

Tobacco Use in California

1992

A Focus on Preventing Uptake in Adolescents

Cancer Prevention Program
University of California,
San Diego

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Chapter 1

EXECUTIVE SUMMARY AND FINDINGS

INTRODUCTION

This report reviews evidence of progress in achieving the goals set for the California Tobacco Control Program that was funded by the voter sponsored Tobacco Tax Initiative (Proposition 99 of 1988). In addition, this report provides information about influences on adolescent smoking behavior; these data have become available as part of the evaluation of this Program. Three overall conclusions are presented on the impact of the Tobacco Control Program through 1992 and the major barriers to the Program's success with adolescents. These conclusions are followed by a summary of the findings for each topic considered in this report. Detailed analyses of the findings are included in the chapters indicated.

OVERALL CONCLUSIONS ON THE IMPACT OF THE TOBACCO CONTROL PROGRAM

- A. Tobacco use in California has declined since the beginning of the Tobacco Tax Initiative. Some of this decline was associated with the introduction of the Initiative and the Tax. However, a good proportion of the decline in prevalence may be attributed to the interventions funded by the tax initiative.
- B. Smoking prevalence among adults has decreased by 23.6% since 1988. This is a more rapid decline than had occurred prior to 1988 and smoking prevalence is on target to reach the 1999 goal of 6.5% smoking prevalence among adults in California. In 1992, 20.0% of adults over 18 years of age were smokers.
- C. Analysis of trends in adolescent smoking behavior produced mixed results. We observed some signs of reduced initiation among young teenagers. We introduce a new measure of *susceptibility to smoking* to permit more direct assessments of program impact in future years. Approximately 40% of California adolescents were susceptible to smoking in 1992. A teenager is considered susceptible if they are not absolutely sure that they won't smoke in the near future.

THE MAJOR BARRIERS TO SUCCESSFUL PREVENTION OF ADOLESCENT SMOKING

- A. Few adolescents in California attend smoke-free schools. The enforcement of strict non-smoking policies at school could substantially reduce the likelihood of adolescent smoking.
- B. Tobacco advertising reaches most of the adolescent population and markedly increases their susceptibility to smoke. Tobacco advertising appears to have this effect by convincing young children/adolescents that there are benefits to smoking, particularly for handling social interactions. Current health education classes are unable to counter this effect of tobacco advertising.

SUMMARY OF CHAPTER FINDINGS

Assessing Progress Toward the 1999 Objectives (Chapter 3)

- A. The California Tobacco Control Program coincided with two periods during which consumption of tobacco in California declined at an accelerated rate. Consumption data suggest that one period of decline was related to the introduction of the California Tobacco Tax. However, this accelerated rate of decline disappeared 5 months after the imposition of the tax. The second period of rapid decline began in April 1990 and coincided with interventions funded by the Tobacco Tax Initiative. This period of rapid decline lasted 12 months. In April 1992, the level of consumption was 14% lower than it would have been without the Tobacco Tax Initiative.
- B. According to data collected in the 1992 California Tobacco Survey, the decline in smoking prevalence among California adults is on target with the official Program Objective: the reduction of adult smoking prevalence to 6.5% by 1999. Prevalence has significantly declined by 23.6% since 1988 (declined from 26.7% in 1988). Among adults over the age of 18 years, smoking prevalence in 1992 was 20.0% with males (22.8%) smoking more than females (17.4%).
- C. The smoking prevalence of young adults (20-24 years) is also on target to achieve the objective set for this group: the reduction of regular smoking by age 20 to no more than 6.8% by 1999. Among young adults, women and the lowest educated seemed to be changing their smoking behavior the most. Among young men, there was no additional decline noticed that could be attributed to the Tobacco Tax Initiative.
- D. The impact of the Tobacco Control Program on adolescents is less clear. Given the irregularity of smoking behavior during adolescence, a more sensitive measure than "smoking in the last month" is necessary to obtain a true picture of trends in smoking behavior among adolescents.
- E. However, a decline observed in the percentage of current smokers and experimenters among 12- to 13- year-olds may herald an impact of the California interventions that will not be clearly identifiable with this smoking measure for a few years.

The Classification of Adolescent Smoking Behavior (Chapter 4)

- A. The process of smoking uptake occurs during the teenage years. By age 17, some 10% of adolescents have become daily smokers. Evidence suggests, however, that adolescents may be predisposed to smoke several years before they begin to experiment with cigarettes.

- B. The relatively high proportion of older adolescents who are already smoking daily suggests the importance of reaching adolescents before they acquire a regular cigarette habit. We propose a measure of "susceptibility to smoke" to identify those adolescents who are already predisposed to try cigarettes or who will probably continue to smoke after early experimentation.
- C. In 1992, approximately 30% of 12-year-olds were susceptible to smoking, although only 2% reported that they had smoked in the last month. The high level of smoking susceptibility among the youngest adolescents suggests that this group must be a public health priority in prevention programs.
- D. Susceptibility to smoke among adolescents varied by race/ethnicity and gender. The highest rate of susceptibility was observed among Hispanic boys, and the lowest rate of susceptibility was observed for African American boys. Across race/ethnic groups, approximately one third of girls were susceptible to smoke. The percentage of boys susceptible to smoke was slightly higher.

Influences on Susceptibility to Smoking: a Conceptual Framework (Chapter 5)

- A. The conceptual framework used in this report highlights two important sources of influence on adolescent smoking behavior: the social environment and personal characteristics.
- B. Personal characteristics analyzed in this report included rebelliousness, depression, school performance, the perception of advantages to smoking, and awareness of the health costs of smoking. Social environmental factors included exposure to smokers in the family and peer network, and awareness of norms favoring smoking among significant others. These factors have been demonstrated in past studies to be significantly implicated in smoking initiation.
- C. A general statistical model of the 1990 and the 1992 data suggests that both personal and socioenvironmental influences are independently associated with susceptibility to smoking among adolescents. The same variables predicted current smoking among adolescents (i.e., smoked in the last month). We considered this good evidence of the concurrent validity of the susceptibility measure.

Personal Characteristics Associated with Susceptibility to Smoking (Chapter 6)

- A. More than 50% of adolescents aged 12-13 years thought that there were benefits to smoking. The benefit most often named was the use of smoking to increase confidence in social interactions.

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- B. Adolescents who expected benefits from smoking were significantly more likely to be susceptible to smoking. Of adolescents who expected no benefits, 23.9% were susceptible compared to 56.8% of adolescents expecting three or more benefits from smoking.
- C. The types of benefits associated with smoking were consistent with the idea that smoking is, for many adolescents, a response to life anxieties. Adolescents most often saw smoking as a way to ease social encounters and relax and were less likely to see smoking as a way of relieving boredom.
- D. High levels of depression, rebellious attitudes, and poor school performance were all associated with an increased susceptibility to smoking among adolescents. Adolescents who like school a lot had lower levels of susceptibility regardless of school performance.
- E. Adolescents who believed that experimenting with cigarettes was safe were twice as likely to be susceptible to smoking as adolescents who thought that experimentation was unsafe.

The Influence of Family and Peers on Susceptibility to Smoking (Chapter 7)

- A. Adolescents who were exposed to smokers in the family were significantly more susceptible to smoking than adolescents living in nonsmoking families.
- B. Adolescents living in single parent households were more susceptible to smoking than adolescents in two-parent households, regardless of whether anyone in the family smoked.
- C. Exposure to friends who smoked also increased adolescent susceptibility to smoking. Best friends who smoked exerted a greater impact than acquaintances who smoked. This effect was especially marked among girls. Girls who had best friends of both sexes who smoked were three times more likely to be susceptible than girls with no smokers in their peer network.
- D. A comparison of peer and family influences on adolescent smoking susceptibility suggested that peers who smoked had a greater impact than family members who smoked.
- E. Among adolescents who were not exposed to smokers in their family or peer networks, 19.3% were susceptible to smoking. This finding suggests the need to consider other sources of influence on smoking susceptibility beyond the social environment.

Smoking Susceptibility and the School Environment (Chapter 8)

- A. When we defined a smoke-free school as a school having a non-smoking policy to which students adhere having no teachers who were known to be smokers and only 1.1% of adolescents surveyed reported that their school was smoke-free.
- B. Based on the small sample of adolescents with smoke-free schools, our findings indicated that adolescents who were not exposed to smokers at school had a greatly reduced susceptibility to smoking. The difference in susceptibility could be as much as three-fold between adolescents with and without smoke-free schools.
- C. Teachers, in particular, and seniors who smoke or are perceived to smoke substantially increase the proportion of adolescents in the student population who are susceptible to smoking.
- D. Despite the fact that health classes are mandated by law in the state of California, one quarter of adolescents in our survey could not recall being exposed to a class on smoking at school. Absence due to sickness or truancy may have accounted for this finding; however, failures to recall a class may also raise questions about the style of delivery of health information to adolescents.
- E. Related to this issue is the finding that a disproportionate number of Hispanics and African Americans failed to recall a class on smoking. This may suggest that the provision of antismoking information must be made more sensitive to ethnic and racial differences in the student population.
- F. Adolescents who participated in health classes on smoking were more likely to be aware of the dangers of experimenting with cigarettes. However, recall of health classes did not reduce susceptibility to smoking overall.
- G. Given that health classes did not appear to counter student perceptions of the benefits to be derived from smoking, we might speculate on the need to address the social consequences of smoking more strongly in adolescent health education.

Normative Influences on Susceptibility to Smoking (Chapter 9)

- A. The majority of teenagers aged 12-13 years believe that their parents are strongly opposed to smoking. However older teenagers are more likely to report parental norms that are not strongly prohibitive of adolescent smoking.
- B. In 1992, 40% of boys over the age of 14 years have best friends who would not mind if they smoked heavily. Although norms concerning heavy smoking appeared to be more positive for boys, one quarter of 16- to 17-year-old girls also indicate that their best friends would not disapprove if they smoked heavily.

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- C. In 1990, opinions in the general adolescent community about smoking were perceived as ambivalent. Approximately one half of California adolescents thought that their peers did not care about staying off cigarettes. The prescription of weight control for girls appeared to be more central to the norms of peers than a prohibition on smoking. Even the issue of staying fit and exercising was felt to be of higher concern to California adolescents than smoking, although avoiding cigarettes was more important than not getting drunk.
- D. Adolescents who perceived widespread normative support for smoking among parents, best friends, and peers in general were twice as likely to be susceptible to smoking.

The Influence of Tobacco Advertising on Adolescent Susceptibility to Smoking (Chapter 10)

- A. Tobacco advertising reaches the very young. Audience awareness of cigarette advertising for the most popular brands is already well established in young adolescence. More than 90% of 12- to 13-year-old children nominated a brand that was advertised. The cigarette brands most frequently recalled were Camel and Marlboro.
- B. The cartoon character, Joe Camel, is particularly salient to the very young. Adolescents under 17 years chose the Camel advertisements as their favorite advertisements at a rate far exceeding that for any other cigarette brand. Among 12- to 13-year-olds, Camel advertisements were chosen as their favorite advertisements almost four times as often as Marlboro advertisements.
- C. Salient advertising promotes future smoking. Having a favorite brand of advertisement doubled the proportion of adolescents over the age of 14 who were susceptible to smoking. It also had a marked effect on the susceptibility of 12- to 13-year-old children.
- D. Evidence suggests that tobacco advertising may encourage teenagers to smoke by associating smoking with benefits that they want. Adolescents across age groups were overwhelmingly in agreement that tobacco advertising promotes specific benefits of smoking. The more cigarette advertisements adolescents recalled, the more likely adolescents were to believe that advertising promotes the benefits suggested in the survey.
- E. Cigarette advertising appears to be a powerful independent source of information about the benefits of smoking for adolescents, beyond the information they receive from smokers they know. Cigarette advertising was especially associated with attributions that smoking was beneficial for increasing confidence in social settings and in weight control. Having a smoker in the social environment was especially associated with the attribution that relaxation was a benefit of smoking.

Smokeless Tobacco Use Among Adolescents (Chapter 11)

- A. In 1992, reported use of smokeless tobacco in the past month was less than 2% for teenagers under 16 years, but rose to 6% among teenagers aged 16 to 17 years.
- B. In 1992, 26% of 12- to 13-year-olds were classified as susceptible to use smokeless tobacco.
- C. Over one third of boys in California were able to name an advertised brand of smokeless tobacco. Our data suggest that smokeless tobacco advertising may be directed at non-Hispanic white boys. Skoal/Skoal Bandits was the brand named most often. -
- D. Some 20% of 12- to 13-year-old boys knew someone who used smokeless tobacco. By age 16-17 years, over half of California boys knew someone who used smokeless tobacco. In most cases, the person known was a friend rather than a family member.
- E. Since exposure to peer users is a major predictor of tobacco use, the prevalence of smokeless tobacco use may be expected to increase in the absence of effective interventions.

Chapter 2

INTRODUCTION AND BACKGROUND

BACKGROUND

The Health Consequences of Smoking

The adverse effects of cigarette smoking have been known for over a generation. It has been estimated that in California alone, cigarette smoking caused 42,207 deaths in 1989¹. These deaths typically occurred in middle and older aged people after years of smoking. Almost 18,000 of the deaths were from cardiovascular disease, nearly 14,000 were cancer-related, and 10,000 deaths were due to a variety of respiratory disorders.

Each smoking attributable death translates to a loss of 15 potential life years and an estimated cost to the community of more than \$100,000. If smokers were taxed to pay for the health costs of smoking, each smoker would be assessed around \$500 annually.¹

The Addictiveness of Nicotine

In 1988, the Surgeon General of the United States classified nicotine for the first time as an addictive drug comparable to heroin and cocaine.² The Surgeon General's Report on Nicotine Addiction noted that, as with other drugs of dependence, cigarette smoking is characterized by highly controlled or compulsive use. Nicotine is known to produce psychoactive or mood-altering effects in the individual that are pleasant (euphoriant). Accordingly, each cigarette smoked reinforces the behavior making it more difficult for the smoker to quit. Hence, individuals will continue to use cigarettes even when well-informed about the adverse physical, psychological, and social consequences of their habit. Smokers who attempt to quit their habit typically suffer from intense cravings that peak during the first weeks of abstinence and frequently impair the social and emotional functioning of the abstainer. As a consequence, attempts to quit smoking are commonly unsuccessful.^{3,4}

The Importance of Preventing Smoking Onset in California

In 1990, over one fifth of the adult population in California smoked. Half of these adults reported that they had tried to quit smoking during the previous year. Of those who tried to quit smoking, 90% failed. More than 50% of the failures occurred in the first 5 days after quitting, a time when the withdrawal symptoms from quitting are strongest.

Given the difficulty of escaping from cigarette dependency, public health officials are increasingly focusing on prevention in an effort to reach individuals before they establish a nicotine dependency. The prevention of smoking initiation has been listed as one of the major public health goals to be achieved in the United States by the year 2000.⁵

Within California, the Tobacco Tax Initiative (Proposition 99) reflected the importance of this emphasis on prevention by making a reduction in adolescent smoking one of its cardinal

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objectives.⁶ Moreover, as noted in the 1991 report on the California Tobacco Survey (CTS),³ 95% of adults and 93% of smokers in California agree that preventing smoking initiation among youth is of crucial importance.

In the years since information on the health consequences of smoking was first disseminated to the public, the maximum age by which individuals start smoking has decreased dramatically. Of smokers born between 1930 and 1934, 90% had begun to smoke regularly before the age of 25. Among smokers born between 1950 and 1954, the proportion of those who were addicted before age 25 increased to 98%.^{7,8} More recent data indicate that the modal years for smoking initiation are currently 16 years for girls and 18 years for boys.⁹ It is now rare for anyone to begin smoking regularly after reaching the age of 20.¹⁰

THE AIMS OF THIS REPORT

This report has two purposes:

- 1) to provide an overview of progress through 1992 toward the targeted reduction of smoking in California;
- 2) to present an in-depth analysis of California teen smoking behavior in order to identify influences on the initiation of tobacco use.

Assessing Progress Through 1992

In the first year of the Tobacco Tax Initiative, we helped outline a number of objectives for the year 1999 against which we could measure the progress of the Tobacco Tax Initiative.¹¹ The objectives relevant to this report are as follows:

- Objective 1:* Reduce cigarette smoking to a prevalence of no more than 6.5% among people aged 20 years or older.
- Objective 2:* Reduce the initiation of smoking by children and youth so that by the year 1999 no more than 6.8% have become regular smokers by age 20.
- Objective 3:* Reduce by 75% the smoking start-up rate among teenagers focusing on ages 14, 16, and 18 years.

Chapter 3 examines the degree to which these objectives are being met for the population of California, paying particular attention to the effects of the California antismoking initiative. In addition, we included data on trends in smoking prevalence among adults and young adults. As smoking initiation appears to be almost complete by the age of 20 years, we used the prevalence of smoking in those aged 20 to 24 years as a marker for the overall level of initiation obtained by a given birth cohort. A more detailed investigation of the impact of the antismoking initiative

on subgroups of the adult population will be the subject of a later report.

Identifying Influences on Adolescent Smoking Behavior

In order to formulate policies that will more effectively deter adolescents from smoking, we must first understand the process by which adolescents become smokers. Chapter 4 of this report describes the process of becoming a smoker; Chapter 5 reviews the dominant theoretical concepts used to explain how and why adolescents take up smoking. Drawing on this research, Chapters 6 through 9 investigate the role of personal characteristics and the influence of the social, school, and media environments on adolescent smoking behavior.

DATA USED IN THIS REPORT

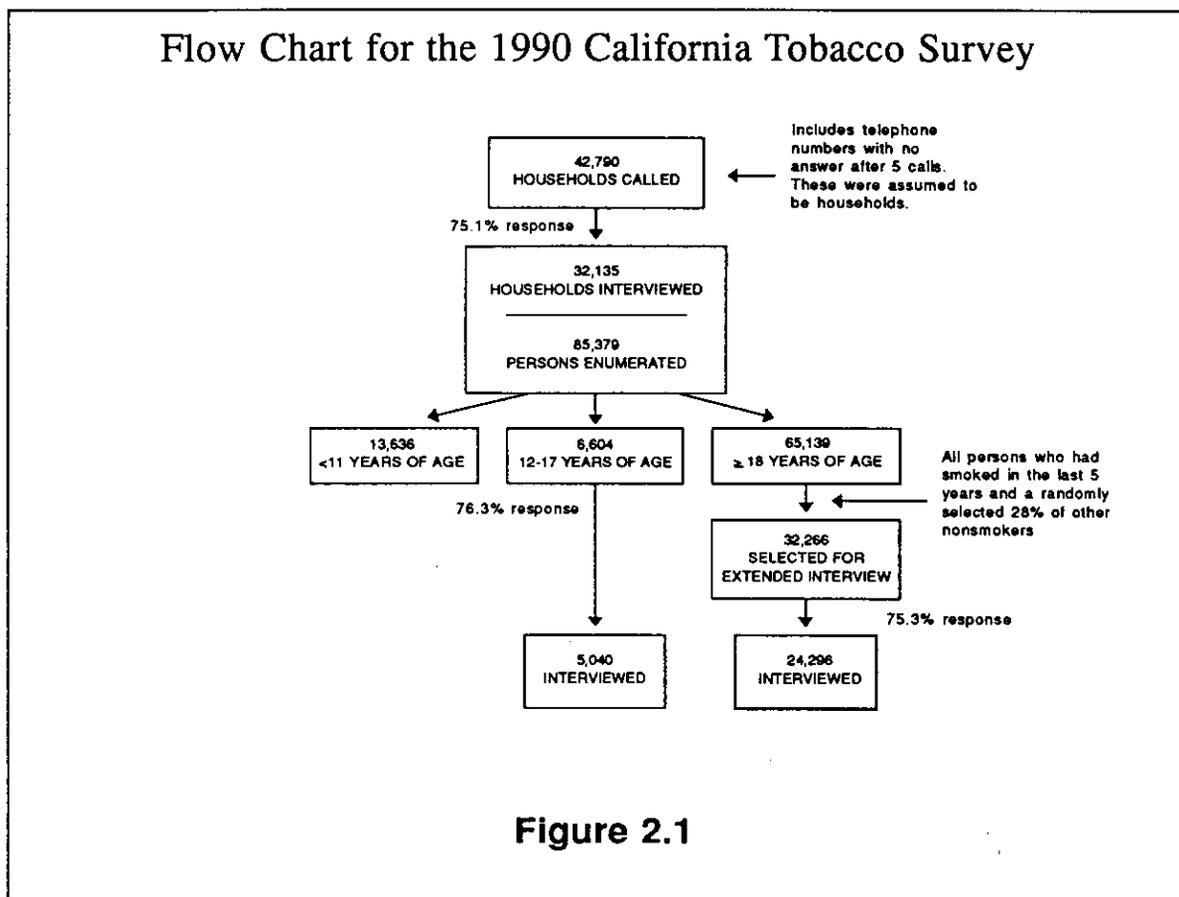
The majority of the data used in this report were collected as part of the California Tobacco Surveys of the 1990s with earlier trend data collected as part of the National Health Interview Surveys (NHIS) conducted throughout the 1970s and 1980s.

The California Tobacco Surveys

The California Tobacco Surveys have been undertaken as part of the evaluation of the California Tobacco Tax Initiative and have been funded with monies from this initiative. These surveys, which have been conducted in 1990 and 1992, are random digit dial telephone surveys. Previous experience with telephone surveys at the national level has demonstrated that this survey mode does not introduce any major bias into the estimates of trends in smoking behavior.⁷

The 1990 California Tobacco Survey

Figure 2.1 presents the response rate flow chart for the 1990 CTS. Attempts to contact 42,790 households were made using a random digit dial methodology described elsewhere.¹² A short screening survey that included full household composition and the smoking status of each of its members was completed for 75.1% (32,135) of these households. These data are used to estimate smoking prevalence in California. Of the 85,379 people enumerated in these households, 6,604 were between the ages of 12 to 17 years. Members of the latter group were scheduled for an in-depth survey and interviews were completed for 76.3% of them. Almost half of the adults enumerated were selected for interview with the selection criteria reducing the probability that someone who had not smoked in the last 5 years would be chosen for interview. An extended interview was completed with 75.3% of adults. A detailed comparison of findings from the screener survey (which included proxy reporting) and the extended interview (self-report only) did not find evidence that either of the two interview methods introduced a bias into prevalence estimates.¹²

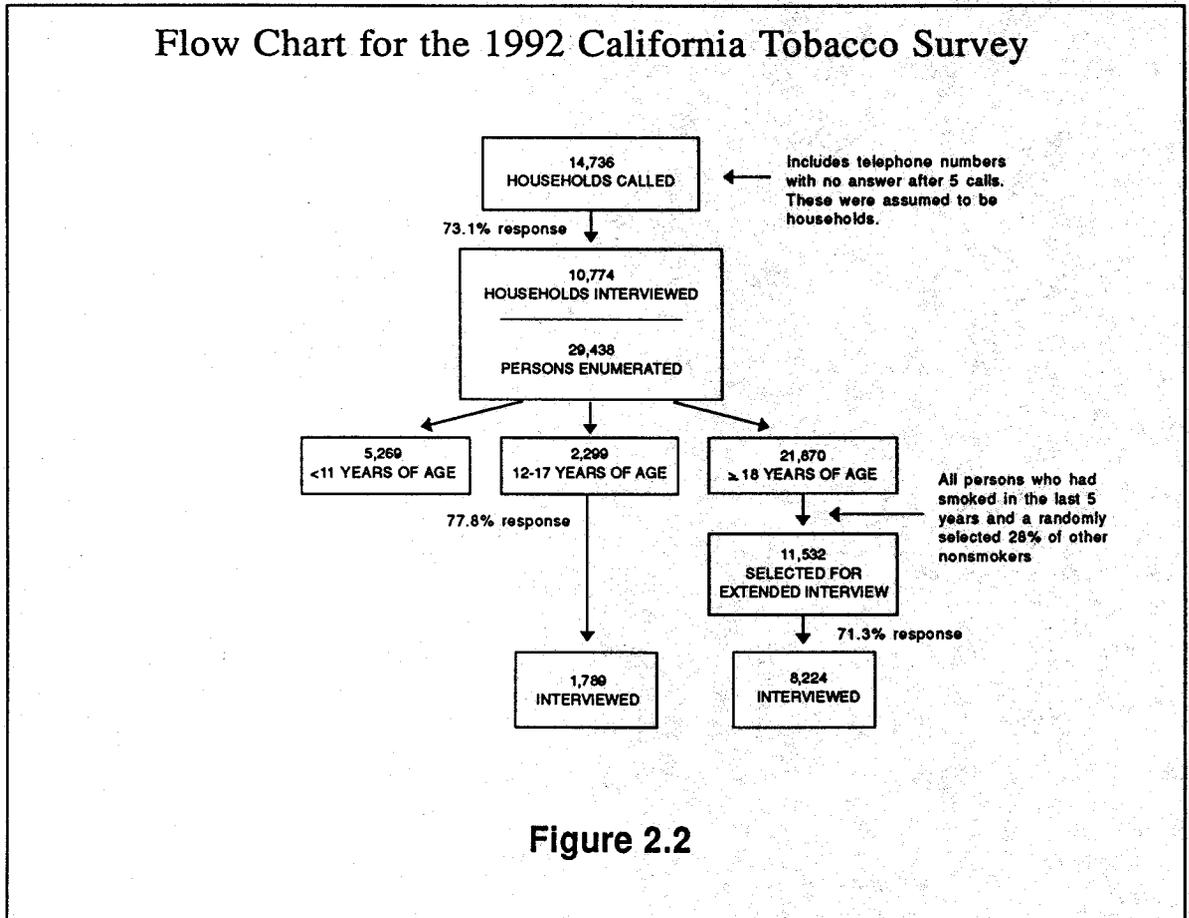


To improve estimates for minorities, the 1990 CTS sample was augmented by data from the Los Angeles County Minorities Health Survey (LACMHS) conducted in early 1991. The methods used to contact the households and the survey questionnaires were identical for both surveys; however, the LACMHS scheduled only minorities for in-depth interviews. The total youth sample of the 1990-1991 CTS (including the LACMHS) was 7,767 adolescents of the following racial/ethnic backgrounds: 2,972 non-Hispanic whites, 689 African Americans, 719 Asian or Pacific Islanders, and 148 of other racial backgrounds.

