would have been associated with outcomes if everyone had received an equal level of exposure to the other program modalities.

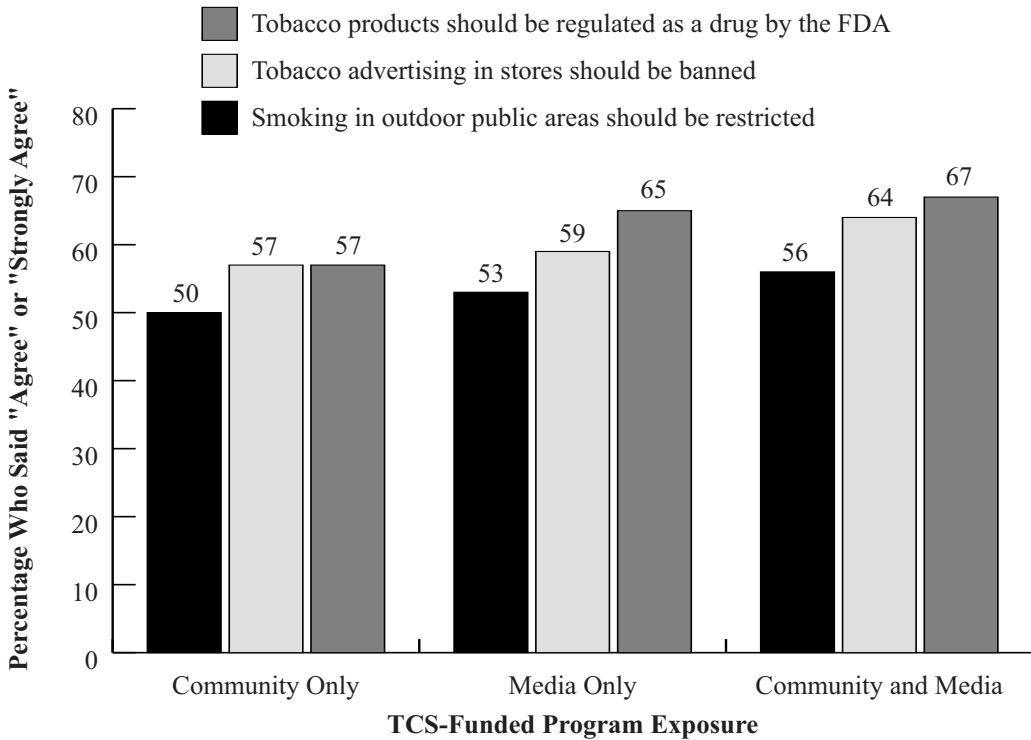
Among adults, exposure to community programs was associated with anti-tobacco attitudes and behaviors. Adults who reported high levels of exposure to TCS community programs were more likely to practice personal enforcement and talk about not smoking. These associations were present regardless of adults' exposure to media programs.

Similarly, among adults, exposure to media programs was associated with anti-tobacco attitudes and behaviors. Adults who reported high levels of exposure to media programs were more likely to dislike environmental tobacco smoke, favor government regulation of tobacco, practice personal enforcement, talk about not smoking, and express greater belief in the importance of tobacco issues. These associations were present regardless of the adults' exposure to TCP community programs.

Adults who were exposed to both media and community programs tended to support anti-tobacco policies more than did adults who were exposed only to media programs or only to community programs (Figure 11-5). Media programs and community programs had important individual associations with support for anti-tobacco policies, but the interaction (or combination of the programs) seems to have been most effective. The data show that each type of program reinforced or increased the relationship between the other type of program and policy attitudes.

Figure 11-5

**Percentage of Adults Who Supported Anti-Tobacco Policies, According to TCS-Funded Program Exposure**



Significant differences at the  $p = 0.05$  level were found when comparing results for community only to community and media; and for media only compared to community and media.

We found similar trends for youth exposure and outcomes as we had observed for adults.

**10th Grade Youths** Among youths, exposure to school programs was associated with anti-tobacco attitudes and behaviors. Regardless of their level of exposure to other tobacco control program activities, the following findings distinguished 10th-graders with high level school-based tobacco program exposure from their peers who reported lower levels of school program exposure:

- More likely to believe that ETS, youth access to tobacco, and pro-tobacco influences are serious problems
- Higher rates of advocacy actions such as signing petitions, contacting government officials, and attending youth conferences
- More likely to talk to others about tobacco use
- More negative attitudes toward the tobacco industry

- More positive attitudes toward anti-tobacco policy enforcement
- More negative perceived consequences of tobacco use

Among youths, TCP community programs appear to have had a mix of positive and negative associations with anti-tobacco attitudes and behaviors, after exposure to school and media programs was taken into account. Tenth-grade youths with high community program exposure showed the following characteristics relative to those with lower exposure to community programs:

- More likely to believe that ETS, youth access to tobacco, and pro-tobacco influences are serious problems
- Higher rates of advocacy actions such as signing petitions, contacting government officials, and attending youth conferences
- More likely to talk to others about tobacco use

However, somewhat surprisingly, 10th-grade youths with high community program exposure also showed the following *negative* characteristics relative to their peers with lower community program exposure:

- Fewer perceived negative consequences of use
- Lower cigarette refusal self-efficacy
- Higher perceived smoking prevalence among peers
- More exposure to ETS in the home or car

We speculate that youths who smoked were perhaps disproportionately aware of community events and activities, accounting for many of the negative associations and higher rates of smoking among those exposed to community programs.