The 1992 California Tobacco Survey

The 1992 survey was smaller than the 1990 survey and included both a cross-sectional component (new sample) and a panel component (the re-interview of selected respondents to the 1990 survey). Results from the panel component will be included in a future report. The flow chart for the cross-sectional component is presented in Figure 2.2. Interviews were attempted in 14,736 California households and achieved in 73.1% (10,774) of them. Of the 29,438 people enumerated from these households, 2,299 were between the ages of 12 to 17 years. As in 1990, these adolescents were scheduled for in-depth surveys and interviews were completed for 77.8% of them. Using the same criteria for reducing the probability of further surveying people who

had not smoked in the previous five years, in-depth interviews were completed with 8,224 adults (71.3% of these selected).



The youth sample of the 1992 cross-sectional CTS included 1,789 adolescents of the following racial/ethnic backgrounds: 932 non-Hispanic whites, 117 African Americans, 550 Hispanics, and 190 of Asian or other racial/ethnic backgrounds.

The National Health Interview Surveys

The NHIS surveys are household surveys of the adult non-institutionalized population of the United States. The surveys are not designed to provide estimates of behavior at the State level but rather at the regional level (with the United States divided into four regions). Because California has such a large population, on any particular survey, the proportion of participants from the Western region who come from California may be as high as 75% and comprises approximately 10% of the total national sample. We use the unweighted data from these surveys to establish the trend in smoking behavior prior to the 1989 Tobacco Tax Initiative.

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The NHIS included smoking questions in each of the years 1990 through 1992, thus enabling a direct comparison with the smoking prevalence estimates from both the CTS surveys and the development of a correction factor for the effect of survey mode if necessary.

Chapter 3

**ASSESSING PROGRESS TOWARD THE 1999
OBJECTIVES**

INTRODUCTION

The Tobacco Tax Initiative

In 1988, enough signatures were raised to place an initiative on the ballot in California that would raise the tax on cigarettes by 25 cents, with a specified proportion of the monies raised to be spent on programs to reduce the level of smoking in California, particularly among teenagers. Although the tobacco industry sponsored a large and expensive campaign to defeat Proposition 99, it passed and the 25-cent excise tax increase went into effect on January 1, 1989. The enabling legislation for this proposition was passed by the Legislature and signed by the Governor in September 1989 and the first contracts of the Tobacco Tax Initiative began in early 1990. The first intervention to be funded by the Tobacco Tax Initiative was a television campaign that began on April 9, 1990. The next set of funded interventions became operational in November 1990. Some of the funded community programs may not have reached their potential for maximum impact until mid-1992. As a result, the assessment of the impact of the Tobacco Tax Initiative at this point in time remains preliminary.

Measures of Cigarette Use in California

The two major sources of information used to assess the impact of the Tobacco Tax Initiative are the following: 1) reported consumption of cigarettes within California, which is obtained by the State Board of Equalization as part of the data collection associated with the excise tax; and 2) individual data on smoking behavior collected from population surveys.

The advantage of using cigarette consumption data includes their availability on a monthly basis and the relatively short delay (about 6 months) in obtaining the data. These data are thus unique in their capacity to provide insight into the impact on total tobacco use of an antismoking intervention within a month of its inception. Consumption data can also indicate the duration of the impact of the intervention. One disadvantage is that these data only refer to packs of cigarettes that leave distribution warehouses within the State; they are not strictly a measure of population consumption. Accordingly, these data must be adjusted over time to account for seasonal variation in warehouse removals.

Consumption data are not optimal to evaluate the impact of interventions on particular subgroups of the population. To investigate which people are smoking, how much they smoke, and which groups were most affected by the funded interventions, we used survey data from the California Tobacco Surveys (1990-1992). Both consumption and survey data were used because the expense of surveys prohibits the collection of data more than once a year. In addition, surveys rely largely on self-reported information. While we have good evidence that self-reported smoking data from community surveys generally do not provide biased estimates of the prevalence of smoking,^{7,13,14} differential response rates in the hard-to-reach groups of the population and reporting errors such as rounding can lead to biased estimates of the consumption level of different population subgroups.^{7,15}

The Importance of Accounting for the Underlying Behavioral Trend

The evaluation of the impact of the Tobacco Tax Initiative must take into account the changes in smoking prevalence that would have occurred if no interventions had taken place. Data from the National Health Interview Surveys were used to document trends in smoking prevalence nationwide and in California.³ Trends in tobacco consumption were also estimated using data from the State Board of Equalization. These analyses showed that smoking prevalence was declining annually in California at a rate of .73 percentage points per year.¹¹ To demonstrate an impact on smoking behavior, interventions funded by the Tobacco Tax Initiative must be shown to have accelerated the rate of decline of smoking prevalence in California. Therefore, we compare the data on trends in consumption and smoking prevalence to our estimates of the underlying trend in smoking behavior to determine if smoking declined at a higher rate in California as a result of the campaign. To meet the target set for the Initiative, the annual rate of decline in prevalence needs to more than double.

TRENDS IN THE PER CAPITA CONSUMPTION OF CIGARETTES IN CALIFORNIA

Figure 3.1 presents the per capita consumption data of cigarette packs per month for California from January 1980 through April 1992. As indicated earlier, considerable seasonal variation is expected in the raw data, which are presented in the figure by the dotted line. To separate real changes in consumption from those changes due to seasonal variations, we used the SABL seasonal and calendar adjustment procedure,¹⁶ available on the standard statistical package, S-Plus.¹⁷ Further details of this procedure will be included in the upcoming technical report. The seasonally adjusted trend in consumption is represented by a solid line in Figure 3.1. This suggests that the underlying trend of tobacco consumption changed in September 1982, April 1983, September 1988, May 1989, April 1990, and April 1991.

As previously reported,¹⁸ per capita cigarette consumption in California declined throughout the 1980s. In January 1983, the federal excise tax on cigarette products increased from 8 to 16 cents. This tax increase was associated with a decline in the per capita consumption that began in September 1982 in anticipation of the tax and lasted until April 1983. Thereafter, per capita consumption continued to decline through September 1988.

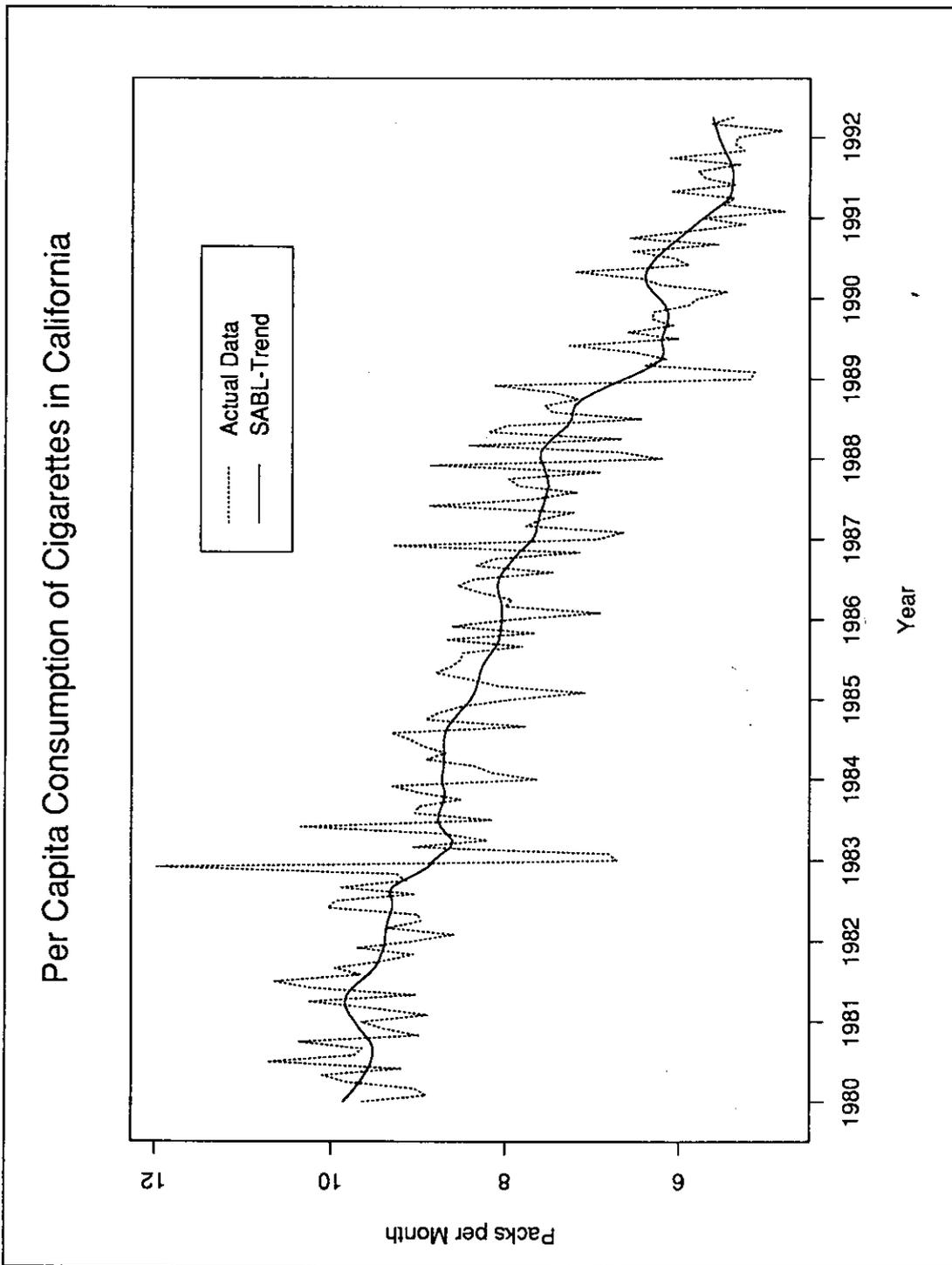


Figure 3.1

TOBACCO USE IN CALIFORNIA

We observed two periods from September 1988 onward during which cigarette consumption declined at a higher rate than the 1983-1988 trend would have predicted.

Period 1: **Coinciding with the start of the tobacco industry campaign to defeat Proposition 99, tobacco consumption decreased rapidly between September 1988 and May 1989.**

This period of rapid decline was followed by an upward correction that lasted until April 1990.

Period 2: **A second period of accelerated decline in consumption rates occurred between April 1990 and April 1991. This period coincides with the start of the mass media antismoking campaign. The period of rapid decline ended at approximately the same time that the media campaign stopped airing the antismoking campaign commercials.**

The final 12-month period of the data suggests another period of correction that lasted through the early part of 1992.

Has Tobacco Consumption Declined Since the Start of the Tobacco Tax Initiative?

The previously presented data show that short term declines in consumption were often counterbalanced by upward corrections coinciding with the varying intensity of interventions administered by the Tobacco Control Program. To provide an overall estimate of the size of the decline in consumption attributable to this program, we fitted least squares regression lines to the de-seasonalized consumption data.

In Figure 3.2 the deseasonalized data are represented by the dotted line and the regression is represented by the solid lines. If the consumption trends before the Tobacco Tax Initiative had continued through 1992 (the dashed line in Figure 3.2), the per capita consumption would have been 6.23 packs per month. The actual per capita consumption data (assuming a linear trend since April 1989) was estimated to be 5.34 packs per month. This consumption rate is 13.82% lower than it would have been without the Tobacco Tax Initiative.

Note that this estimate of consumption decline refers to the impact of all the interventions combined. Many people have an interest in attributing change to differing interventions such as the increase in excise tax or the mass media program. The available data at this time do not permit us to conclude the impact attributable to each intervention separately. We emphasize that the fact that deseasonalized trend fits a pattern suggesting that individual components of the Tobacco Tax Initiative had a major impact is not sufficient to support a causal association.

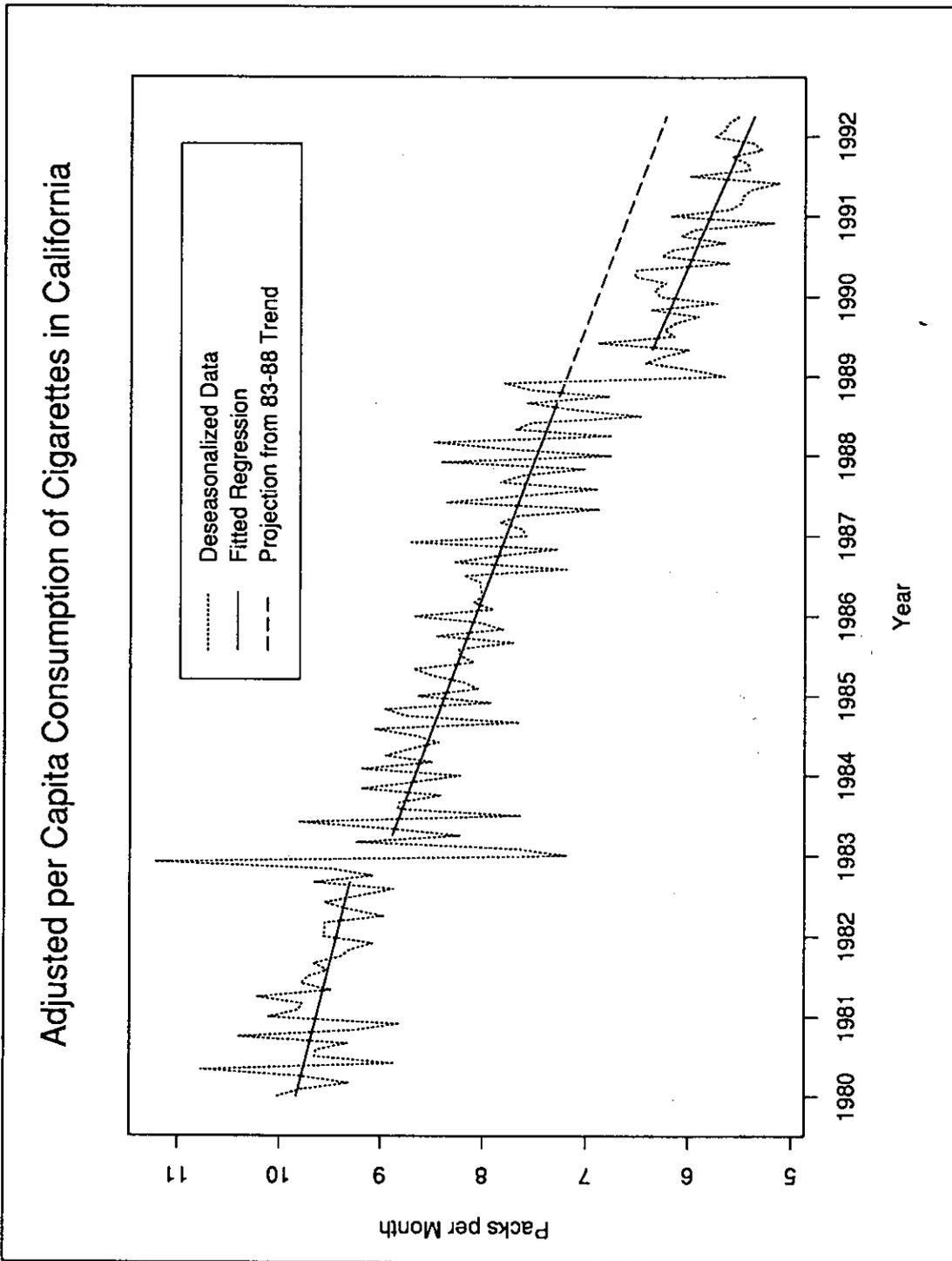


Figure 3.2

CHANGES IN SMOKING PREVALENCE AMONG CALIFORNIANS AGED 20 OR OLDER

We report prevalence for adults over the age of 20 years as some NHIS samples do not interview below this age. Smoking prevalence for adults over the age of 18 years is presented for both 1990 and 1992 CTS in Appendix Tables B-1 and B-2. Figure 3.3 presents the trend in adult prevalence of smoking for the period 1974 through 1992. As reported previously, smoking prevalence among California adults declined from 36.2% in 1974 to 26.8% in 1987. The 95% confidence limits around this line are presented in the figure as dotted lines. If this rate of decline had persisted, smoking prevalence would have dropped to 23.9% in 1992. The actual prevalence level measured from our 1992 screener survey was 20.4% (95% CI: 19.6 to 21.2). As there is no overlap in the 95% confidence intervals, we conclude that the decline in smoking prevalence attributable to the Tobacco Tax Initiative is statistically significant. From Appendix Table B-2, the 1992 smoking prevalence for adults 18 years and older was 20.0%.

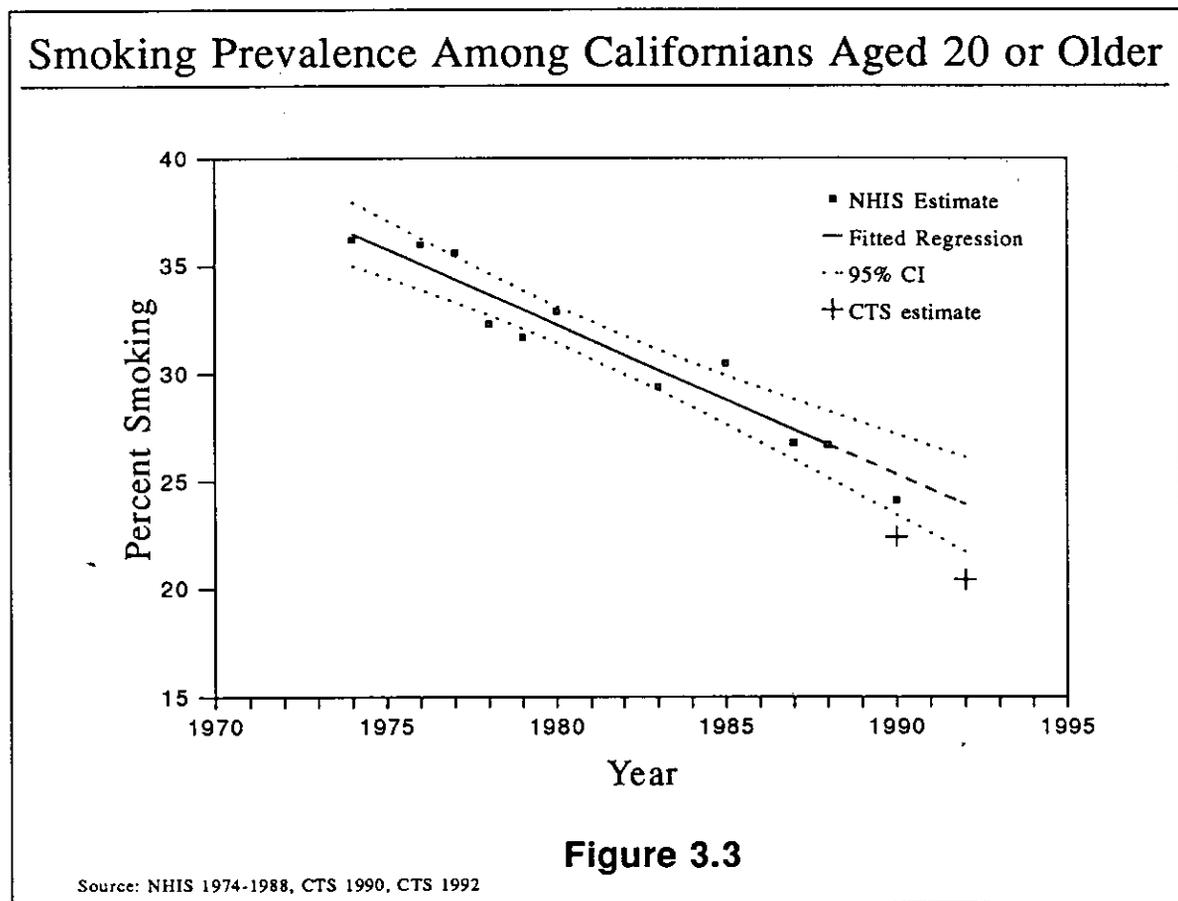
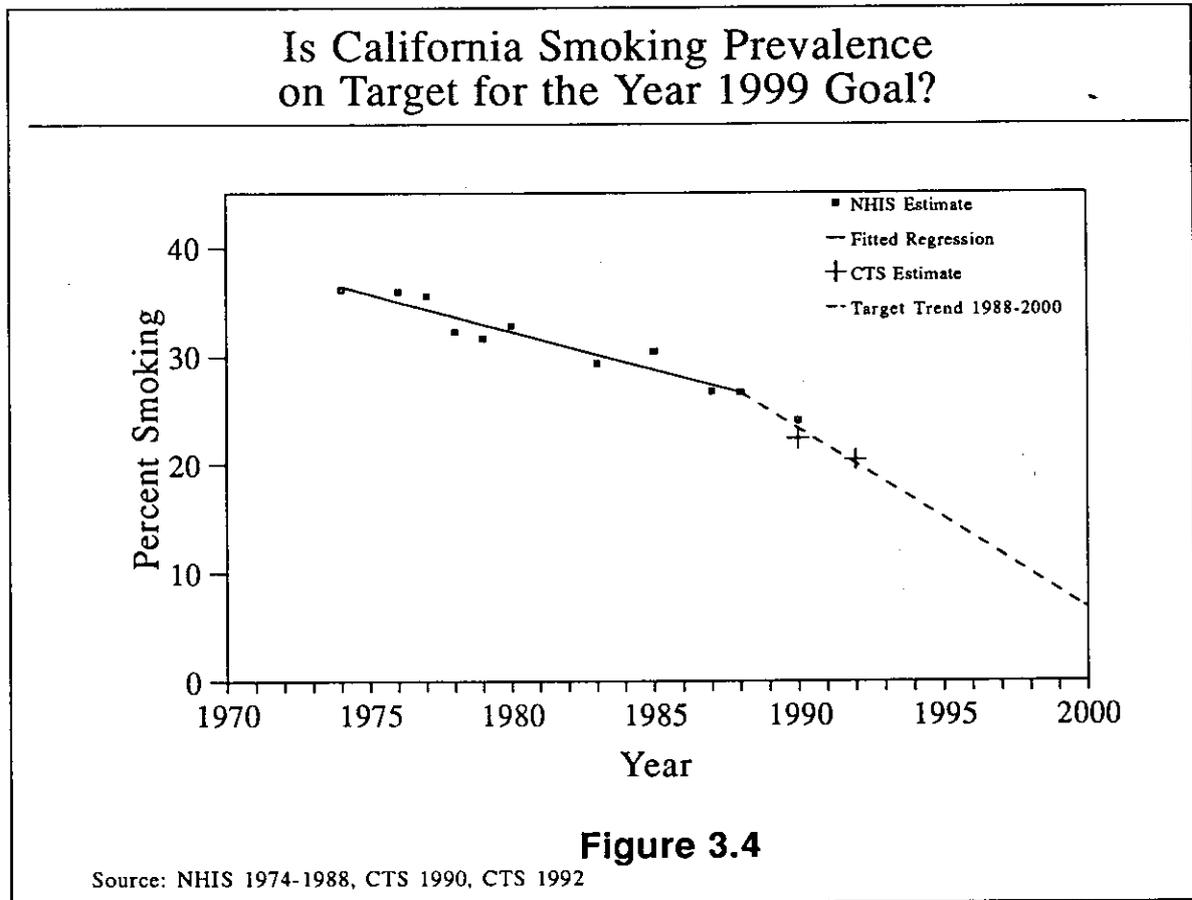


Figure 3.4 again presents the prevalence data from 1974 through 1990 (solid line). The prevalence level required to achieve the Tobacco Control Program goals is represented by the dashed line. In 1992 the prevalence of smoking among California adults is on target to achieve the ambitious objective of a 75% reduction in prevalence before the turn of the century. The 1992 prevalence level is 14.6% lower than it would have been had the 1974 through 1988 trend continued. Since the start of the campaign (1988), there has been a 23.6% decline in smoking prevalence in California.



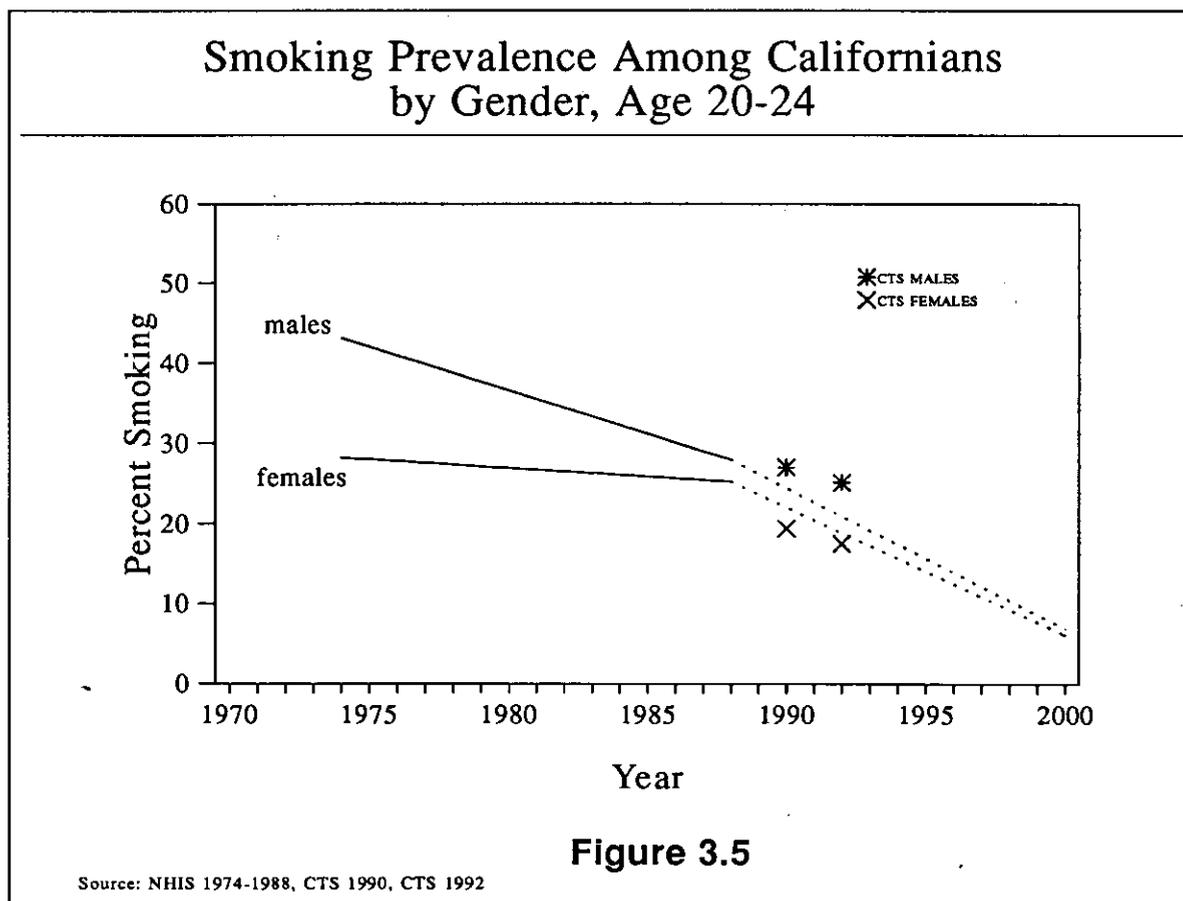
The difference between the actual prevalence estimate and the prevalence projected from the trend prior to the Tobacco Tax Initiative is consistent with the results of the analysis of the consumption data. That is to say, both sources of information suggest that the California Antismoking Campaign was instrumental in accelerating the rate of decline of smoking among adults in California.

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CHANGES IN SMOKING PREVALENCE AMONG ADULTS AGED 20-24 IN CALIFORNIA COMPARED TO THE REST OF THE UNITED STATES

As discussed in Chapter 2, the prevalence of smoking in 20- to 24-year-old adults provides the best estimate of the smoking initiation rate, since by the age of 20 smoking uptake is virtually complete.

Figure 3.5 shows smoking prevalence levels by gender. Among young adult California men, the proportion who became smokers appeared to decline fairly rapidly between 1974 and 1988 from a high of 45.2% to 26.3%. We observed no change in this rate of decline during the period of the California interventions. The 1992 prevalence in young adult men was 25.5%, which was 4.2% higher than the target required to meet the 1992 goal. We note, however, that if the interventions were successful in reducing smoking initiation, a decline in smoking among young adults would not be registered for several years.

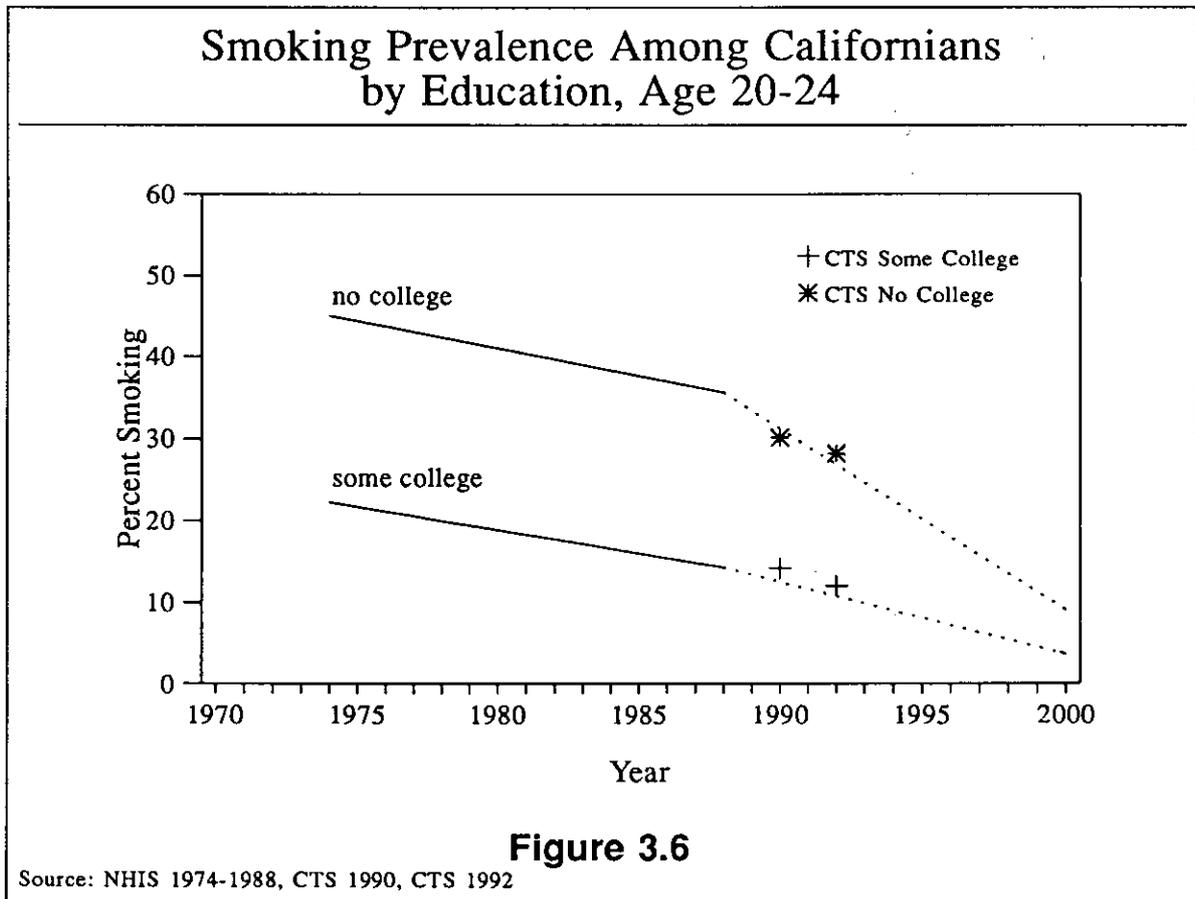


Among young adult women, smoking prevalence declined modestly from 27.2% in 1974 to 24.4% in 1988. However, by 1992, smoking prevalence in this group had declined to 17.5%.

Thus the decline in smoking prevalence among young adult women since the start of the California Antismoking Campaign appears on target to achieve the 75% reduction goal by the turn of the century.

Figure 3.6 presents the difference in smoking prevalence among young adult Californians by education level. Among young adults who had not attended college, smoking prevalence declined from 45.1% in 1974 to 35.7% in 1988 at a rate of 0.67% per year. To achieve the goal reduction in prevalence among this group of Californians will require the decline rate to increase by almost ninefold. Results from the 1990 and 1992 surveys indicate that this very large level of change is being achieved. Young adult Californians who do not attend college are on target to reach a prevalence level of 9.1% by the turn of the century.

For some time, smoking prevalence among young adult Californians who attended college has been much lower than among those who did not attend college. In 1974, 22.2% of those who had attended college smoked, a level that decreased at a rate of 0.57% per year to 14.3% in 1988. Both the 1990 and 1991 surveys suggest that smoking prevalence in this group is slightly higher than the trend required to meet the goal of a smoking prevalence of 3.7% by the turn of the century.



SMOKING PREVALENCE AMONG CALIFORNIA ADOLESCENTS

Many studies of smoking among teenagers have been undertaken in the last 30 years, and most have struggled with the problem of what measure will best indicate the level of smoking among individuals who have not yet established stable patterns of consumption. This issue will be discussed in depth in Chapter 4. The data reported here on smoking prevalence among adolescents follow the National Cancer Institute (NCI) guidelines in defining a current adolescent smoker as anyone who reports smoking in the past 30 days.¹⁹ This definition was proposed by the NCI to maximize comparability across studies and, therefore, we report results for this measure.

It is important to note, however, that this definition of current smoking behavior derives from a developmental model of smoking behavior in adolescents, according to which smoking gradually increases during adolescence until a daily habit is established. Evidence presented in the following chapter and by other investigators²⁰ suggests this may not be the best characterization of uptake smoking behavior. For many teenagers, smoking may be an opportunistic behavior without any regular pattern. If this description is valid, there will be little reliability to repeated measures of smoking in the last month among those currently experimenting with cigarettes. Moreover, the proportion of teenagers who smoked in the last month is minimal during early adolescence, although it rises substantially with age. Thus, if the impact of an intervention is limited to the youngest age group, this measure would not register the impact of the intervention for several years (i.e., until those teenagers affected by the intervention become old enough to smoke each month).

Current Smoking Among California Boys

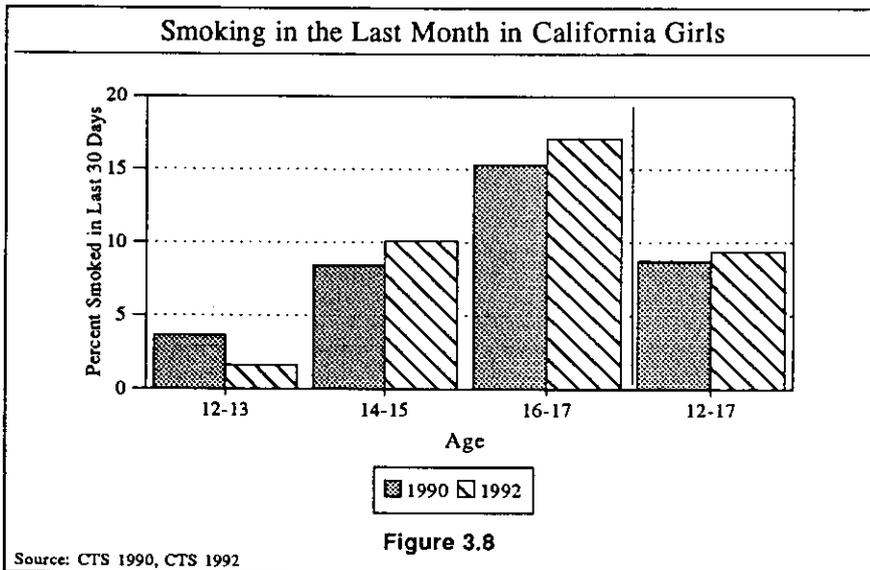
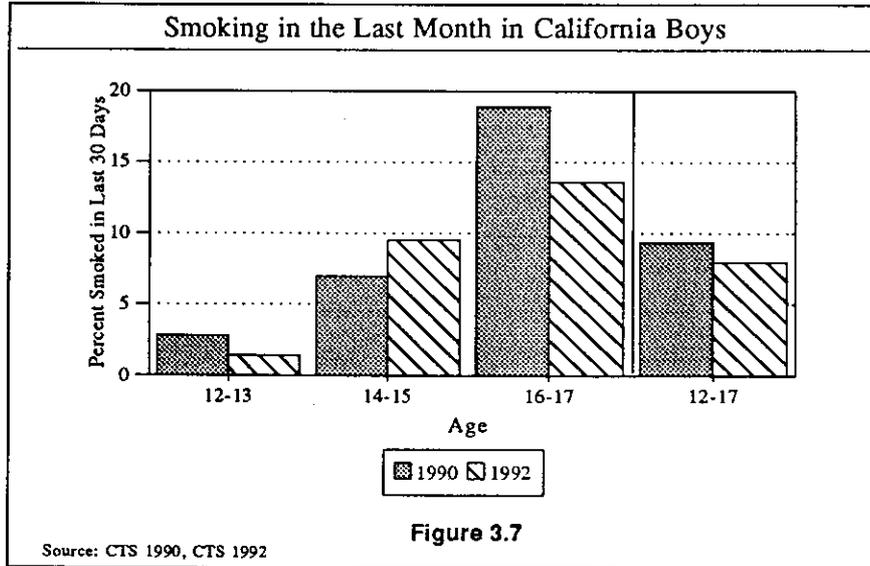
Figure 3.7 presents the prevalence of smoking among California boys. In 1990, 9.4% of California boys aged 12-17 years reported smoking in the previous month. As expected, reports of smoking in the last month rose steadily with age from 4% of 12- to 13-year-olds to 19% of 16- to 17-year-olds.

In 1992, 8% of boys reported smoking, which was not a significant decrease in reported prevalence. Among the youngest adolescents, smoking prevalence did decline considerably between 1990 and 1992. The percentage of current smokers among 12- to 13-year-olds in 1992 was less than half the 1990 percentage.

Current Smoking Among California Girls

The percentage of current smokers (i.e., smoked in the last month) among California girls is presented in Figure 3.8. Overall, smoking prevalence in teenage girls was slightly higher in 1992 than it was in 1990 (9.4% versus 8.7%). Once again, a decline in prevalence was observed

among 12- to 13-year-olds. The proportion of current smokers in the older age groups rose by approximately 2%.

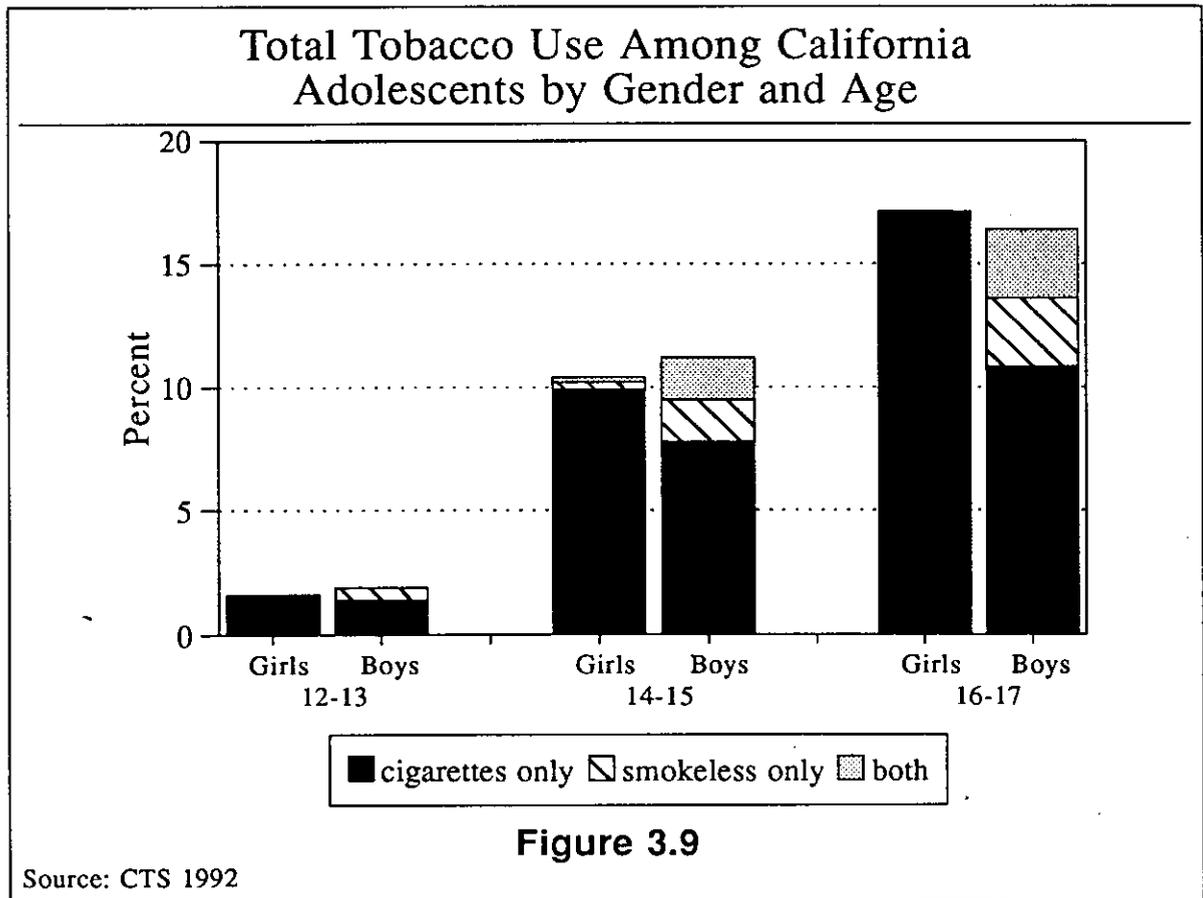


Overall, this measure of smoking behavior did not indicate a decline in adolescent smoking between 1990 and 1992. Although we were unable to judge whether the decline reported for 12- to 13-year-olds among both boys and girls represented a real effect, this decline is consistent with evidence from a previous study²¹ that suggests that the impact of antismoking campaigns may be confined to those who have not yet entered the smoking uptake years at the time of intervention.

TOTAL TOBACCO USE AMONG CALIFORNIA ADOLESCENTS IN 1992

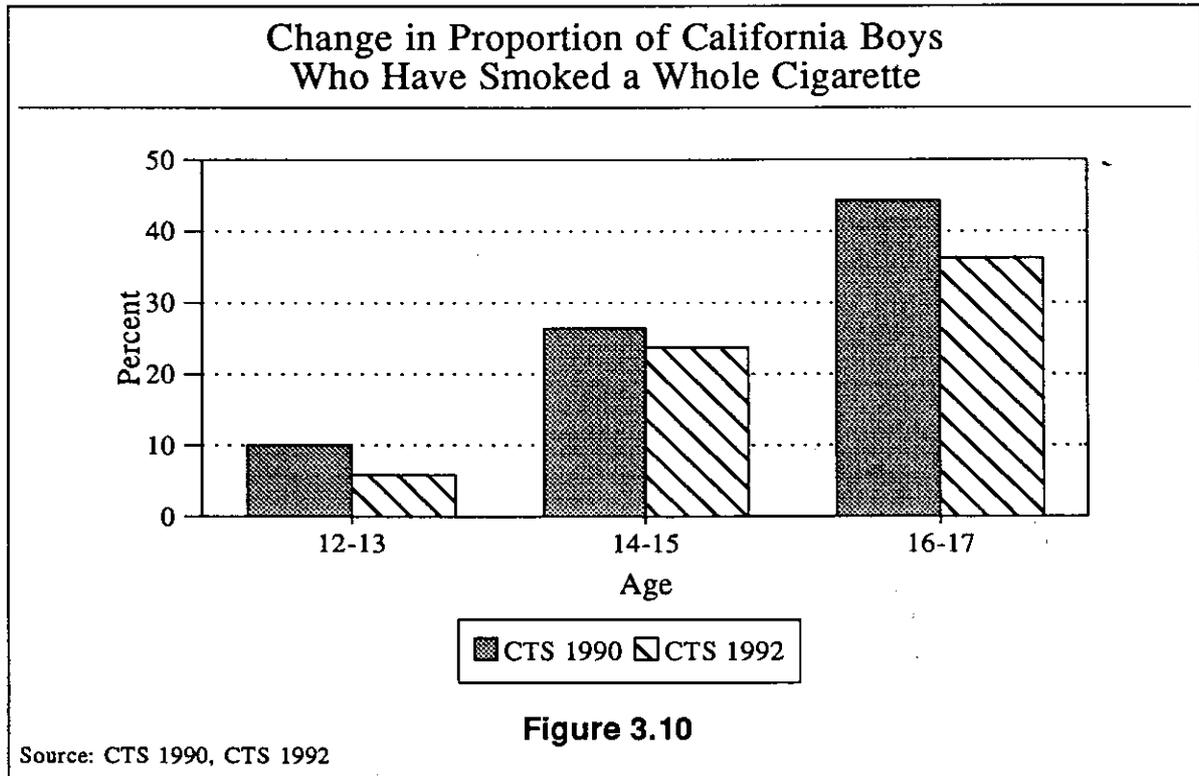
Cigarette smoking is not the only form of tobacco use. Past studies indicate that some adolescents, particularly boys, may substitute smokeless tobacco (chewing tobacco and snuff) for cigarette use.²² The use of smokeless tobacco is known to cause oral cancer.^{23,24} Moreover, individuals who use smokeless tobacco may later transfer to cigarette smoking or vice versa.²⁵ For these reasons, we present data in Figure 3.9 for total tobacco use (including smokeless tobacco) among California adolescents.

In every age group the proportion of teenagers who smoke cigarettes was much higher than the proportion who use smokeless tobacco. Although use of smokeless tobacco was negligible among 12- to 13-year-olds of either gender, 5.6% of boys aged 16-17 years used smokeless tobacco. As reported in other studies, we found the use of smokeless tobacco to be largely confined to boys.



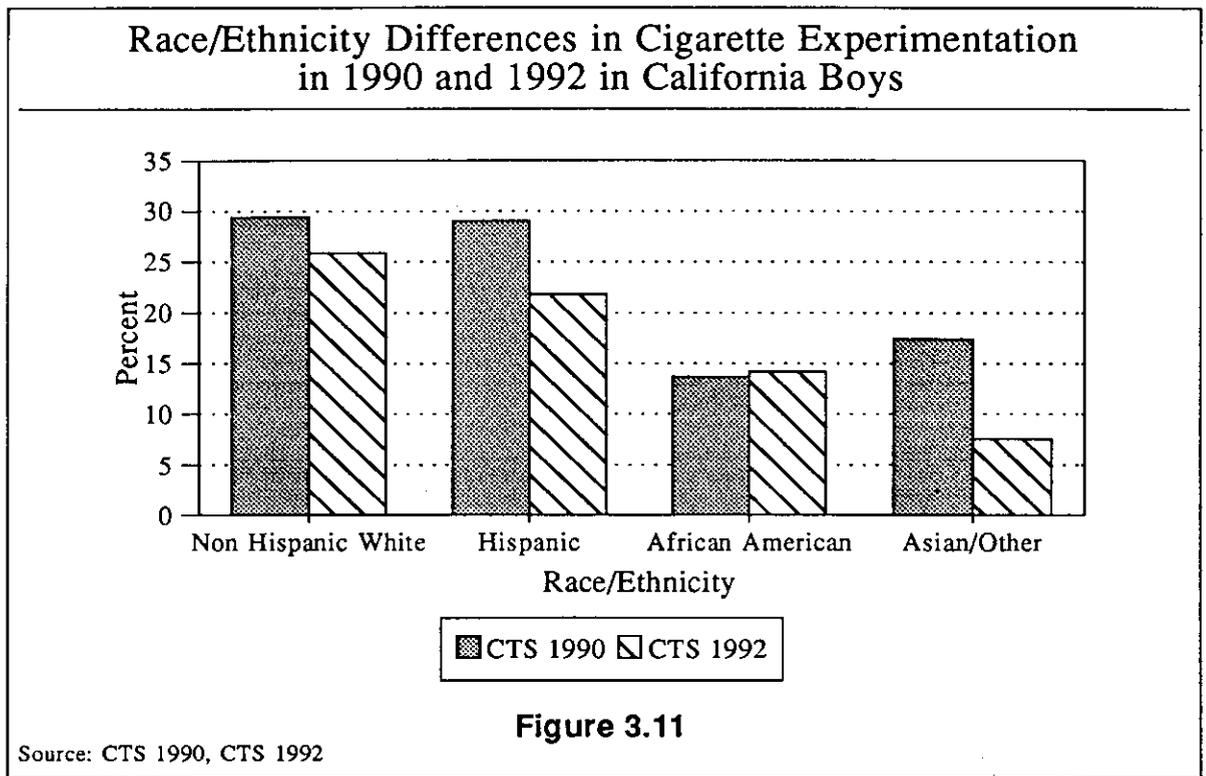
EXPERIMENTATION WITH CIGARETTE SMOKING AMONG ADOLESCENT BOYS

An experimenter was defined as anyone who had ever smoked a whole cigarette. Figure 3.10 presents the proportion of experimenters among adolescent boys in 1990 and 1992.



In 1990, 26.8% of boys had experimented with cigarettes. By 1992 this proportion had declined to 21.5%, a statistically significant decline of 5.3 percentage points. A decline in experimentation by boys occurred in all age groups. The highest decline was observed for 12- to 13-year-olds. In this group, the proportion of experimenters was 41% lower in 1992 than in 1990. The drop in experimentation rates of 12- to 13-year-olds was consistent with the decline in current smoking within this age group, as reported previously.

Figure 3.11 shows the percentage of experimenters among boys within different race/ethnic groups. In 1990, non-Hispanic white and Hispanic teenagers were most likely to experiment with cigarettes. Between 1990 and 1992, the largest decrease in experimentation (25%) was observed among Hispanics (29.0% to 21.8%). The decline in Asians could not be assessed due to the small Asian sample included in the 1992 survey. Experimentation among African Americans increased slightly.