Exposure to tobacco control program media programs was associated with stronger anti-tobacco attitudes and behaviors among youths. The following results distinguished 10th-grade youths with high media exposure from their peers with low media exposure:

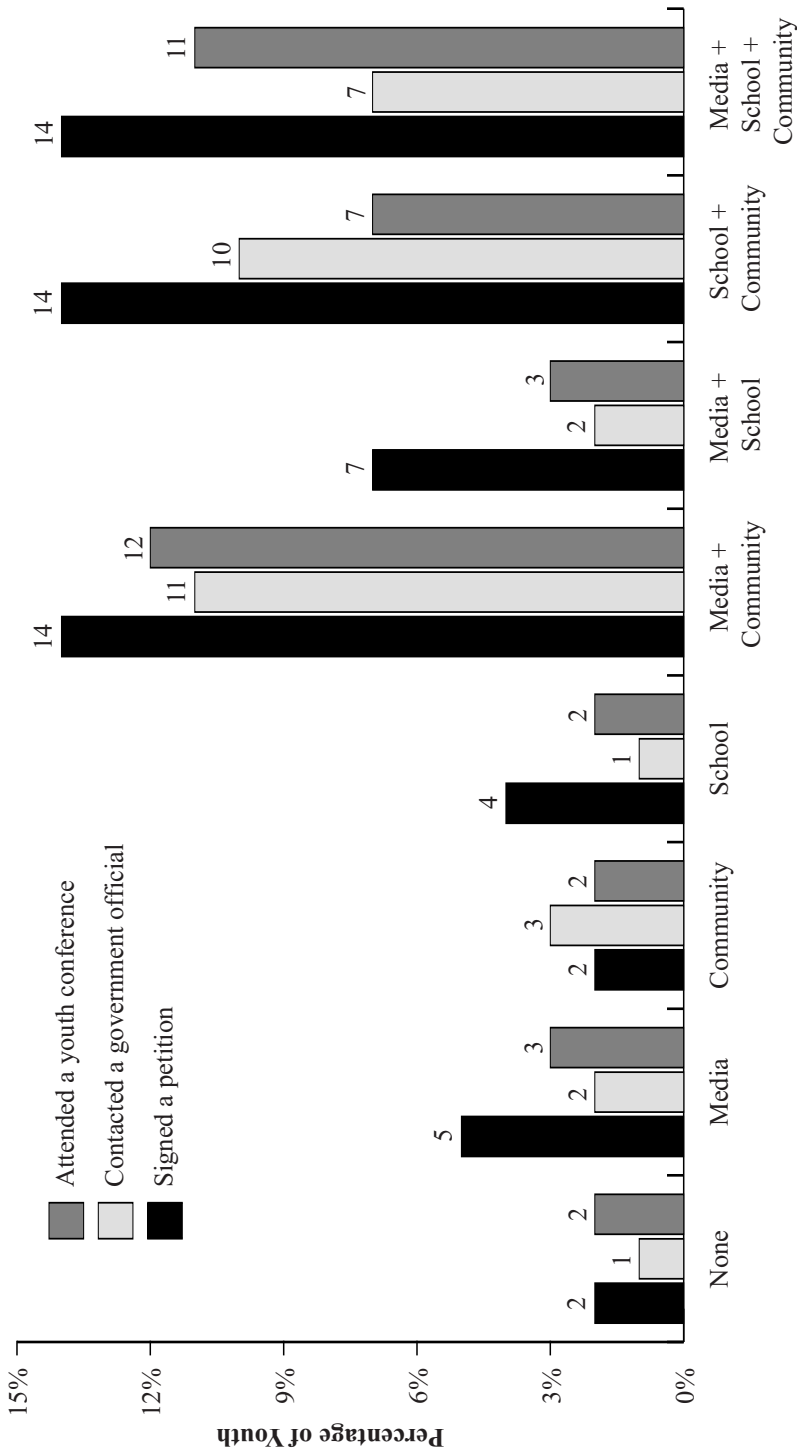
- More negative attitudes toward the tobacco industry
- More perceived negative consequences of tobacco use
- Higher cigarette refusal self-efficacy

Figure 11-6 shows the percentage of 10th-grade youths who participated in advocacy actions, such as signing petitions, contacting government officials, and attending youth conferences. Youths who reported exposure to more than one type of tobacco control program were more likely to have performed these advocacy actions than were youths exposed to only one program or to no programs at all.

In most cases, exposure to multiple programs was better than exposure to a single program. All comparisons of results for these three actions following exposure to a single component as compared with exposure to multiple components were significant at  $p = 0.05$ , except for the following: *media* versus *media and school*; *community* versus *media and school*; and *school* versus *media and school*.