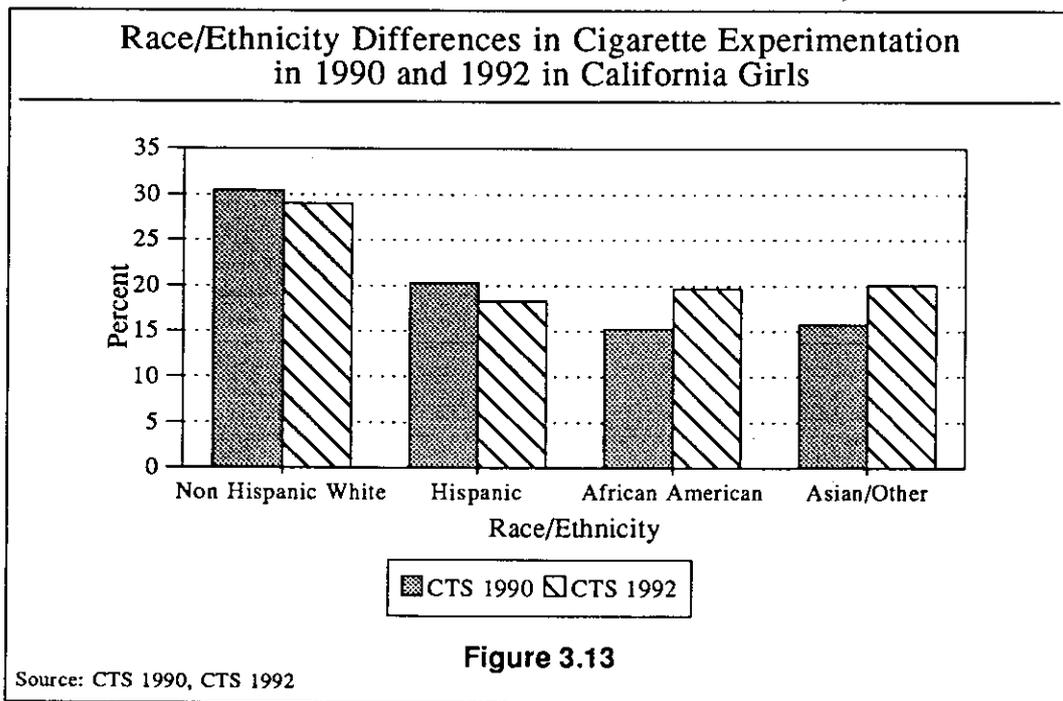
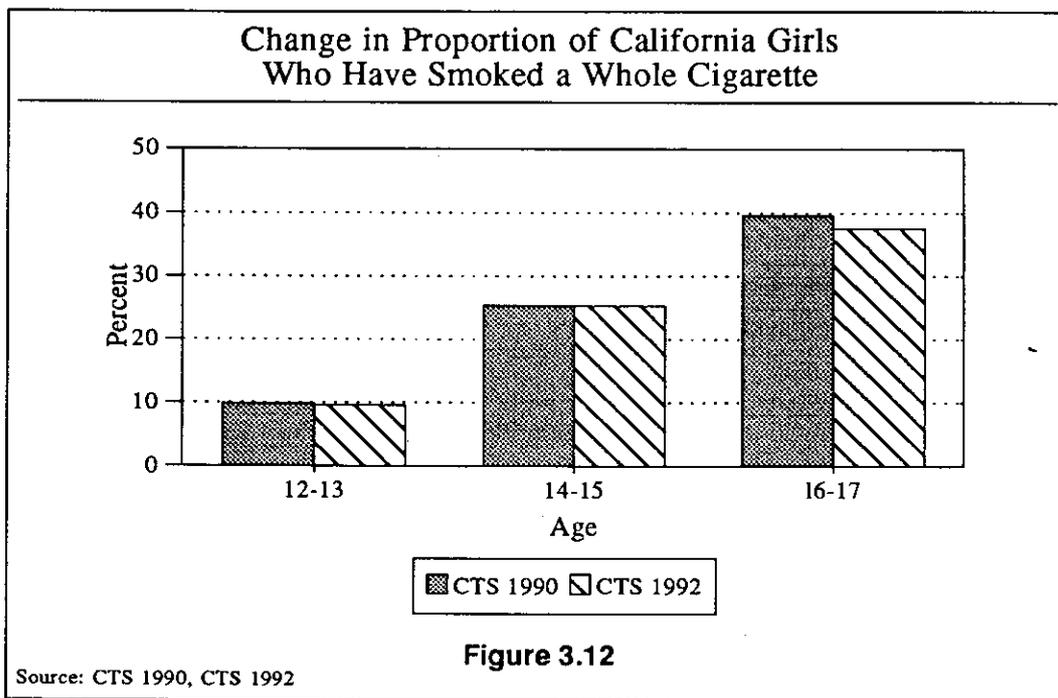


EXPERIMENTATION WITH CIGARETTE SMOKING AMONG ADOLESCENT GIRLS

Figure 3.12 shows the proportion of adolescent girls who had smoked a whole cigarette for 1990 and 1992. The decline in experimentation observed for boys was not evident among girls. Overall and within age groups, the level of experimentation among girls remained substantially the same.

A comparison of the experimentation rate among boys and girls in 1992 showed that experimentation among boys aged 14 or older resembled that of girls, due to a drop in experimentation by boys between 1990 and 1992. However, in the youngest age group, the experimentation rate among boys was approximately two thirds that of the rate in girls.

Experimentation by girls within different race/ethnic groups is presented in Figure 3.13. Slight, non-significant declines were noted in both non-Hispanic whites and Hispanics. Non-significant increases were observed among African American and Asian girls.



EXPERIMENTATION WITH SMOKELESS TOBACCO AMONG ADOLESCENTS

Figure 3.14 presents data on experimentation with smokeless tobacco (ever tried) for 1990 and 1992. During this period, the proportion of adolescent boys who reported having experimented with smokeless tobacco decreased significantly, from 15.2% in 1990 to 12.5% in 1992. This decrease was reflected in each age group, with the largest drop observed among boys aged 16-17 years. As noted previously, boys of this age were most likely to report current use of smokeless tobacco. The drop in the numbers of 16- to 17-year-olds who were experimenting with smokeless tobacco is therefore encouraging.

As in 1990, experimentation with smokeless tobacco was twice as frequent among non-Hispanic whites compared to Hispanics (17.6% vs 9.1%) and less frequent among African American boys (8.0%) and Asian boys (5.6%).

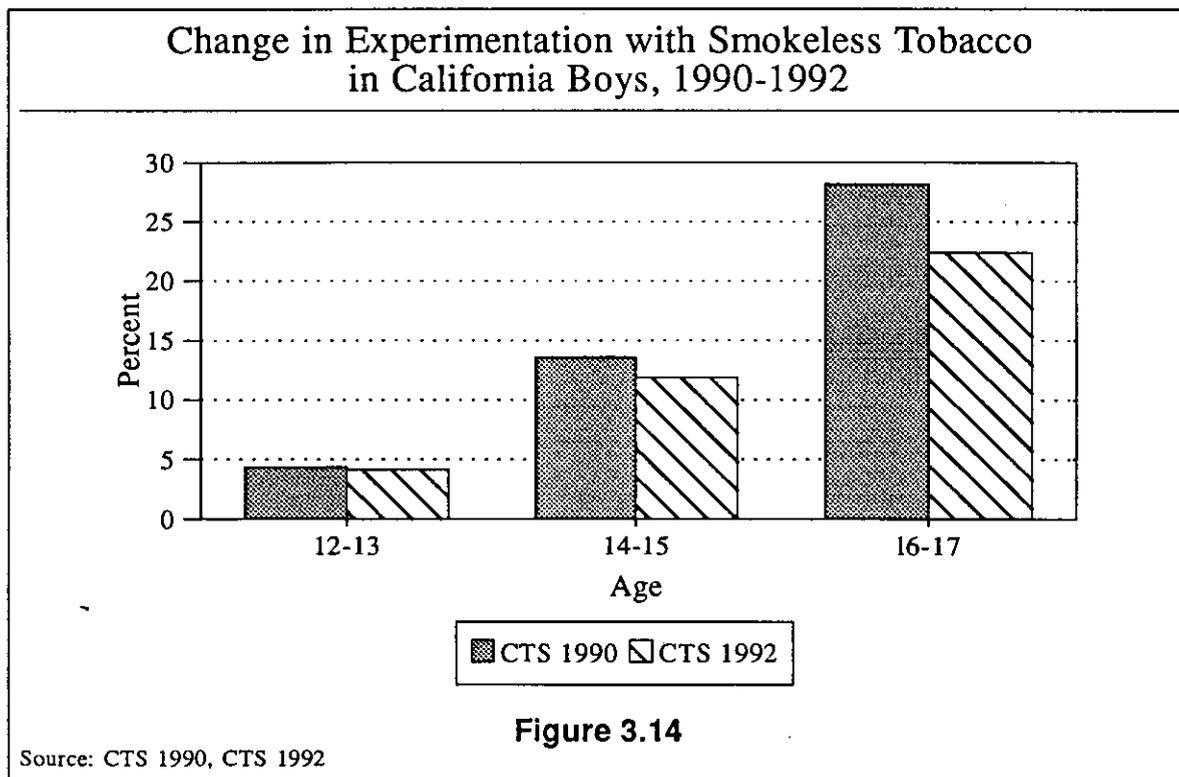


Figure 3.14

SUMMARY OF FINDINGS

1. The California Tobacco Control Program coincided with two periods during which consumption of tobacco in California declined at an accelerated rate. Consumption data suggest that one period of decline was related to the introduction of the California Tobacco Tax. However, this accelerated rate of decline disappeared 5 months after the imposition of the tax. The second period of rapid decline began in April 1990 and coincided with interventions funded by the Tobacco Tax Initiative. This period of rapid decline lasted 12 months.
2. According to data collected in the 1992 California Tobacco Survey, the decline in smoking prevalence among California adults is on target with the official Program Objective: the reduction of adult smoking prevalence to 6.5% by 1999. Prevalence has declined by 23.6% since 1988. Among adults over the age of 18 years, smoking prevalence in 1992 was 20.0% with males (22.8%) smoking more than females (17.4%).
3. The smoking prevalence of young adults (20-24 years) is also on target to achieve the objective set for this group: the reduction of regular smoking by age 20 to no more than 6.8% by 1999. Among young adults, women and the lowest educated seemed to be changing their smoking behavior the most. Among young men, there was no additional decline noticed that could be attributed to the Tobacco Tax Initiative.
4. The impact of the Tobacco Control Program on adolescents is less clear. Given the irregularity of smoking behavior during adolescence, a more sensitive measure than "smoking in the last month" is necessary to obtain a true picture of trends in smoking behavior among adolescents.
5. However, a decline observed in the percentage of current smokers and experimenters among 12- to 13-year-olds may herald an impact of the California interventions that will not be clearly identifiable with this smoking measure for a few years.

Chapter 4

**THE CLASSIFICATION OF SMOKING
BEHAVIOR**

INTRODUCTION

A surveillance system of cigarette smoking must first be able to estimate the prevalence of the behavior at a point in time. Cigarette smoking among the general adult population has typically followed a stable and highly consistent pattern that is characteristic of a drug of dependence.² In all national surveys in the United States, the current prevalence of smoking is ascertained by the question:

"Do you smoke now?"⁷

The overwhelming majority of adults who indicate that they smoke now also indicate that they have smoked 100 cigarettes.⁷ This latter criterion is used in the United States to define an individual who has been dependent on cigarettes at some time (the ever smoker).

As with other drugs of dependence, a physiological tolerance to nicotine is gradually built up before a stable pattern of tobacco usage is achieved. We label the period between first experimentation with cigarettes and the establishment of a stable pattern of usage as the smoking uptake period. Early studies of smoking uptake estimated the length of the smoking uptake period to be between 2 and 3 years.^{26,27} At present the process of becoming a regular smoker takes place almost entirely during the teenage years.^{7,8}

The Standard Measures of Smoking Behavior Among Teenagers

Studies of the smoking uptake process typically divide this period into a sequence of distinct behavioral stages based on regularity and frequency of smoking. According to this model, cigarette consumption increases consistently until the individual reaches a stable plateau of consumption.²⁸⁻³¹ Salber³² suggested that the period immediately after first experimentation serves as a learning stage in which the adolescent slowly develops a sense of the personal uses and pleasures of cigarette smoking, before accomplishing the transition to full-time smoking status.

Because the early uptake phase is characterized by intermittent smoking and low levels of consumption, investigators have conventionally used a recall measure to estimate the prevalence of adolescent smokers, most of whom may not smoke every day or even every week. Thus the two major measures of adolescent smoking prevalence are: a) any smoking in the 30 days prior to the survey; and b) any smoking in the week prior to the survey. Such measures do not provide us with a description of the adolescent's behavior at the current point in time, but only with the adolescent's behavior prior to the survey, with all the attendant limitations of recall bias. If the smoking uptake process is characterized as a gradual and orderly build-up of cigarette consumption, then the adolescent's behavior in the weeks prior to the survey is a valid indicator of where adolescents are positioned in the uptake process and their probable behavior in the future. However, some researchers have questioned whether the acquisition of a smoking habit

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is the result of a steady progression in consumption patterns.^{25,33} If smoking uptake is an erratic process in which adolescents swing between occasional high levels of consumption and extended periods of no consumption with some never smoking again, then reports of smoking in the last month may tell us little about an adolescent's current behavior or the probability of becoming an adult smoker.

A recent longitudinal study of smoking uptake in the United Kingdom supports this picture of how adolescents smoke.²⁰ A sample of 4,334 children (aged 11-15 years) was followed for 4 years with over 4,000 children surveyed annually. The study reported that the onset of smoking was seldom a single or discrete event, and that smoking behavior in this group was much more erratic than in older populations. Little evidence of any steady progression from smoking occasionally to smoking regularly was seen. Based on this evidence and the results from our own surveys, we suggest that for many adolescents smoking is an opportunistic behavior and teenagers are quite capable of smoking intensively at a party one night and not smoking again for a long period.

The Importance of Measuring Susceptibility to Smoke

The smoking uptake process is monitored so that public health interventions may be targeted to minimize the proportion of experimenters who will later become dependent smokers. It can be argued, however, that interventions aimed at preventing smoking must focus on adolescents before they try their first cigarette. Leventhal³⁴ reasoned that a predisposition to smoke is cultivated up to two years prior to first experimentation, based on evidence that a child's sense of becoming a smoker at some time in the future was a good predictor of that child's smoking status during adolescence. The predictiveness of an "intention to smoke" expressed by the child has been replicated in many studies; although consistent, the correlation between intention and later dependent smoking is not high.^{20,35,36}

To improve measures that indicate a predisposition to smoke, we suggest that a predisposition might better be conceptualized as a "susceptibility" to smoking. It is not clear that teenagers rationally form decisions to smoke. At the time of their first cigarette, many teenagers may respond to an offer of a cigarette with the rhetorical "why not?" suggesting that the teenager has not thought consciously prior to that time about whether she or he wants to be a smoker. That is to say, the move to smoking may result from the absence of a determined decision not to smoke, rather than from a specific resolve to become a smoker. Again, the British study²⁰ of smoking is suggestive here, in that the proportion of adolescents who said they wanted to become a smoker was considerably lower than the proportion who were categorized as smokers in later years.

The concept of susceptibility thus reflects whether adolescents have consciously determined not to smoke or whether they are open to the possibility of smoking another cigarette or their first cigarette. The CTS of 1990 and 1992 used a series of questions rather than a single item in order to probe fully the strength of adolescent intentions regarding their future smoking behavior.

The Questions Used to Define Smoking Status on the 1992 CTS

We compare three measures of smoking status across age in Californians surveyed in 1992: daily smoking, smoked in the last month, and susceptible to smoke in the future. The definitions for each are as follows:

- a) A *daily smoker* was defined as anyone who had smoked on 25 or more days in the past month.
- b) A *current adolescent smoker* was defined as anyone who reported smoking one or more cigarettes in the last month. This measure encompassed both daily and non-daily smokers.
- c) Our concept of *susceptibility to smoke* is the absence of a determined decision not to smoke in the future. It includes both daily and monthly smokers. We assessed susceptibility with the following set of questions:

- Respondents who indicated that they had never even puffed on a cigarette before were asked whether they thought that they would try a cigarette soon. A positive response to this item was sufficient for that person to be labeled as susceptible to smoke. Participants who responded negatively as to whether they would try a cigarette soon or who reported having puffed on a cigarette were asked whether they would accept a cigarette from a best friend if it were offered. Any response other than "definitely not" was sufficient for that individual to be labeled as susceptible to smoke.

- Anyone who had smoked a whole cigarette was asked whether they thought that they would smoke a cigarette at any time during the next year. Any response other than "definitely not" was sufficient for the individual to be labeled as susceptible to smoking. All those who had puffed on a cigarette but were not classified as susceptible to smoke on the best friend question were queried as to whether they would smoke a cigarette at any time in the next year with the same classification decisions applied.

- Any person who had smoked in the last month was automatically defined as susceptible to smoking.

An important difference between the 1990 and the 1992 questionnaires does not allow the measure of susceptibility to be compared over the two surveys. While the pattern of questions remained exactly the same, the wording of the question on future smoking changed. The 1990 youth questionnaire asked the following question:

"Do you think that you will be smoking cigarettes one year from now?"

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During the initial analysis of this question, we felt that it was too broad to reflect susceptibility properly. The question was rephrased on the 1992 survey to read:

"At any time during the next year do you think that you will smoke a cigarette?"

As a result, we expected that the proportion of the population classified as susceptible to smoking would be higher with the 1992 measure and that this result would more accurately represent the proportion of the adolescent population who were susceptible to smoking.

To estimate the percentage of adults who were susceptible to smoking, never smokers were asked the questions on trying a cigarette soon and future smoking as outlined above. In addition, all former smokers who had smoked in the past 10 years were asked:

"Do you think that it is likely or unlikely that you will return to smoking in the next 12 months?"

followed by the question:

"Do you think that there is any possible situation in which you might start smoking again?"

Former smokers were classified as susceptible to resuming their smoking habit unless they indicated that they were unlikely to return to smoking and also indicated that there was no situation in which they might start again.

MEASURES OF SMOKING BY AGE

One way of assessing the usefulness of categorizations of adolescent smoking behavior is to examine the performance of these measures across the life cycle. Ideally a measure of adolescent smoking status should bear some relation to the percentage of adolescents who will become dependent in adult life. The following figures compare the above three measures of smoking behavior across age for males (Figure 4.1) and females (Figure 4.2) in California.

Smoking in Males

Figure 4.1 presents the measures of daily smoking, smoking in the last month, and smoking susceptibility by age for the California male population.

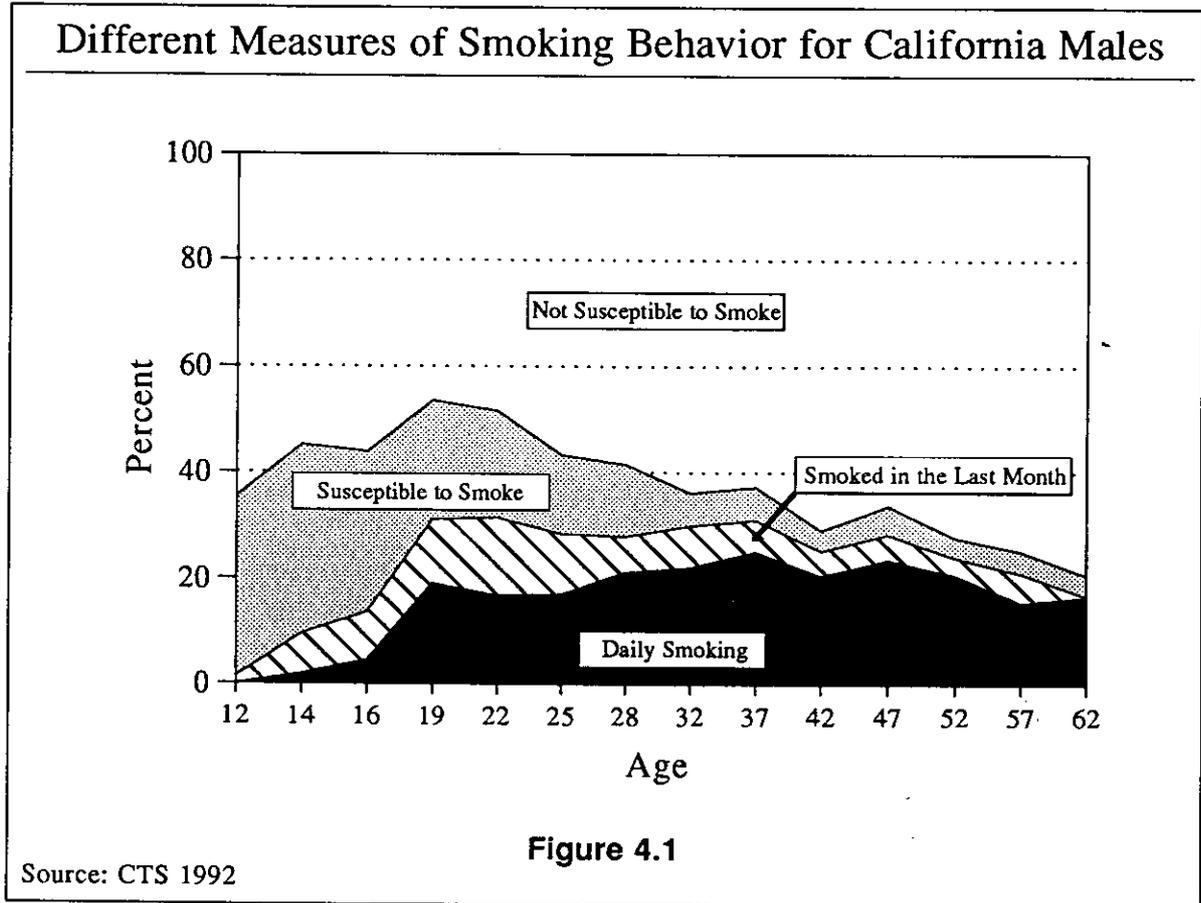


Figure 4.1

The prevalence of daily smoking behavior increases from zero in boys 12 years of age to 20% for those aged 19 years. Daily smoking prevalence is relatively constant through age 30 years and the first clear indication of decline occurs after age 50 years. Previous studies of smoking behavior across age have demonstrated that the reduction in prevalence after the age of 45 years is a quitting effect.^{4,37} For our purposes, it is important to note that the percentage of daily smokers among adolescents (12-18 years) in no way reflects the size of the eventual adult smoking population.

Reported smoking in the last month rises from around 2% in 12-year-olds to 31% by age 25 years after which it levels off, remaining relatively constant until the early forties when it starts to decline. Since the percentage of the population who report smoking in the last month is for every group up to age 40 years at least 5 percentage points higher than the proportion who report smoking daily, it would appear that non-daily smoking continues to be prevalent even among adults.³⁸ Although a measure of last month smoking that includes both daily and non-daily smokers captures more of the adolescent population, we still see a major disjunction between the low numbers of 12- to 15-year-olds who report smoking in the last month, and the percentage of older age groups who become daily smokers in adult life.

Almost 35% of 12-year-olds were classified as susceptible to smoke, a proportion that is higher than the proportion of monthly or daily smokers at any older age. This proportion increased to a peak of 54% at age 20 years after which it declined toward the monthly smoking rate. The high percentage of susceptible adolescents obviously overestimates the percentage of adolescents who become adult regular smokers. That is to say, not everyone who is susceptible to smoking will become a daily smoker. Nonetheless, a measure of susceptibility would appear to be better positioned to include those adolescents who will become daily smokers than either of the other two measures which, during adolescence, gravely underestimate the eventual percentage of daily smokers in the population.

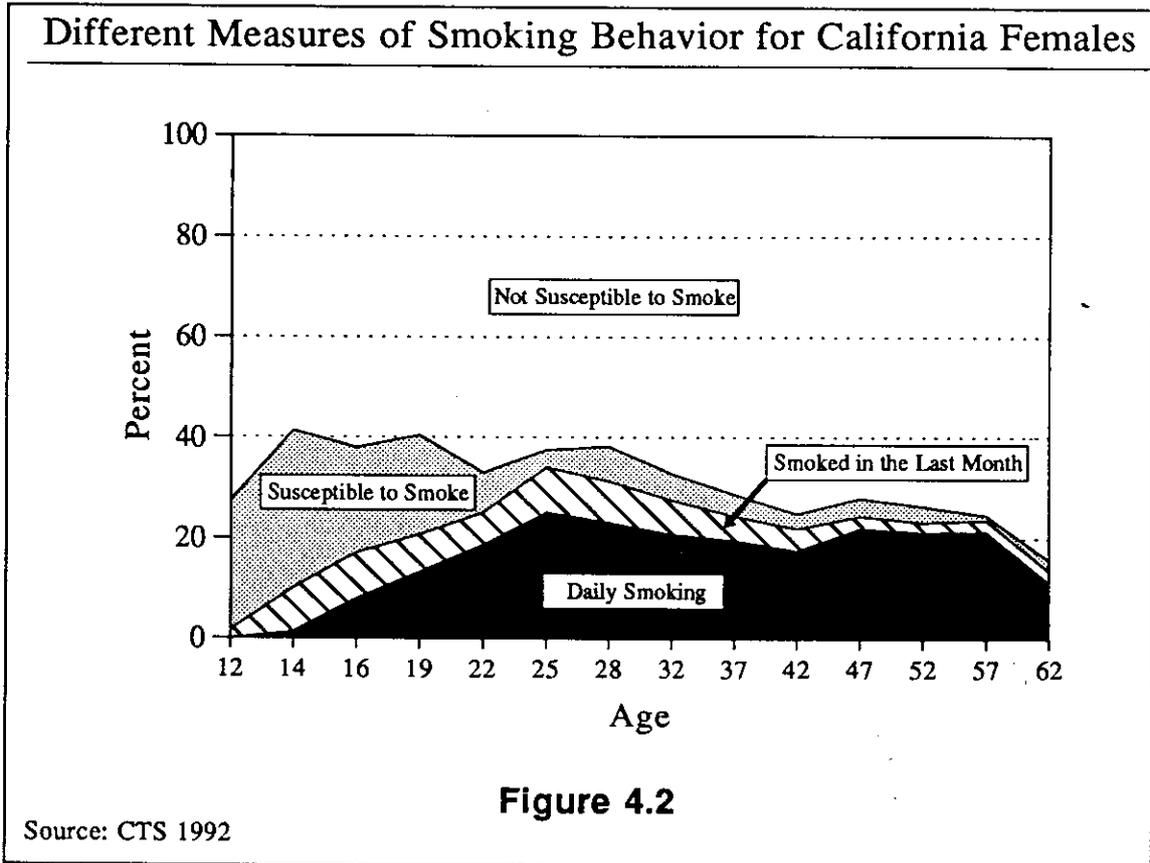
In Chapter 5 we demonstrate that this susceptibility has concurrent validity with the other measures of smoking behavior among adolescents; that is, the same factors that predict who smoked in the last month also predict who is susceptible to smoke. However, the ultimate test of validity is whether susceptibility predicts future behavior and this can only be addressed with a study that follows the same adolescents over time.

Smoking in Females

The pattern of relationships between daily smoking, last month smoking, and smoking susceptibility across age is similar for California women (Figure 4.2).

Daily smoking is non-existent among 12-year-olds and rises to a peak of around 25% by age 25 years. Again, there are at least 5% more monthly smokers than daily smokers for each age from about 14 years to the early forties.

Twenty-eight percent of girls aged 12 and 13 years are classified as susceptible to start smoking. Approximately 40% of girls aged 14 through 20 years are susceptible to smoking. Once again, a measure of susceptibility produces a conservative overestimate of the proportion of adolescents who will become daily smokers in adulthood.



THE RELATIONSHIP OF EXPERIMENTATION TO SUSCEPTIBILITY ACROSS AGE

We propose to use the previously discussed susceptibility measure as the key dependent variable in an analysis of the influences that place adolescents at risk for smoking. In general, antismoking prevention efforts have focused on preventing experimentation with cigarettes. By contrast, this report suggests that public health efforts should be directed toward children who are susceptible to smoking, whether or not they have experimented with smoking. Accordingly, it is important to address the issue of the relationship between experimentation (a measure of past experience with cigarettes) and susceptibility (a current status measure). An experimenter was defined as anyone who had ever smoked a whole cigarette, but had not yet smoked 100 cigarettes.

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Figure 4.3 presents the experimentation experience of those who are susceptible to smoke by age, based on data from the 1992 CTS. Approximately 14% of 12-year-olds who are susceptible to smoking report having smoked a whole cigarette. This proportion increases dramatically across age such that by 19 years 90% of those who are susceptible to smoke have already experimented with cigarettes. These data suggest that the susceptibility measure includes adolescents who may smoke in the future but have not yet tried a cigarette. Thus a measure of susceptibility fulfills one of the goals stated in this report: to identify a target group for preventive interventions prior to experimentation with smoking.

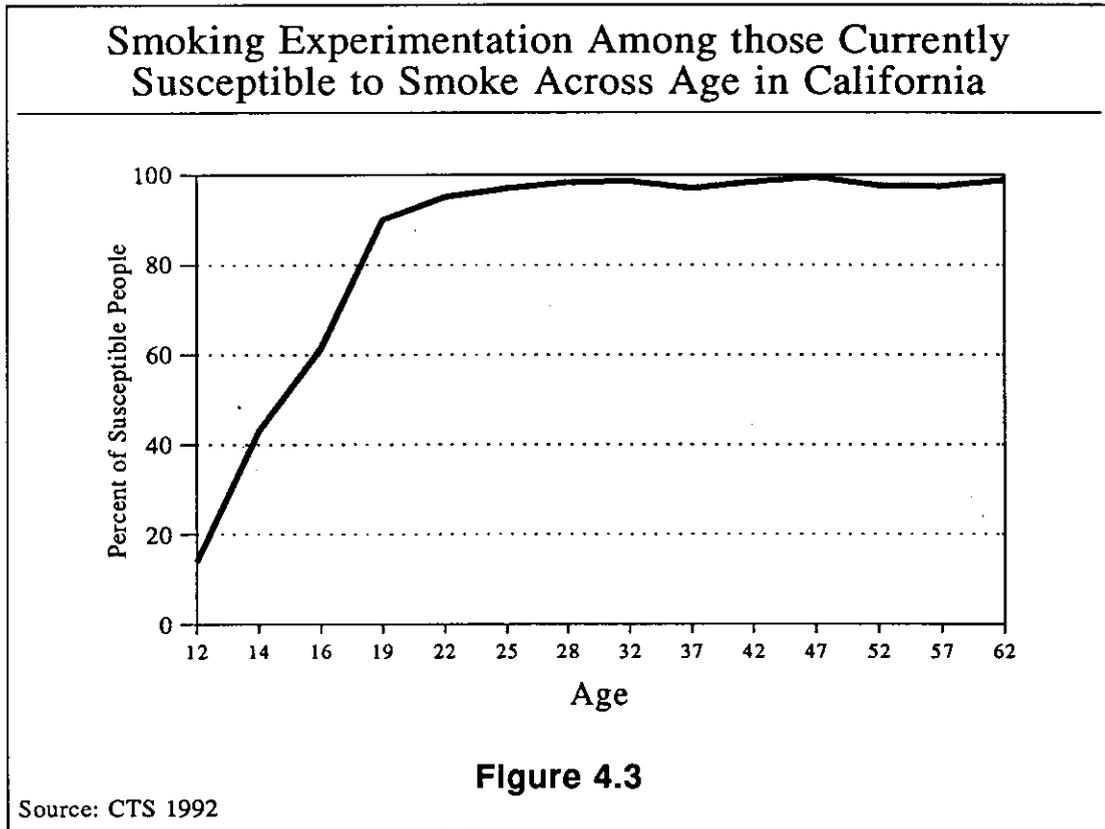


Figure 4.4 shows the experimentation history of those who are classified as not susceptible to smoke. As this figure demonstrates, a large proportion of the population have experimented with cigarettes but were not susceptible to have another at the time of the 1992 survey. Even among 12-year-olds, approximately 5% have smoked a whole cigarette but are currently certain that they will not smoke again. This proportion increases through age 25 years, by which time over 54% of those who are no longer susceptible to smoke have smoked a whole cigarette. Based on these findings we may speculate that some adolescents smoke a whole cigarette for the life experience even though they are not at high risk to proceed on to become adult smokers. Differentiating those adolescents who are at risk of continuing to smoke after experimentation is clearly an important issue for improving the effectiveness of public health interventions. This measure of susceptibility holds considerable promise of meeting this need, but further validity studies are required.

Smoking Experimentation Among Those Currently Not Susceptible to Smoke Across Age in California

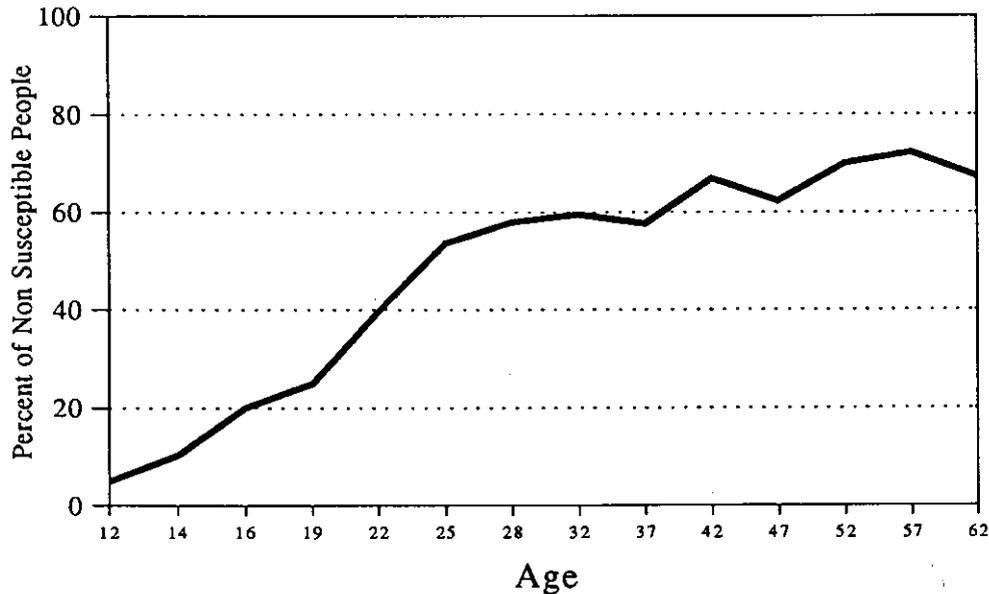


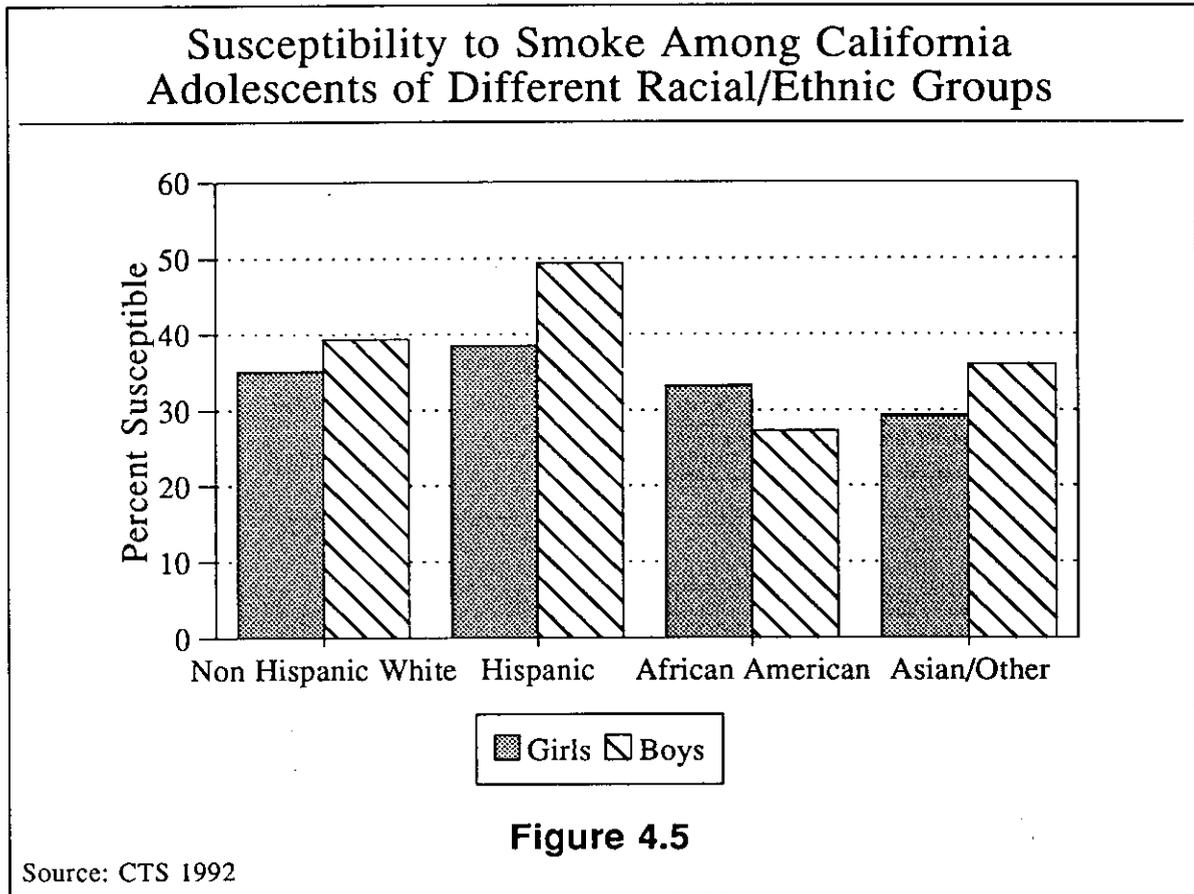
Figure 4.4

Source: CTS 1992

Race/Ethnicity Differences in Susceptibility to Smoke

The 1992 survey was not designed to provide precise estimates of behavior for the different race/ethnic subgroups. Consequently, the sample sizes for these subgroups were small (see Chapter 2). However, preliminary estimates of the overall proportion who are susceptible to smoke within each race/ethnic group can be made from this survey.

Figure 4.5 presents information on susceptibility to smoke by race/ethnicity for each gender. With the exception of African Americans, boys tended to be more frequently classified as susceptible than girls across each racial/ethnic group. The highest proportion of adolescents susceptible to smoking was observed for Hispanic boys at 49%, a figure 10 percentage points higher than the proportion of non-Hispanic white boys who were susceptible to smoking. The only two groups in which the proportion of adolescents susceptible to smoking was less than 30% were African American boys (27.3%) and Asian/other girls (29.3%).



The very low susceptibility observed for African American boys confirms previous reports that smoking prevalence among young African Americans is decreasing rapidly and that this decrease is attributable to a decline in initiation rates rather than a rise in quit-smoking rates.^{3,4,7,39}

The high rate of susceptibility among Hispanic adolescents of both genders suggests that increasing attention must be paid to smoking prevention in this group.

SUMMARY OF FINDINGS

1. The process of smoking uptake occurs during the teenage years. By age 17, some 10% of adolescents have become daily smokers. Evidence suggests, however, that adolescents may be predisposed to smoke several years before they begin to experiment with cigarettes.
2. The relatively high proportion of older adolescents who are already smoking daily suggests the importance of reaching adolescents before they acquire a regular cigarette habit. We propose a measure of "susceptibility to smoke" to identify those adolescents who are already predisposed to try cigarettes or who will probably continue to smoke

after early experimentation.

3. In 1992, approximately 30% of 12-year-olds were susceptible to smoking, although only 2% reported that they had smoked in the last month. The high level of smoking susceptibility among the youngest adolescents suggests that this group must be a public health priority in prevention programs.
4. Susceptibility to smoke among adolescents varied by race/ethnicity and gender. The highest rate of susceptibility was observed among Hispanic boys, and the lowest rate of susceptibility was observed for African-American boys. Across race/ethnic groups, approximately one third of girls were susceptible to smoke. The percentage of boys susceptible to smoke was slightly higher.

Chapter 5

**INFLUENCES ON SUSCEPTIBILITY TO
SMOKE IN ADOLESCENTS**

INTRODUCTION

In the previous chapter, we introduced a measure that identified people as susceptible to begin smoking from their earliest adolescent years. Almost nobody believes that adolescents are born with an innate susceptibility to smoke. In this report, we use the information collected from California adolescents to improve our understanding of how and why individuals become susceptible to smoking at such a young age. The overall goal of this analysis is to provide guidance for the development of interventions to prevent California teens from smoking.

Numerous investigations of teenage smoking behavior over the past 30 years have produced a wide array of factors thought to influence teenagers to start smoking.^{29,40-45} The analysis presented here proceeds from the theory that dominates the field of smoking initiation research and is at the basis of most current interventions: social learning theory.

INFLUENCES ON BEHAVIOR

Social learning theory^{46,47} posits that the individual's susceptibility to perform a particular behavior is based on expectations of the costs and benefits of performance. These expectations are influenced by three types of factors that interact with each other in complex ways:

- a) *Personal influences*, such as emotional stability and personal goals, to which the behavior might seem related.
- b) *Environmental influences*, such as who else performs the behavior, societal norms and rules relating to the behavior, and how the behavior is promoted in the community.
- c) *Behavioral influences*, such as past experience with the behavior. In the case of cigarette smoking, a key attribute of the behavior is the psychoactive effect of the drug nicotine, which can be obtained at low social or performance cost to the individual. An example of performance cost can be illustrated by comparing alcohol use and smoking: alcohol ingestion quickly inhibits a person's ability to perform tasks; cigarette smoking does not.

Figure 5.1 presents a schematic representation of the different influences as they are implicated in the decision to smoke. This report focuses on the influences on teenagers that make them susceptible to smoke another cigarette, irrespective of whether it is their first cigarette or not. Social learning theory predicts that this susceptibility will be mediated primarily by the individual's expectations of the consequences of smoking. However, cognitions related to this expectation are subject to a variety of environmental influences including exposure to other smokers, community norms and the social network, how smoking is treated in the school environment, and the impact of tobacco advertising in promoting cigarette use.

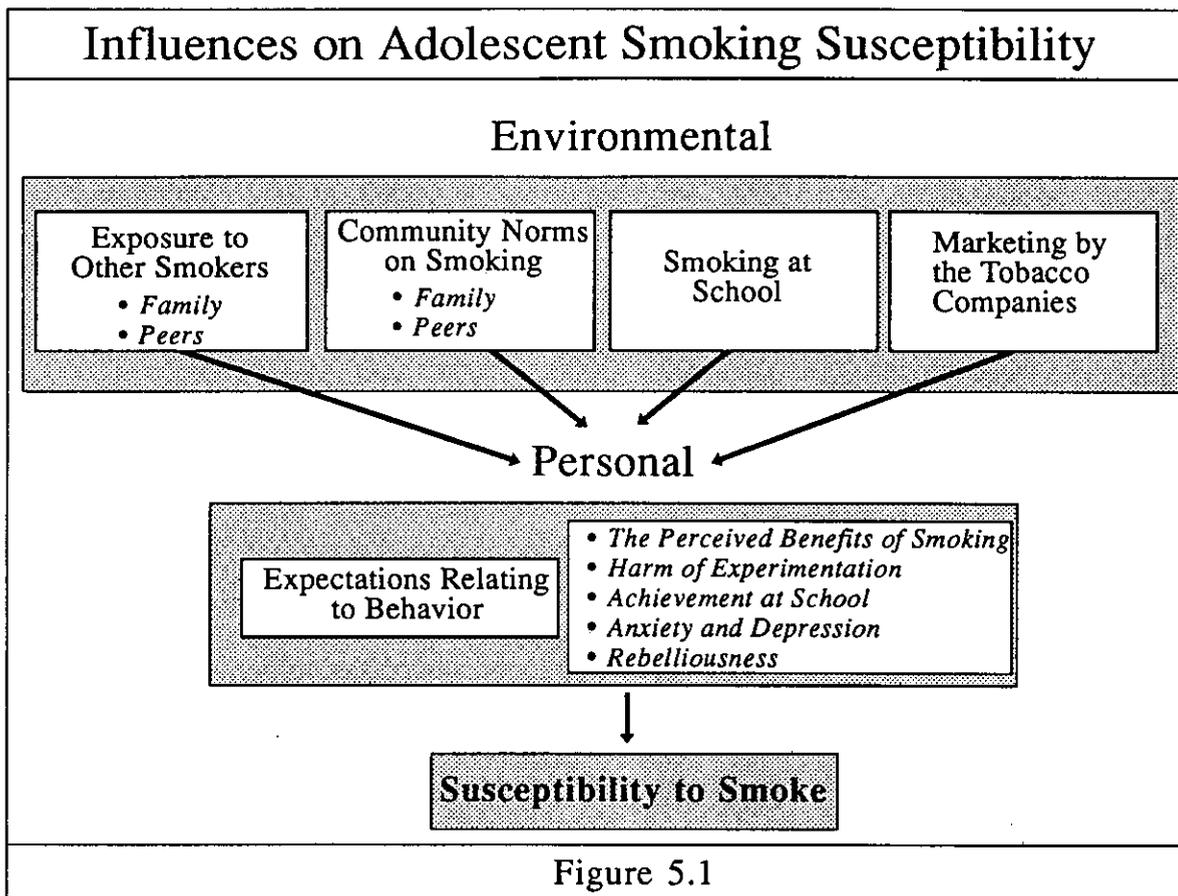


Figure 5.1

Tables 5.1 and 5.2 include a column that presents the overall percentages of adolescents in 1990 and 1992 who indicated some level of socioenvironmental or personal influence related to smoking. These tables will be referred to throughout the following sections, as we report the results for personal and socioenvironmental factors separately, and go on to indicate the overall impact of these influences on adolescent smoking behavior. The questions used to measure each factor are contained in Appendix A.

Personal influences

The final decision to accept a cigarette or to start smoking is a personal one made by the individual. While it is suggested that this decision is primarily mediated by an adolescent's expectations of the advantages or disadvantages to smoking, other less immediate aspects of the adolescent's personal situation may enhance or distort their perceptions of smoking.

Developmentally, adolescence has long been acknowledged as a particularly stressful and confusing time.⁴⁸ During this period, individuals begin to take charge of their lives and strive for autonomy. In many cases they lack the cognitive and social resources to easily effect this transition. The conflict between personal goals and means often causes anxiety, depression, and

Influences on Susceptibility to Smoke in Adolescents

Table 5.1
Odds Ratios from Logistic Regression Analyses Predicting Susceptibility to Smoking and Smoking in the Last Month from the 1990 California Tobacco Survey

		Proportion in Subgroup (%)	Adjusted OR* of Susceptibility	Adjusted OR* of Smoking in the Last Month
PERSONAL INFLUENCE MEASURES				
Number of Perceived Benefits to Smoking	None	35	----	----
	One	25	1.44	1.20
	Two or Three	30	1.93	2.44
	Four or More	10	2.33	3.05
Harm of Experimentation	Some	57	----	----
	None	43	1.91	2.44
School Performance	Better than Average	55	----	----
	Average and Below	45	1.28	1.85
Liking for School	A Lot	39	----	----
	Some, Very Little, or Not at All	61	1.49	1.40
Depression	Below Median	49	----	----
	Above Median	51	1.26	1.02
Rebelliousness	None	38	----	----
	Some	62	1.40	1.54
ENVIRONMENTAL INFLUENCE MEASURES				
Existence of Peer Smokers	None	18	----	----
	Acquaintances and Friends	45	1.24	1.41
	Best Friend of One Sex	23	1.89	5.79
	Best Friends of Both Sexes	14	2.93	13.01
Existence of Familial Smokers	None	24	----	----
	Some	76	1.24	1.82
Norms	None	39	----	----
	One	36	1.40	1.58
	Two or More	25	1.94	1.68

* OR=Odds Ratio

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Table 5.2
Odds Ratios from Logistic Regression Analyses Predicting Susceptibility to Smoking and Smoking in the Last Month from the 1992 California Tobacco Survey

		Proportion in Subgroup (%)	Adjusted OR* of Susceptibility	Adjusted OR* of Smoking in the Last Month
PERSONAL INFLUENCE MEASURES				
Number of Perceived Benefits to Smoking	None	35	----	----
	One	23	1.64	1.31
	Two or Three	30	2.03	2.60
	Four or More	12	2.04	1.82
Harm of Experimentation	Some	55	----	----
	None	45	2.67	3.74
School Performance	Better than Average	54	----	----
	Average and Below	46	1.27	1.92
Liking for School	A Lot	36	----	----
	Some, Very Little, or Not at All	64	1.45	1.65
Depression	Below Median	50	----	----
	Above Median	50	1.19	1.89
Rebelliousness	None	20	----	----
	Some	80	1.42	1.36
ENVIRONMENTAL INFLUENCE MEASURES				
Existence of Peer Smokers	None	19	----	-----
	Acquaintances and Friends	40	1.15	1.01
	Best Friend of One Sex	26	2.39	7.40
	Best Friends of Both Sexes	15	4.81	20.36
Existence of Familial Smokers	None	27	----	----
	Some	73	1.33	1.25
Norms	None	28	----	----
	One	53	1.05	1.39
	Two or More	19	1.88	2.45

* OR=Odds Ratio

a move to behaviors categorized as "adult behaviors" that may help adolescents to sustain an illusion of maturity.⁴⁹ Since smoking is illegal for adolescents, it falls into this category.

To examine personal factors related to smoking initiation, we looked first at adolescents' cognitive appraisal of the costs and benefits of smoking. We then included a number of other questions to look for indicators of life stresses that may encourage adolescents to see a utility in smoking.

1) The Perceived Benefits of Smoking

Both the 1990 and the 1992 CTS elicited information on items that have commonly been reported as benefits of smoking by adolescents, including the perception that smoking is useful in social settings, that it helps people relax, handle stress, overcome boredom, and control weight (see APPENDIX A, TABLE A-1).

In 1990 and 1992, almost two thirds of adolescents perceived some benefit to smoking. In 1992, 12% of adolescents perceived four or more benefits to smoking, and 35% attributed no benefit to smoking. We observed no significant reduction between 1990 and 1992 in the proportion of adolescents affirming the benefits of smoking.

2) Safety of experimentation

To identify expectations of the disadvantages of smoking, three questions asked adolescents about the safety of experimenting with cigarettes. In both survey years, more than 40% of adolescents believed there was no harm in experimenting with cigarettes (see APPENDIX A, TABLE A-2).

3) Achievement at school

Previous studies have shown that adolescents who feel they are performing inadequately at school are more likely to turn to smoking.⁷ Lack of success in conventional roles may encourage adolescents to find smoking more attractive, perhaps as a behavior signaling deliberate nonconformity.⁵⁰ The CTS asked adolescents to rate their performance in school, with possible responses ranging from "very much above average" to "below average." In both the 1990 and the 1992 surveys, approximately 45% of adolescents indicated that they were average or below.

We also asked adolescents how much they liked school in general. In the 1990 survey, 39% of adolescents indicated that they liked school a lot. This proportion was slightly lower in the 1992 survey at 36%.

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4) *Anxiety and Depression*

Levels of anxiety and depression in adolescents were measured using six items (see APPENDIX A, TABLE A-3) that have previously been scaled and found to be valid and reliable for use among adolescents.⁵¹ This scale elicited information about sleeping patterns, general fatigue, feelings of hopelessness and sadness, and episodes of worry, nervousness, or tension.

In 1990, 51% of adolescents surveyed were in the top half of the depression distribution. No significant change was observed between 1990 and 1992 in the proportion of adolescents reporting depression symptoms.