Figure 11-6  
**Advocacy Actions among Youths, According to TCP Exposure**



**Exposure to TCP Modalities**

Figure 11-7  
**Negative Attitudes toward the Tobacco Industry among Youth, According to TCP Exposure**

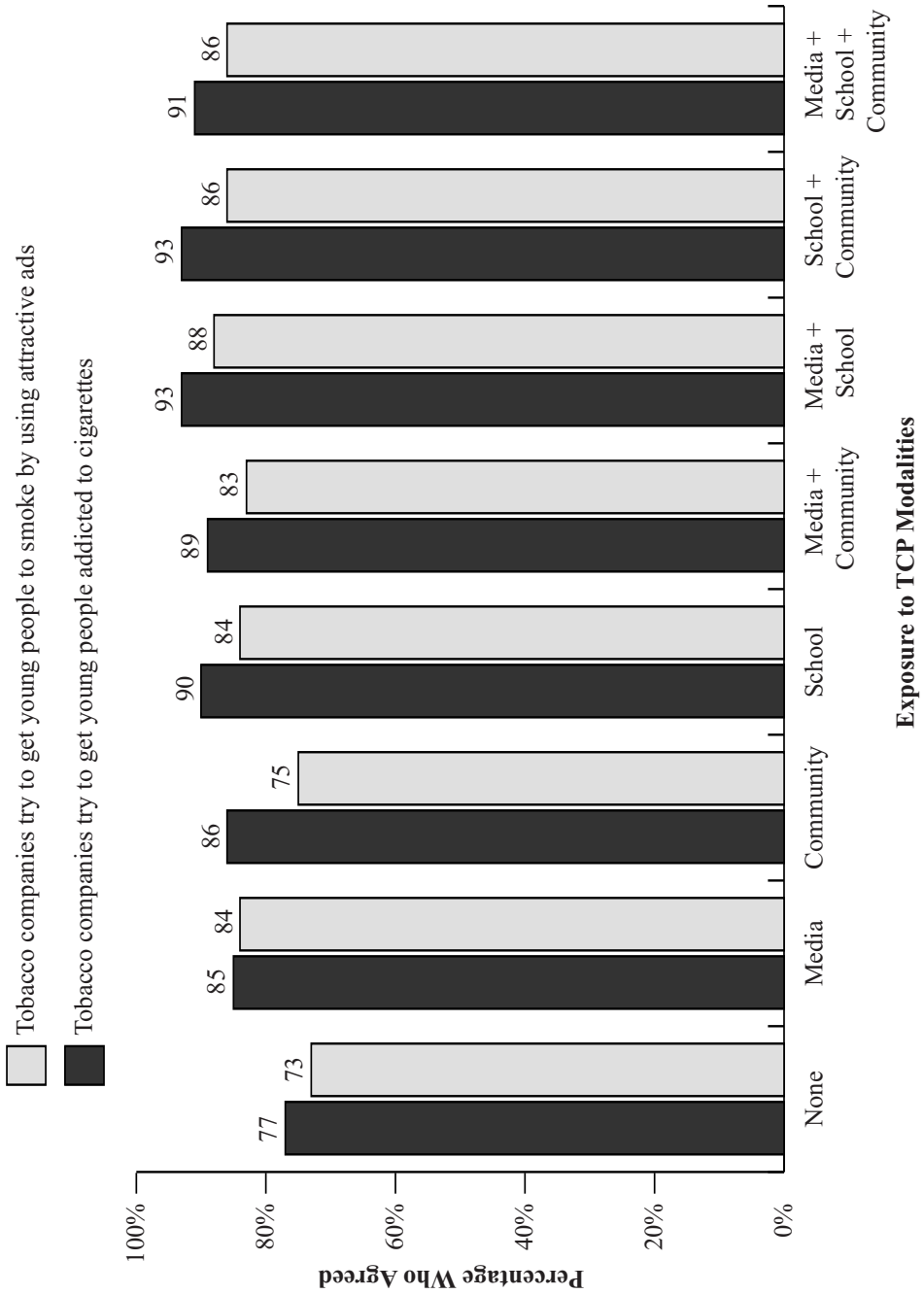


Figure 11-7 shows the percentage of 10th-grade youths that expressed negative attitudes toward the tobacco industry, according to their exposure to TCS program modalities. Youths exposed to more than one program expressed attitudes toward the tobacco industry that were significantly more negative than those of youths exposed to only one program or youths not exposed to any programs.

The trends showed a slight but significant increase in negative attitudes toward the tobacco industry among youths exposed to messages from multiple modalities. Significant differences in youth attitudes were found (at  $p = 0.05$ ) when results were observed for comparisons between *media* versus *media and school*; and *school* versus *media and school*. The nonsignificant results for negative attitudes toward the tobacco industry may be due to a ceiling effect; regardless of program exposure, most students already had very negative attitudes about the tobacco industry.

**SUMMARY** While exposure to specific tobacco control programs was associated with anti-tobacco attitudes and behaviors, exposure to multiple components appeared to be more beneficial than exposure to only one component. This indicates that presenting information through a variety of modalities is an important strategy for tobacco control.

## REFERENCES

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