5) *Rebelliousness*

Adolescence is a time of frequent conflict with parents and other authority figures. As suggested previously, the experience or anticipation of failure in conventional roles may prompt adolescents to reject parental and community norms for accepted behavior. The gravitation towards rebellious behavior often compensates adolescents by reinforcing their position within peer groups. Cigarette smoking may be viewed by some teens as a moderately deviant behavior through which to improve their status in the peer group.

In 1990 two items assessed propensity for rebellion among adolescents. Further items were added to the 1992 survey to create a more comprehensive measure of rebellious behavior and attitudes in adolescence. Items included questions on arguments with the family, willingness to lie to authorities to help friends, involvement in physical fights, and preference for actions that are slightly risky or dangerous (see APPENDIX A, TABLE A-4). The reliability index⁵² for this scale was quite high (Cronbach's $\alpha = .66$).

In 1990, 38% of adolescents were classified as not at all rebellious. This proportion dropped to 20% in 1992 based on the full scale of rebelliousness.

ENVIRONMENTAL INFLUENCES

While the final decision of whether to accept a cigarette is a personal one reflecting individual expectations, the information required to form these expectations is likely to come from the social environment. Moreover, the opportunity to smoke the first cigarette is often situationally determined.⁵³ In this report, we address the following environmental influences:

- a) Exposure to other smokers clearly gives the individual the chance to assess the immediate consequences of smoking. Acquaintance with smokers may also provide the opportunity (i.e., a free cigarette) to experiment with smoking.
- b) The impact of the school on smoking is a function both of policies restricting the behavior and the content of the health education classes offered. Smoking

Influences on Susceptibility to Smoke in Adolescents

restrictions at school and in public places aim to eliminate easy access to cigarettes. Health education classes at school are a major opportunity for people to learn the not-so-obvious negative consequences of smoking.

- c) Norms are the unwritten rules by which people communicate how acceptable a behavior is within a community or group and the likely social consequences that will follow from performance. The strength of the norm varies with the behavior. Two important sources of norms for adolescents are the family and the peer network.
- d) Cigarette advertising can influence a teenager's expectations of the advantages of smoking. Successful marketing of any product will involve the invention or promotion of particular client needs that the product is then said to serve. Like other products, cigarettes are advertised as possessing certain utilities that may come to affect the individual's assessment of the costs and benefits of smoking.

Parental and Peer Smoking

The opportunity to observe others perform a behavior and to see the consequences that follow is a powerful determinant of the expectations formed by the individual. One of the strongest and most consistent findings in the smoking initiation literature is that teenagers who are exposed to smokers in the family or among peers are more likely to smoke themselves than teenagers who are unexposed.^{28,29,42}

In both the 1990 and the 1992 CTS, adolescents were asked to specify any member of the household who smoked and any relative living outside the household who smoked. Approximately one quarter of adolescents on both the 1990 and the 1992 surveys indicated that they had no smokers in their family network (24% and 27%, respectively).

To measure exposure to smoking among peers, adolescents were asked to indicate the number of their best male and best female friends who smoked. This was followed with two questions on acquaintances in which one response category was "don't have friends who smoke":

"How many people do you know who are about your age who smoke cigarettes?"

and

"Do any of your friends who smoke say that they should quit smoking?"

In both surveys, just under 20% of adolescents reported that they had no smokers among their peer network. Approximately 40% in both surveys had a best friend who was a smoker (37% in 1990 and 41% in 1992).

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The Role of the School

Schools are one of the more important socializing forces in the life of the adolescent. Formal education is available to communicate the specific dangers of starting to smoke. Schools also impart knowledge of acceptable and prohibited behaviors informally. For example, students may learn of the norms governing smoking by observing whether smoking is banned in the school and the extent to which other students comply with this ban.

The CTS asked adolescents whether they attended school and whether they recalled taking a health class that addressed the smoking issue. Adolescents were asked whether their school banned student smoking and if so what proportion of students complied with this rule. We also asked whether teachers at school smoked. In the 1990 survey only, all non senior students were asked what proportion of seniors in their school they thought smoked. These data were used to determine whether or not smokefree schools were associated with a reduction in the susceptibility to smoke. The findings on these questions about school are presented in detail in Chapter 8.

Norms

The normative codes of conduct are established particularly strongly by the family and the peer networks. Adolescence has been characterized as a period in which individuals begin to favor the norms of their peers over the norms of their parents, although parental norms may remain important for some behaviors.^{54,55} These often unspoken norms may be conceptualized as one of the benefits or costs of smoking perceived by the adolescent. For example, the expectation that starting to smoke will receive strong negative feedback from significant others may constitute one of the "disadvantages" of smoking that adolescents take into account when deciding whether to smoke. We envisaged three sets of normative influence that would be related to smoking susceptibility: **parental norms, general peer norms, and the norms of adolescents' best friends.**

Parental norms were ascertained in the 1990 survey by the question:

"When I'm older my parents won't mind if I smoke."

In 1992, an additional question was asked:

"If you lit up a cigarette tomorrow in front of your parents, how do you think that they would react?"

General peer norms were assessed with the question:

"Do you think people your age care about staying off cigarettes?"

Two questions investigated the perceived norms of best friends:

- 1) *"How do you think that your best friends would feel about you smoking one or more packs of cigarettes a day?"*
- 2) *"How do you think that your best friends would feel if you used chewing tobacco and snuff regularly?"*

A further series of questions on the 1990 survey analyzed the normative consensus among adolescents about the relative importance of not smoking compared to avoiding other health hazardous behaviors. Adolescents were asked which of several health behaviors they thought people their own age cared about. Items included weight gain for boys and girls separately, avoiding drugs, marijuana and cigarettes, drinking and driving, staying fit, not getting drunk while drinking, wearing seat belts, and eating healthy food. These data are presented in detail in Chapter 9.

Tobacco Advertising

We also investigated tobacco advertising as an environmental influence on smoking susceptibility. In the early 1970s, public health professionals were instrumental in obtaining a legislative ban of tobacco advertising on all electronic media. By this measure, they aimed to limit the pervasiveness of tobacco advertising which, before this period, had played a major role in television sponsorship. At the time, banning tobacco advertising on television and radio was considered sufficient to protect children from exposure to messages about smoking.

However, recent reports indicate that through the creative use of billboard advertising and other devices, the tobacco industry has succeeded in achieving high levels of penetration even in the very young. In December 1991, evidence emerged that among 6-year-old children the Joe Camel figure used in Camel cigarette advertising was recognized as often as the Mickey Mouse logo used by the Disney Channel.⁵⁶

In the 1992 survey, both adult and adolescent respondents were asked which brands they recalled as advertised and which advertisement was their favorite. All those who recalled any tobacco advertising were asked what benefits of cigarettes they thought that the advertisements promoted. These data are considered in depth in Chapter 10.

SOCIAL LEARNING THEORY AND SUSCEPTIBILITY: TESTING THIS RELATIONSHIP EMPIRICALLY

It has been said that there is nothing as practical as a good theory. For our purposes, the value of social learning theory lies in its ability to provide an explanation of why adolescents take up smoking and how they might best be prevented from doing so. This section examines whether the personal and socioenvironmental influences highlighted by social learning theory enable us to predict which adolescents are susceptible to smoking.

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It is important to note here that both the 1990 and 1992 surveys are cross-sectional surveys that limit considerably inferences about the causal ordering of the variables analyzed. If a particular influence is manifest early in the natural history of how people start to smoke, it may be missed altogether in this type of analysis. Nonetheless, a statistical analysis of the association between these variables and smoking susceptibility constitutes a form of empirical support for the theoretical approach outlined here.

Using the SAS computer software,⁵⁷ we conducted separate logistic regression analyses on both the 1990 and the 1992 data to see if the personal and socioenvironmental characteristics of adolescents were associated with both susceptibility to smoking and reported smoking in the previous month. The purposes of these analyses were the following:

- a) To examine whether the previously noted characteristics made an independent contribution to explaining the level of susceptibility among adolescents.
- b) To identify whether or not the same factors made an independent contribution to explaining the proportion who had smoked in the last month.
- c) To identify whether these predictive factors were stable across the two surveys.

To demonstrate empirical support for the concept of susceptibility and its usefulness as a measure, we needed to show that the same factors predict both *susceptibility* among adolescents and smoking in the last month by adolescents (the standard measure of adolescent smoking behavior). Consistency between predictors of the two smoking measures provides support for the hypothesis that adolescents who are susceptible will be included among those who are eventually identified as smoking monthly. We carried out this check of the concurrent validity of the susceptibility measure in both the 1990 and 1992 data sets.

Tables 5.1 and 5.2 present the results of these analyses. For ease of presentation, we divided the tables into personal influences and socioenvironmental influences. The analyses also included demographic variables (age, gender, race/ethnicity). Details of the effects of personal and socioenvironmental factors on adolescent smoking behavior will be discussed separately in Chapters 6, 7, and 9.

Tables 5.1 and 5.2 show how the variables performed in predicting who was susceptible to smoke and who smoked in the previous month in the 1990 and the 1992 surveys, respectively. The adjusted odds ratio is used to show the proportional increase in susceptibility to smoke among adolescents, according to different levels of personal or socioenvironmental influences. For example, in 1990, adolescents who attributed four or more benefits to smoking were 2.33 times more likely to be susceptible to smoking than those who attributed no benefits to smoking. This ratio is adjusted to represent the effect of each variable on smoking susceptibility independently of all other variables in the model (including differences observed across gender, race/ethnicity, and age).

Importantly, in both surveys, the same factors predicted who smoked in the past month and who was susceptible to smoke in the future.

Since susceptibility is a more inclusive smoking measure than having smoked in the last month, we expected that the variables would be slightly less predictive of this measure than of "smoked in the past month". Generally this was the case. We noted a difference in the importance of "exposure to peer smokers" as an independent predictor of the two smoking measures. Exposure to peer smokers was a more powerful predictor of current tobacco use among adolescents (smoked in the last month) than of susceptibility, although peer exposure was still a major predictor of susceptibility.

SUMMARY OF FINDINGS

1. The conceptual framework used in this report highlights two important sources of influence on adolescent smoking behavior: personal characteristics and the social environment.
2. Personal characteristics analyzed in this report included rebelliousness, depression, school performance, the perception of advantages to smoking, and awareness of the health costs of smoking. Socioenvironmental factors included exposure to smokers in the family and peer network, and awareness of norms favoring smoking among significant others. These factors have been demonstrated in past studies to be significantly implicated in smoking initiation.
3. A general statistical model of both the 1990 and the 1992 data suggests that both personal and socioenvironmental influences are independently associated with susceptibility to smoking among adolescents. The same variables predicted current smoking among adolescents (i.e., smoked in the last month). This is considered good evidence of the concurrent validity of the susceptibility measure.

Chapter 6

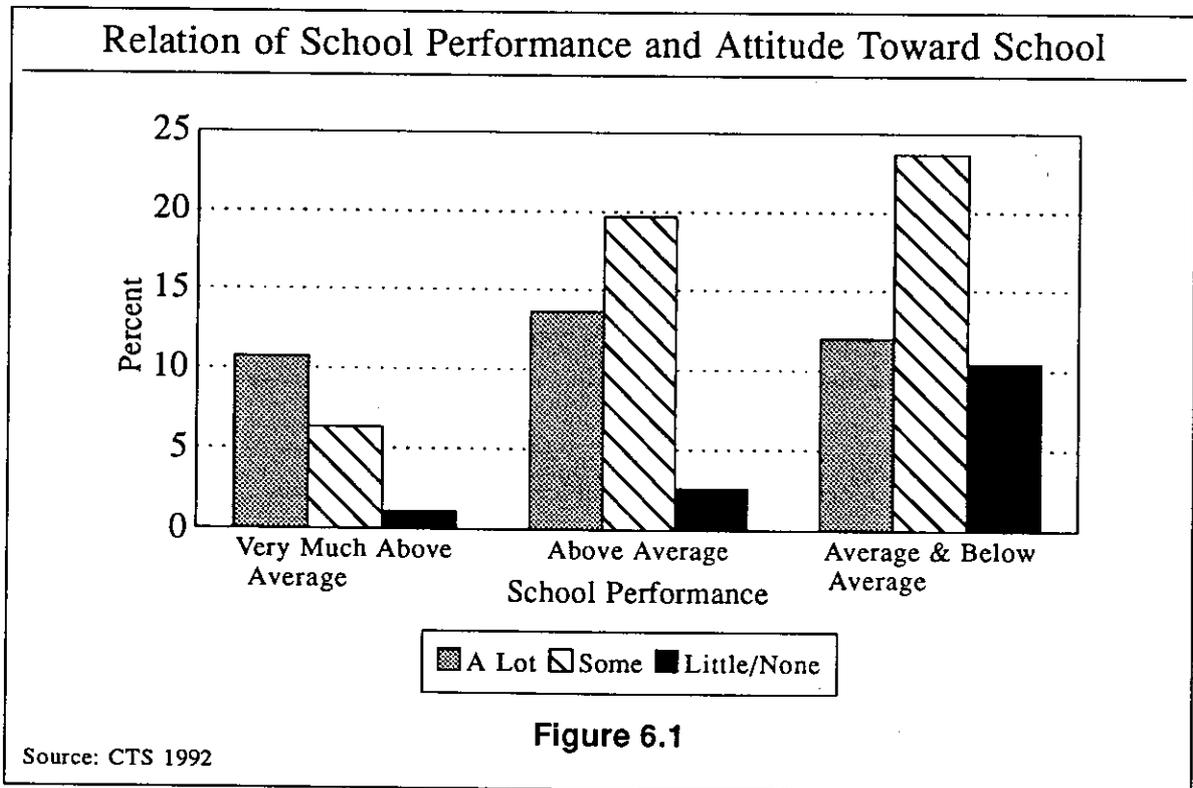
**PERSONAL CHARACTERISTICS
ASSOCIATED WITH SUSCEPTIBILITY TO
SMOKING**

INTRODUCTION

In the overview of antecedents of adolescent smoking behavior (see Chapter 5), we observed that personal factors were important influences on adolescent susceptibility to smoking. Among the personal factors considered, an expectation of benefits to smoking was the most important predictor of susceptibility. This chapter explores in greater depth the effect of personal well-being and cognitive expectations on adolescent smoking behavior. We examined which groups of adolescents were likely to be having problems at school or interpersonal difficulties and how such problems may make smoking seem more desirable and render them susceptible to smoke in the future.

ATTITUDES TO SCHOOL AND SCHOOL PERFORMANCE

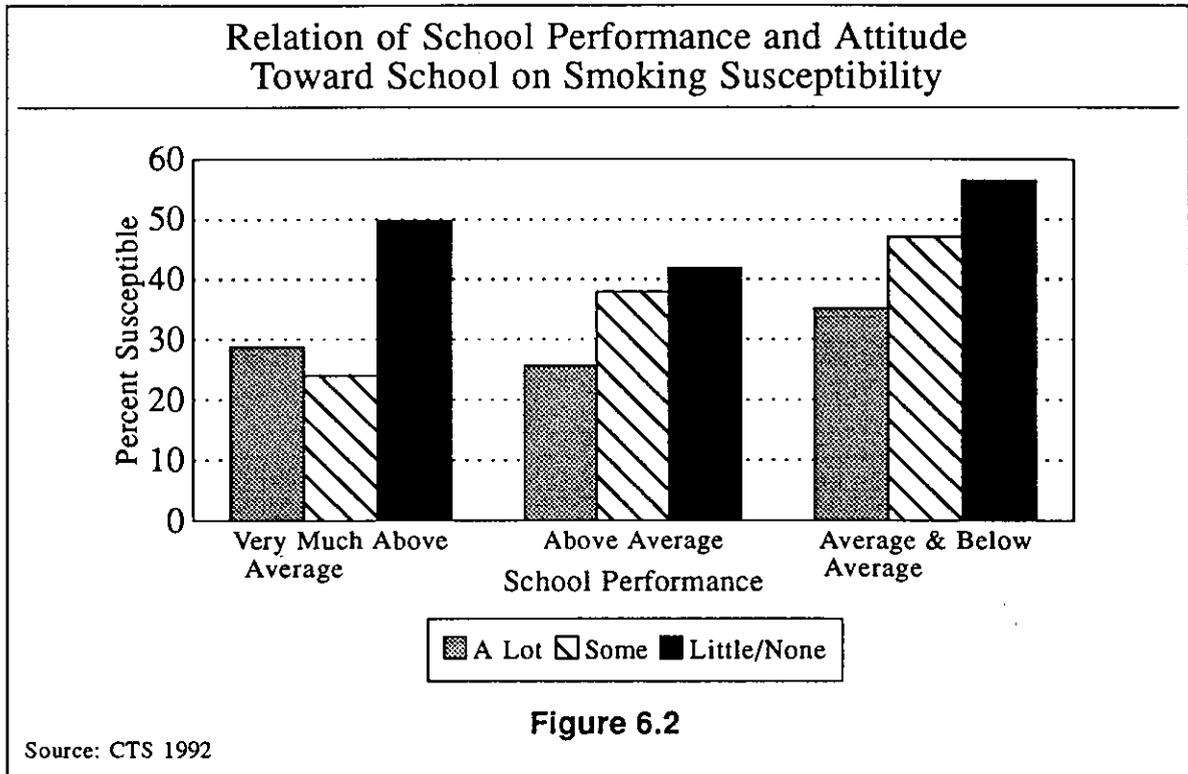
Figure 6.1 identifies adolescents who were having problems at school by asking them to rate their own academic performance and to report how much they liked school in general.



Overall, in 1992, 36.2% of teenagers reported that they liked school a lot (see APPENDIX B, TABLE B-14). Approximately 46.1% of teenagers rated their performance at school as average or below. The percentage of adolescents who don't like school a lot increases markedly with perceived poorer performance at school. However, there was little difference perceived school performance in the proportion of adolescents who liked school a lot.

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Figure 6.2 presents the effect of school performance and attitude toward school on smoking susceptibility, based on the 1992 sample of adolescents. As shown those who disliked school were much more likely to be susceptible to smoking than those who liked school a lot. Teenagers who thought that they were average or below in school performance were more likely to be susceptible to smoke than those who thought they were performing very well.



Attitude toward school appeared to make an independent contribution toward smoking susceptibility that outweighed the effects of perceived school performance. At each school performance level, the highest proportion of susceptible adolescents represented those who liked school the least. For example, among adolescents who thought they were doing very well at school, but who professed a dislike for school, 49.8% were susceptible to smoking compared to only 28.7% of those doing very well who also liked school a lot. These findings suggest that the effects of poor school performance must be measured alongside the value placed on school performance by students. The anxiety caused by poor grades may be counterbalanced by other elements of the school experience that afford a positive attitude toward school life and disincite students to deviate into prohibited behaviors such as smoking.

DEPRESSION AND SMOKING SUSCEPTIBILITY

In 1992 we found a substantial proportion of adolescents who showed signs of moderate to high depression and anxiety. More than one fifth of adolescents overall were identified as very

depressed and a further quarter of adolescents were rated as moderately depressed. The proportion of adolescents who were highly depressed tended to increase with age (see APPENDIX B, TABLE B-16).

Figure 6.3 shows the level of depression for girls and boys separately. Girls were more likely to be rated as very depressed than boys, with 25.6% of girls and 19.9% of boys in the highest depression category.

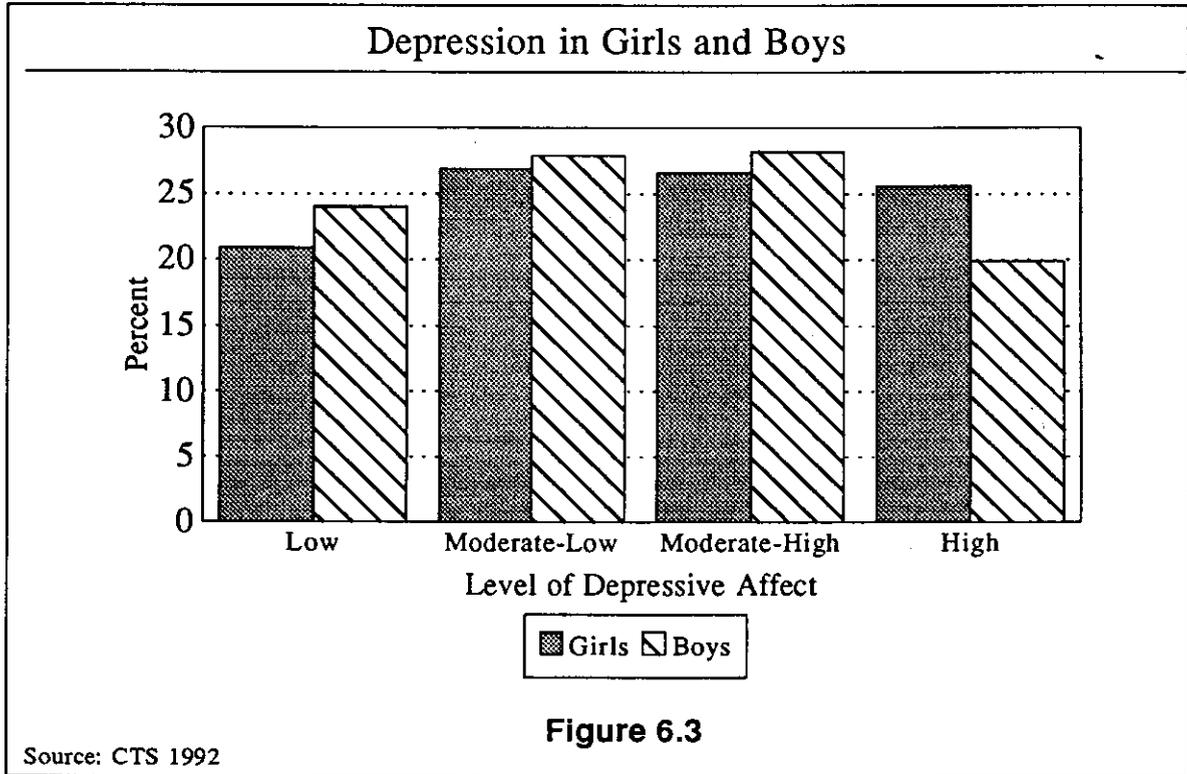
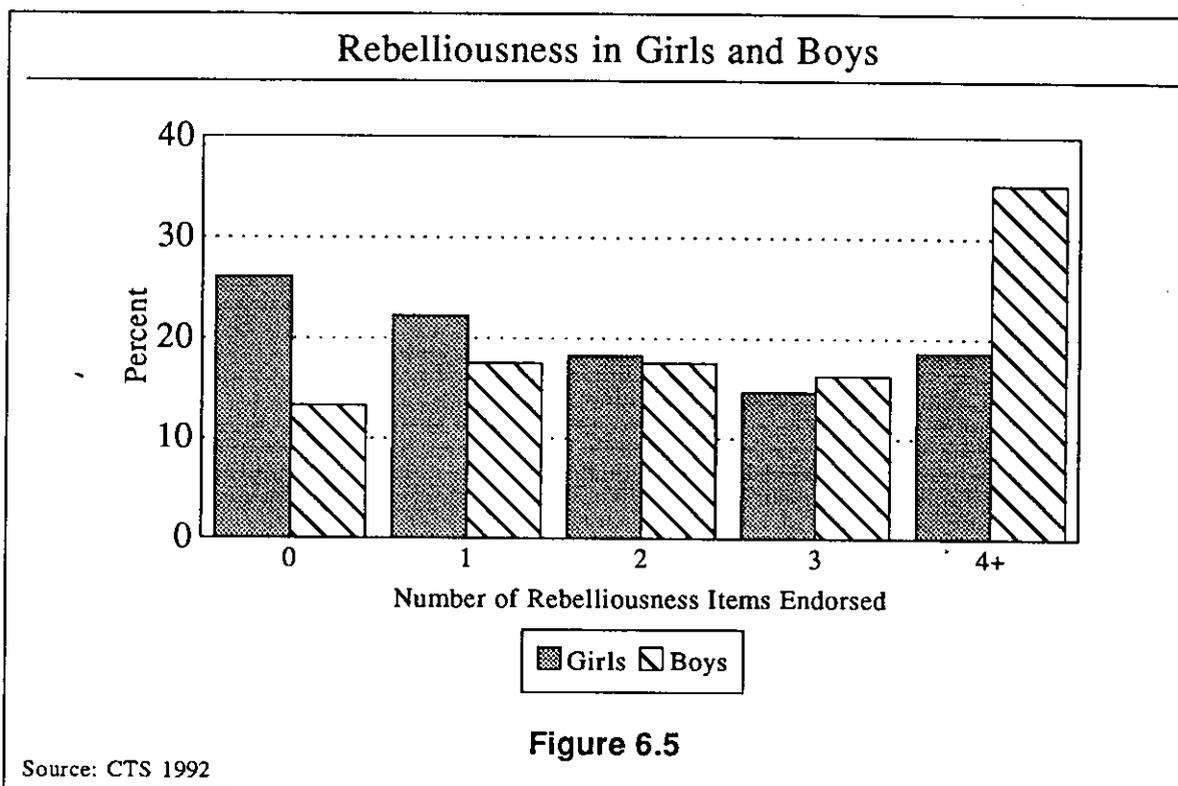
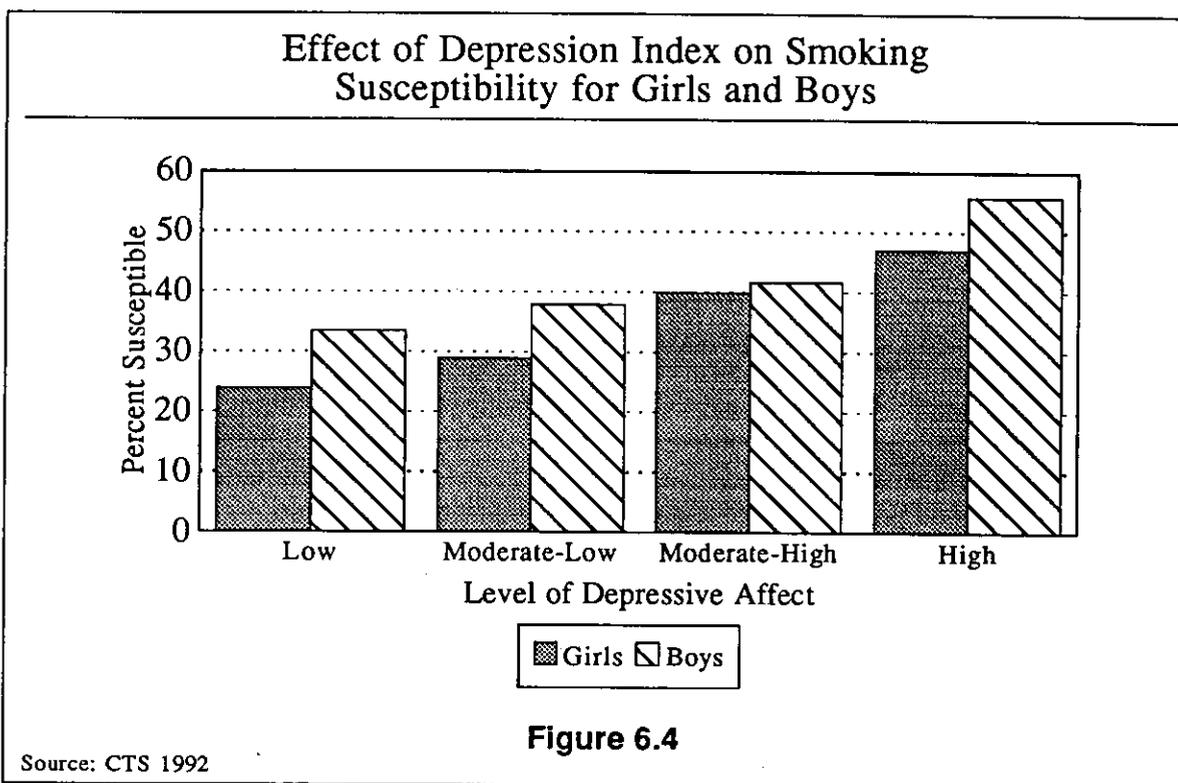


Figure 6.3

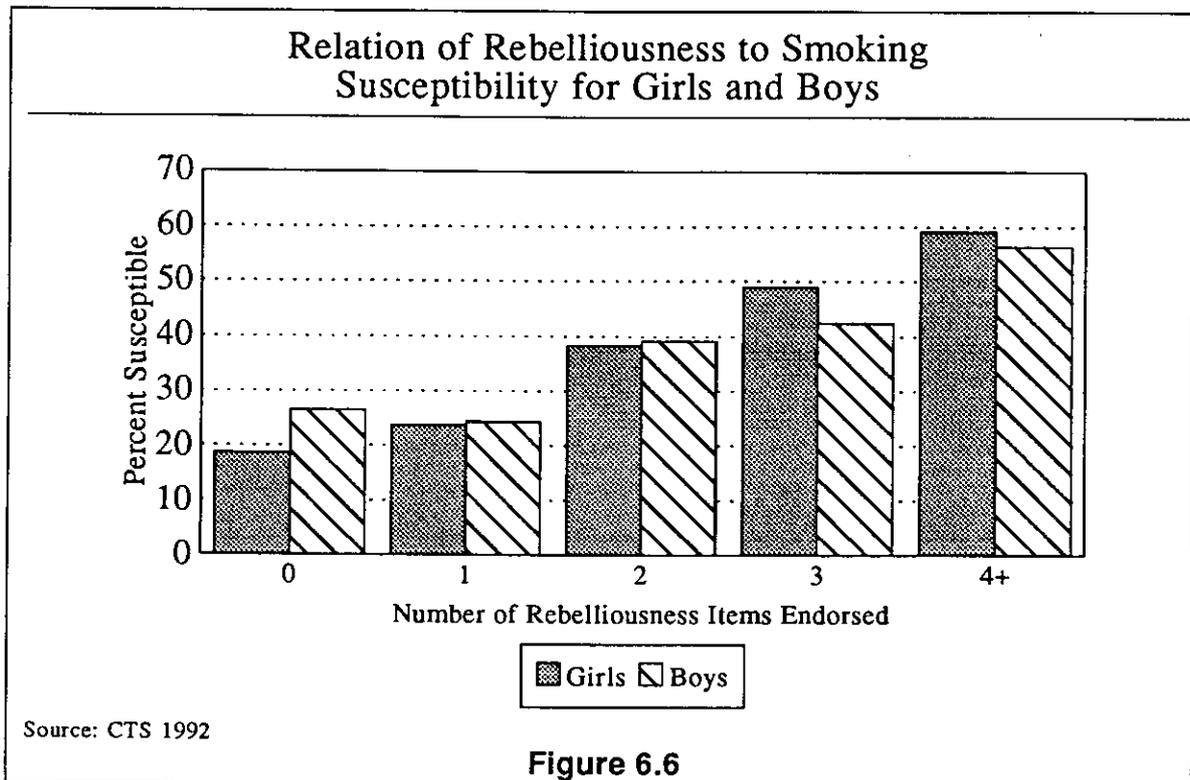
The impact of depression on smoking susceptibility for boys and girls in 1992 is illustrated in Figure 6.4. As shown, susceptibility to smoking rose consistently with higher levels of depression. Among girls who were most depressed, twice as many were susceptible to smoking as among girls with the lowest depression rating. Similarly, more than half of the boys categorized as highly depressed were susceptible to smoking, compared to one third of boys who were least depressed.



REBELLIOUSNESS

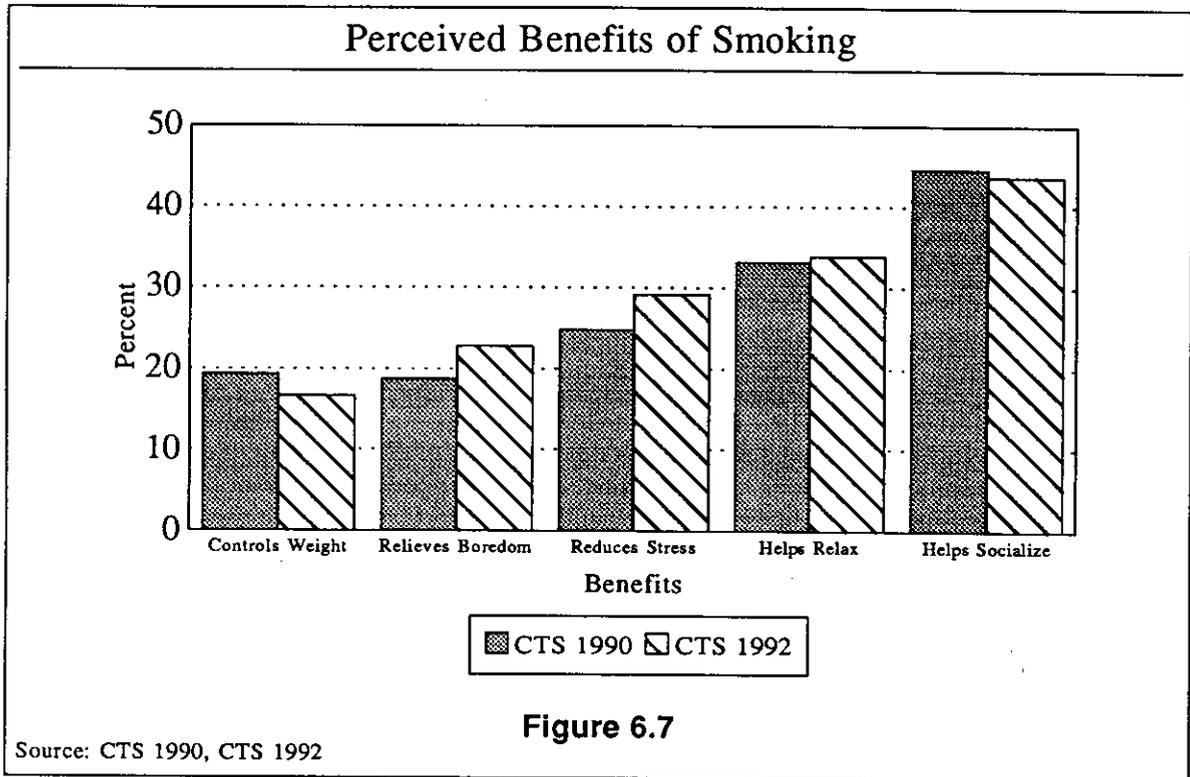
The percentage of boys and girls in California who were prone to rebellious behavior or feelings is provided in Figure 6.5. As we might anticipate, girls were much less likely to report rebellious tendencies than boys. Twice as many girls as boys indicated that none of the rebellious items characterized them (26.1% vs 13.3%). Among boys, 35.3% endorsed four or more items reflecting rebelliousness compared with only 18.6% of girls. Again, a tendency towards rebellious behavior increased with age (see APPENDIX B TABLE B-15).

Figure 6.6 presents the proportion of adolescents who were susceptible to smoking according to their propensity for rebellion. We observed a positive association between rebellion and smoking susceptibility among both boys and girls. Adolescent boys who reported four or more symptoms of rebelliousness were two times more likely to be susceptible to smoking than boys who scored zero on the rebelliousness scale. The relationship between rebellious tendencies and smoking susceptibility was stronger among girls. The proportion of susceptible girls tripled as the number of rebellious items endorsed increased from zero to four or more.



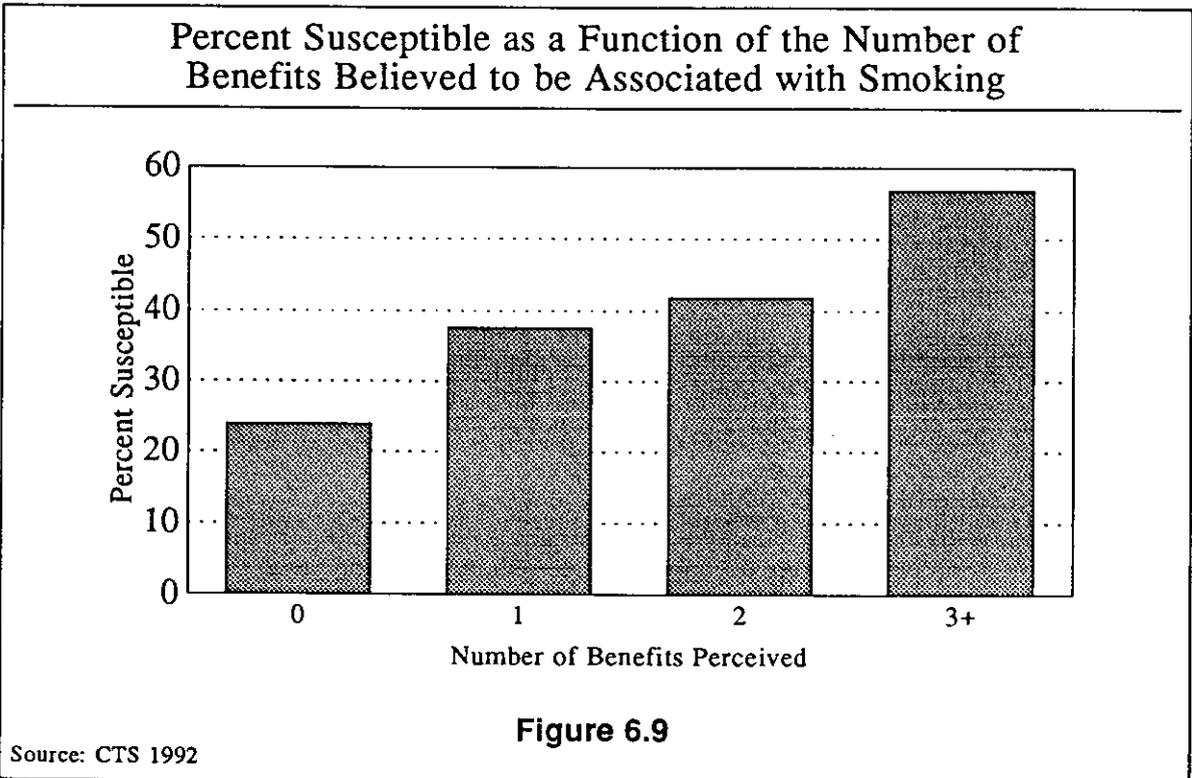
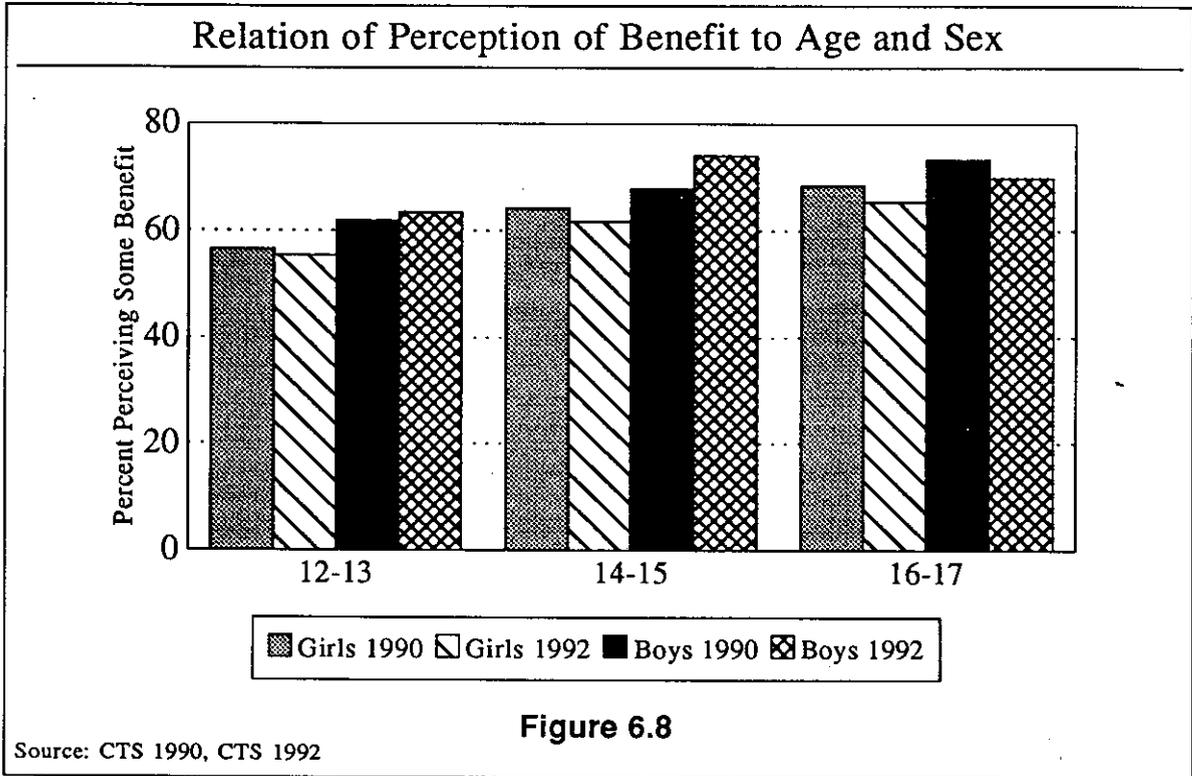
THE PERCEIVED BENEFITS OF SMOKING

The next three figures investigate the utility of smoking for adolescents to determine what purposes smoking was thought to serve. Figure 6.7 shows which benefits were more popularly attributed to smoking by adolescents in 1990 and 1992.



The most frequently adduced benefit to smoking across all age groups was its ability to help people feel comfortable in social situations. In 1990 and 1992, over 40% of adolescents agreed with this statement about smoking. The least agreement concerned smoking's role in weight reduction or its potential to relieve boredom. We may speculate that for adolescents, smoking is less an inherently interesting behavior than a defensive measure used to control certain unpleasant affective states such as stress and tension, as well as situations inevitably characterized by such feelings. Between 1990 and 1992, no pattern of significant change was seen in the percentage of adolescents who perceived benefits or in the kinds of benefits they attributed to smoking.

Figure 6.8 examines whether expectations of benefits from smoking differed by gender or within different age groups of teenagers. The most striking finding was that by the age of 12-13 years, more than half of adolescents already perceived benefits to smoking. The perception of benefits increased modestly with age, but clearly a positive appraisal of smoking is established early in life. Other analyses revealed that "relaxation" was the smoking benefit that varied markedly across age groups, with older teenagers more likely to choose this as an advantage to smoking. Even so, more than one quarter of 12- to 13-year-olds also selected relaxation as a benefit they expected smokers to enjoy.

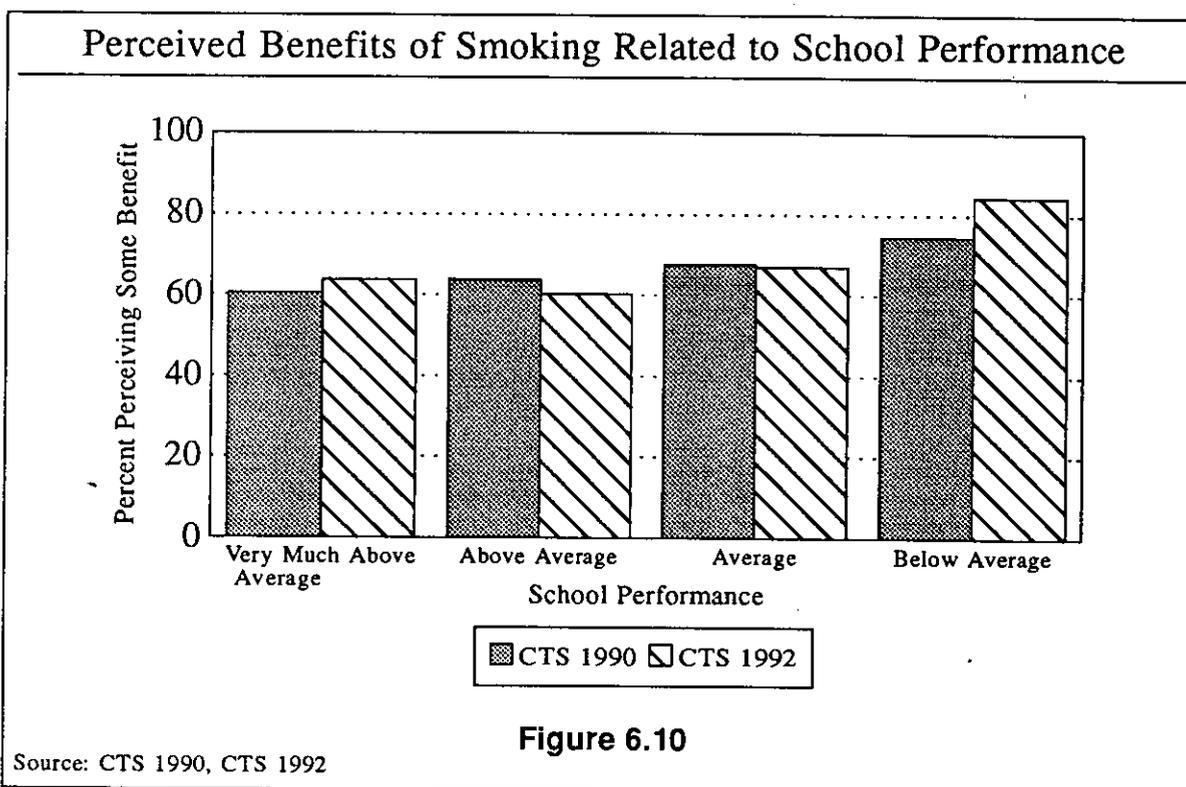


TOBACCO USE IN CALIFORNIA

Perception of the benefits of smoking did not vary significantly by gender, although in each age group boys were slightly more likely to anticipate positive consequences from smoking than girls.

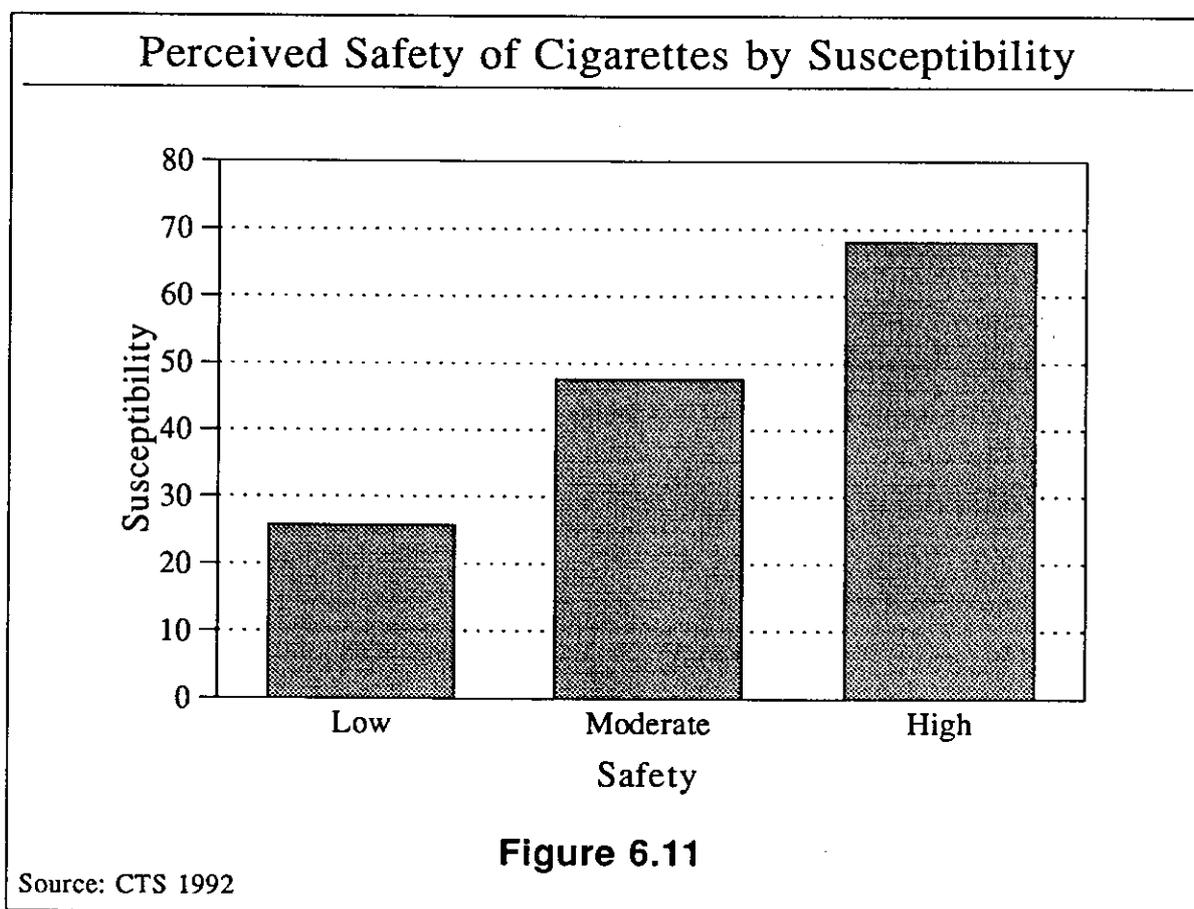
Figure 6.9 shows how perceiving advantages to smoking affects the susceptibility of adolescents to smoke. The perception of benefits was strongly associated with smoking susceptibility. As the number of perceived smoking benefits increased from zero to three or more, the proportion of adolescents susceptible to smoke more than doubled. Even among adolescents who perceived only one advantage to smoking, over one third (37.6%) were susceptible compared to 23.9% of those adolescents who saw no advantages in smoking.

Figure 6.10 demonstrates the impact of school performance on perceived benefits. We found some evidence that the perception of the advantages of smoking increased among adolescents doing less well at school. In 1992, 84% of adolescents who rated their performance as below average believed that smoking would have positive consequences for them, compared to 64% of adolescents in the highest academic category, and similar differences were observed in the 1990 data. This finding provides some support for the idea that teenagers who are failing to conform to conventional standards of success may become more favorably disposed to smoking, perceiving or projecting onto smoking such compensatory properties as stress reduction and social confidence.



PERCEIVED COSTS OF SMOKING: SAFETY OF EXPERIMENTATION

We assessed teenage awareness of the health costs of smoking by asking if they thought there was any harm in experimenting with cigarettes. In 1992, many adolescents in California appeared to be unaware that experimentation often leads to habituation. Approximately 45% of the adolescent population thought that experimentation was safe to some degree (see APPENDIX B, TABLE B-9). Figure 6.11 shows that impressions of the safety of experimenting with cigarettes increased with age, probably reflecting a growth in the numbers of teenagers who have themselves tried a cigarette. Boys were slightly more likely than girls to think no harm was associated with trying cigarettes and, again, this may reflect higher rates of experimentation among boys.



The sense that cigarettes may be tried without undue harm was highly associated with susceptibility to smoking in 1992 (Figure 6.11). As beliefs in the safety of experimenting with cigarettes increased from low to high, the proportion of adolescents who were susceptible to smoke more than doubled (from 25.8% to 68.1%).

TOBACCO USE IN CALIFORNIA

SUMMARY OF FINDINGS

1. More than 50% of adolescents aged 12-13 years thought that there were benefits to smoking. The benefit most often named was the use of smoking to increase confidence in social interactions.
2. Adolescents who expected benefits from smoking were significantly more likely to be susceptible to smoking. Of adolescents who expected no benefits, 23.9% were susceptible compared to 56.8% of adolescents expecting three or more benefits from smoking.
3. The types of benefits associated with smoking were consistent with the idea that smoking is, for many adolescents, a response to life anxieties. Adolescents most often saw smoking as a way to ease social encounters and relax and were less likely to see smoking as a way of relieving boredom.
4. High levels of depression, rebellious attitudes, and poor school performance were all associated with an increased susceptibility to smoking among adolescents. Liking for school appeared to mitigate the impact of poor school performance on susceptibility to smoking.
5. Adolescents who believed that experimenting with cigarettes was safe were twice as likely to be susceptible to smoking as adolescents who thought that experimentation was unsafe.

Chapter 7

**THE INFLUENCE OF FAMILY
AND PEERS ON SUSCEPTIBILITY
TO SMOKE**

INTRODUCTION

This chapter focuses on the effects of exposure to smokers in the social environment. One of the strongest and most consistent findings in the smoking initiation literature is that teenagers who have family members or friends who smoke are more likely to smoke themselves.^{28,29,43,58} Many researchers have debated whether parents, older siblings, or peer smokers constitute the prime source of influence on adolescent smoking behavior.⁵⁹⁻⁶¹ While this report addresses the relative influence of family and peers on smoking susceptibility, we were especially interested to see if adolescents who did not know any smokers were susceptible to smoking. If such a group of teenagers could be identified, this would provide an opportunity to investigate whether the media has an independent effect on smoking susceptibility.

As reported in Chapter 5, exposure to peer smokers and exposure to family smokers predicted adolescent susceptibility to smoke in both 1990 and 1992. In the general overview of major predictors of susceptibility (Tables 5.1 and 5.2), peer smokers appeared to exert a stronger influence on adolescent susceptibility than family smokers. In this chapter we present a more detailed analysis of the impact of the social environment by looking at the kinds of family and peer relationships that impinge upon teenage smoking behavior.

THE INFLUENCE OF THE FAMILY ON SUSCEPTIBILITY

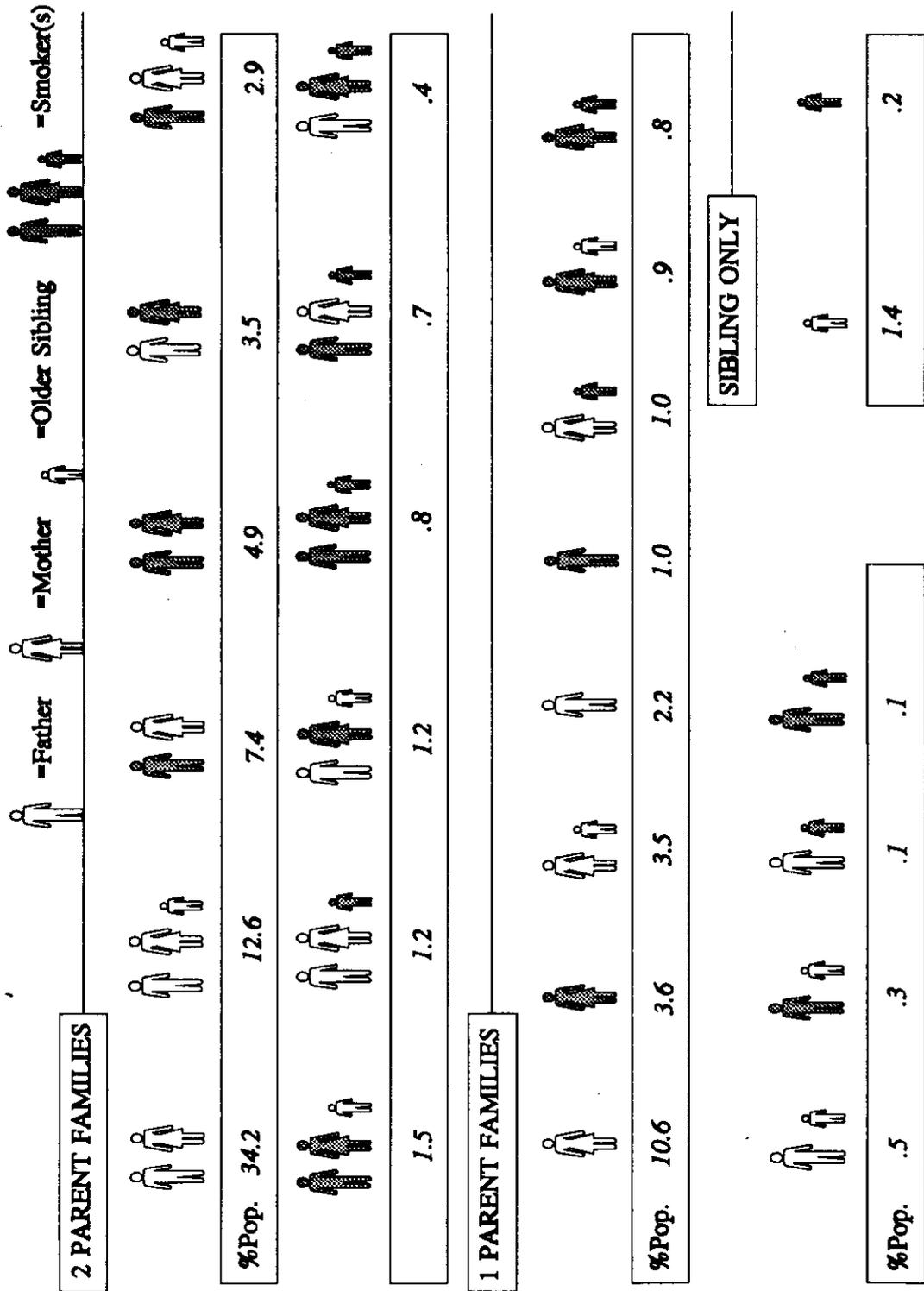
Family structure in California

Figure 7.1 presents the family structure of California adolescents in 1990 by family smoking status. We have classified family structures by the number of parents in the household and the presence or absence of an older sibling.

Seventy-one percent of California adolescents live in two-parent families, thirty percent of which have an older sibling. Sixty-six percent of these families do not include a smoker, 23% have one smoker, and 12% include more than one smoker.

A further 20% of California adolescents live in families where the mother is the only parent present. Again, 30% of these families include an older sibling. Sixty-nine percent of these families do not include a smoker. Some 4% of California adolescents live in single parent families in which the parent is the father. Sixty-five percent of these families do not include a smoker. Just under 2% of the CTS sample of adolescents lived with an older brother or sister with no parent present.

The Families of California Adolescents by Smoking Status



Guardians/Other: 2.5%

Figure 7.1

The Influence of Family Smoking on Susceptibility to Smoke

Figure 7.2 presents the effects of family structure and parental smoking status on the smoking susceptibility of adolescents. As shown, the presence of a parent who smoked increased the susceptibility of teenagers to smoking. In 1990, 26.1% of adolescents in nonsmoking two parent families were susceptible to smoking compared to 38.8% of adolescents living in two parent families in which one parent smoked. However, fewer adolescents were susceptible to start smoking (32.7%) in two parent families where both parents were smokers. This counter-intuitive finding suggests that simply counting the number of parents who smoke in a family may not be a sufficiently sensitive measure of family influence. For example, a parent who tries frequently and unsuccessfully to quit may have a very different effect on the susceptibility of the adolescent from a parent who smokes and sees no reason to quit.

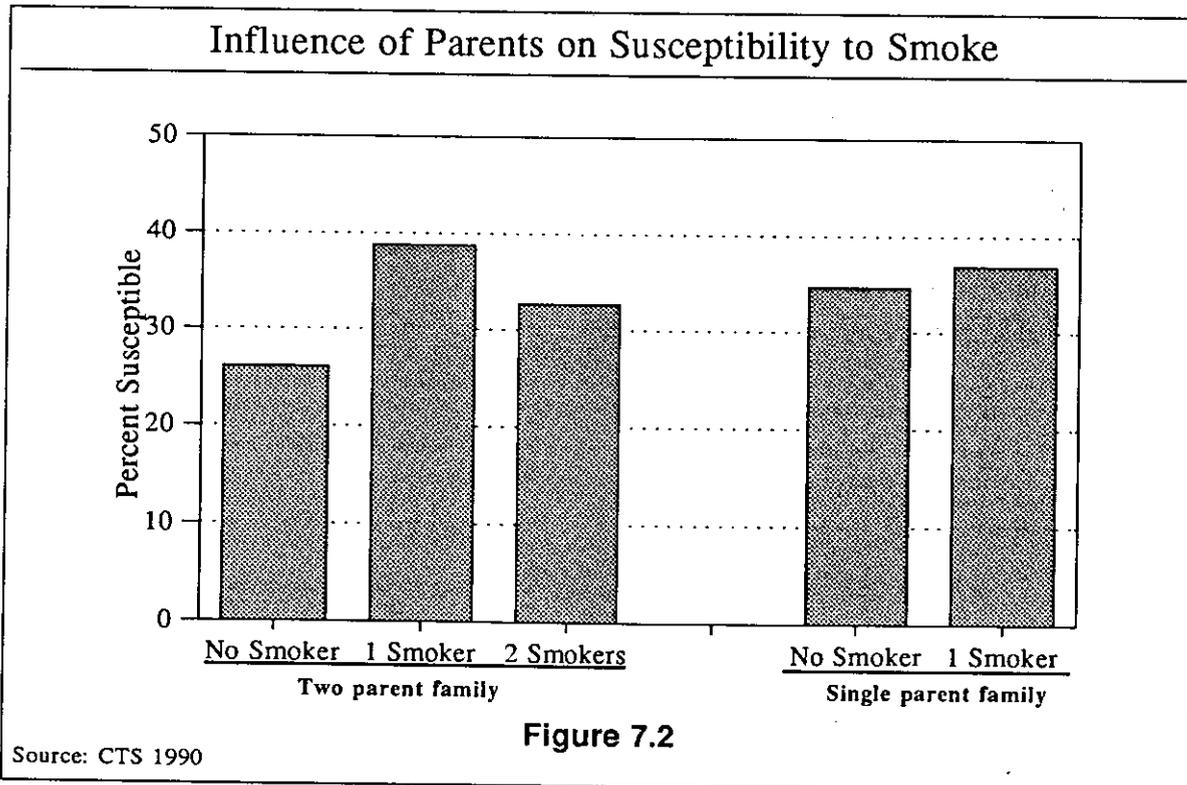


Figure 7.2

Two parent versus single parent families

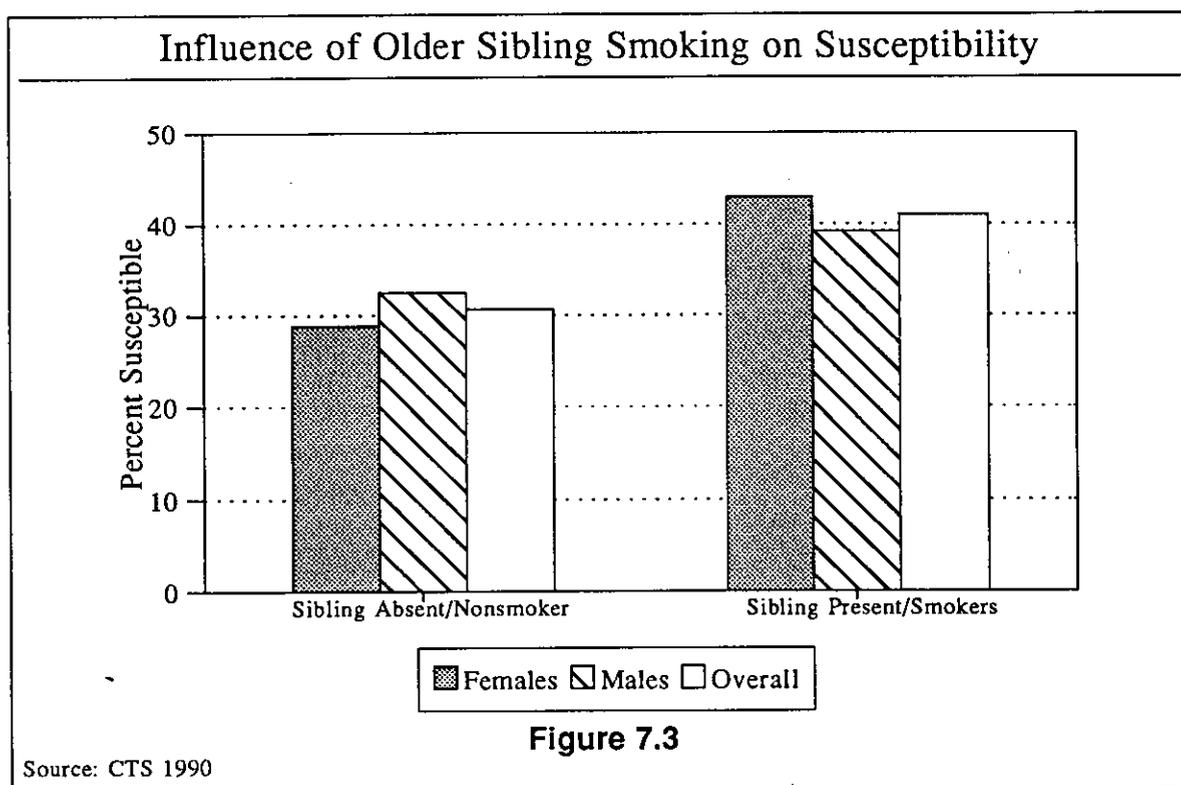
Some studies of family influence have suggested that teenagers who come from single parent families are more likely to smoke than teenagers in two parent families, although the evidence for this effect has not been consistent.⁶² Some support for an independent effect of family structure on smoking was manifest in the 1990 data. Among nonsmoking families in California,

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a higher proportion of adolescents living in single parent families were susceptible to start smoking compared to adolescents living in two parent (34.7% vs 26.1%). Having a smoker in the single parent family increased the likelihood that an adolescent was susceptible only slightly (to 36.9%).

The Influence of Sibling Smoking on Adolescent Susceptibility

Figure 7.3 demonstrates the influence of sibling smokers on adolescents. Adolescents were classified into two groups, those with a sibling smoker and those without a sibling or whose sibling did not smoke. As shown, adolescent susceptibility to smoking increased significantly with exposure to sibling smokers, rising from 30.7% of adolescents without a sibling smoker to 41% of adolescents who have a sibling smoker. For girls there was a 48% increase in susceptibility if a sibling smoked, which was much larger than the 21% increase that occurred for boys.

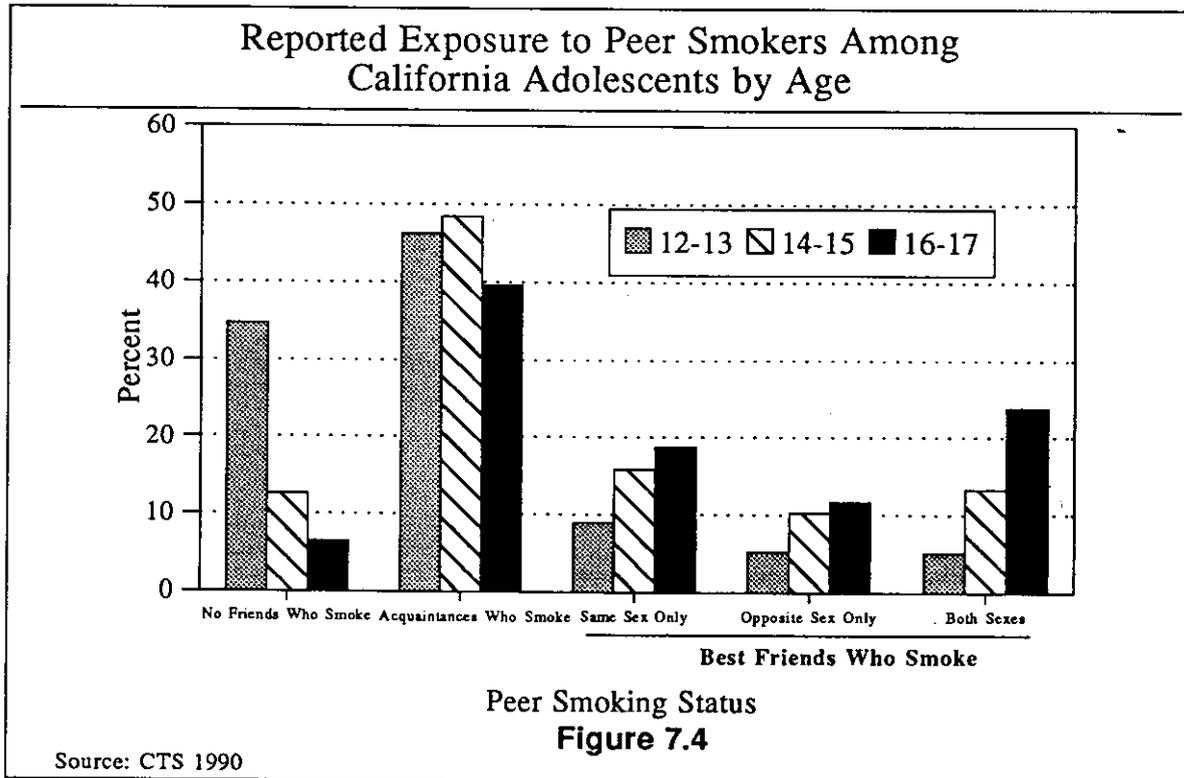


THE INFLUENCE OF PEER SMOKERS

Reported exposure to peer smokers among California adolescents

As expected, the proportion of teenagers who have friends who smoke increased with age (Fig. 7.4). Among 12- to 13-year-olds, some 35% did not know anyone their own age who smoked. By the age of 16, less than 7% of teenagers could say the same.

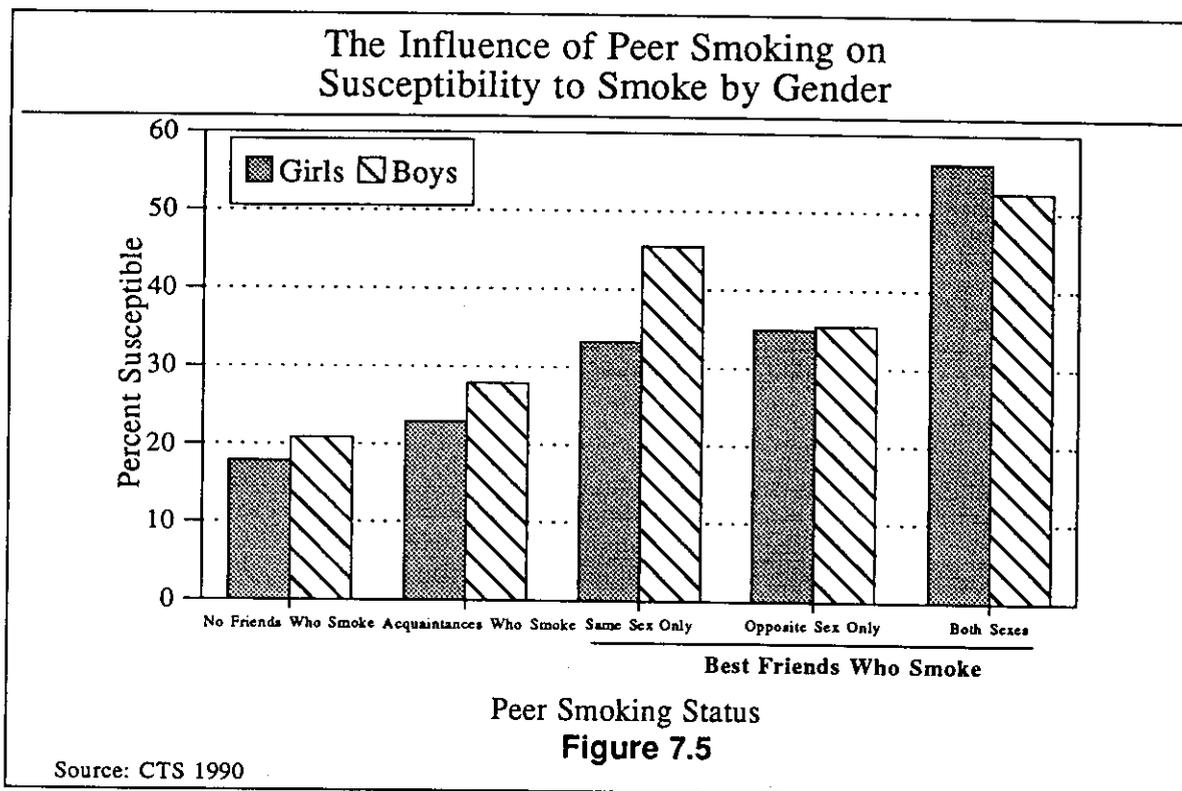
At older ages, adolescents were more likely to report smokers among their close peer relationships. More than 50% of 16- to 17-year-olds had best friends who smoked. Still, note that even among the youngest adolescents the proportion with best friends who smoked was substantial. Almost one fifth of 12- to 13-year-olds claimed to have best friends (same sex or both sexes) who were smokers. The 1992 data on exposure of adolescents to peer smokers is similar to these 1990 data and is presented in Appendix Table B-8.



The Relationship of Peer Smoking to Susceptibility

Figure 7.5 shows the influence of peers on the susceptibility of adolescents to smoke for each gender. Susceptibility to smoking increased steadily with higher exposure to peer smokers. Twenty-one percent of boys and 18% of girls who did not have any friends or acquaintances who smoked were susceptible to start smoking. Having an acquaintance who smoked increased susceptibility in both boys and girls by more than 5 percentage points.

We observed a marked increase in susceptibility when adolescents reported that their best friends smoked. Among adolescents who had best friends of both sexes who smoked, over half were susceptible to smoking. This was true for both boys and girls. A comparison of susceptibility for teenagers with no peer smokers and teenagers with best friends of both sexes who smoked showed that susceptibility more than tripled for girls in the latter group and increased two and a half times among boys.



Peer Smoking Status
Figure 7.5

The Importance of the Gender of the Best Friend who Smokes

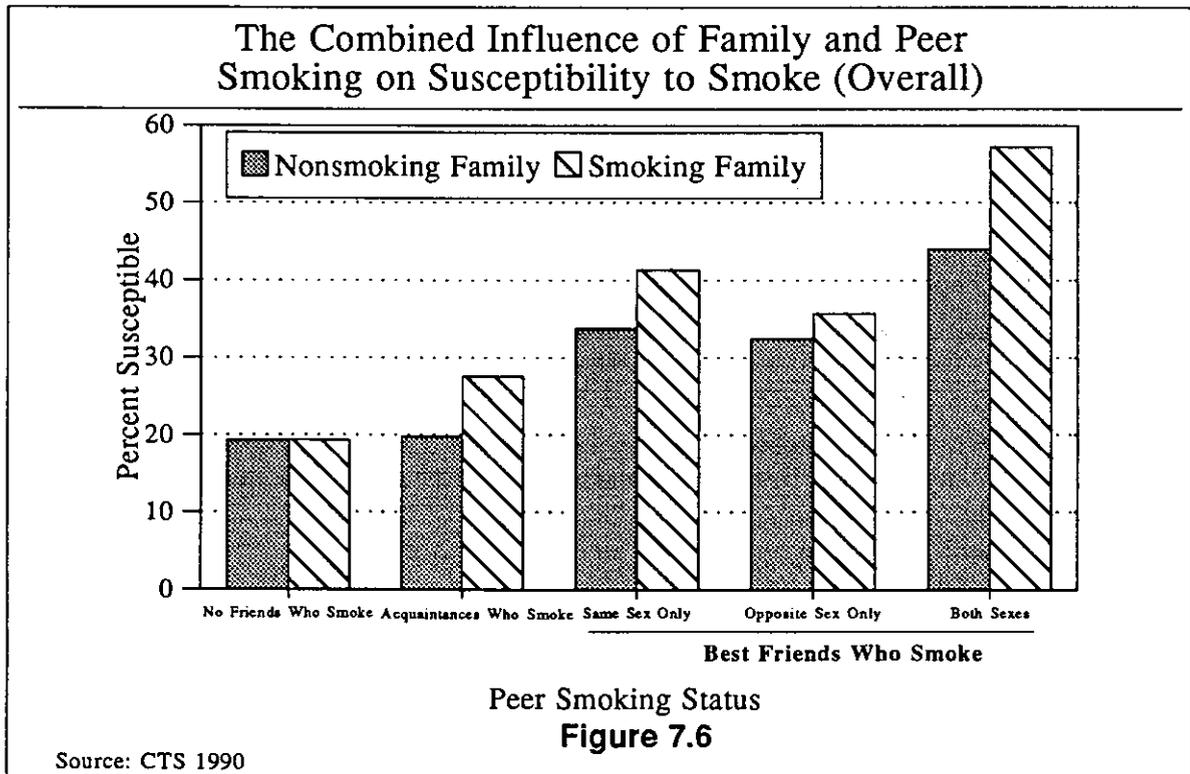
A high rate of susceptibility was observed among boys whose best male friends smoked and this rate did not substantially increase when boys also reported that they had best female friends who smoked. Hence, boys may be influenced more by friends of the same sex. The same does not appear to be true of girls. The susceptibility rate among girls was equally high regardless of whether the best friend who smoked was male or female but increased by more than 50% when they had best friends of both sexes who smoked.

The Combined Influence of Family and Peer Smoking

Figure 7.6 examines the interaction of family and peer influences on teenagers. Here we maintained the same categories for smoking among the peer network; however, to simplify the data we combined the level of exposure to smokers in the family into a binary all-or-none variable.

For adolescents who did have friends who smoke, a smoking family increased susceptibility in every case. Thus, adolescents who were most susceptible to smoke were those exposed to both family and peer smokers. We noted that adolescents who did have best friends who smoke were less likely to be susceptible if no one in their family smoked.

Perhaps the most striking result of categorizing adolescents by both peer and family exposure was the appearance of a group of adolescents who were not exposed to smokers in the social environment but were nevertheless susceptible to smoking (19.3% of the teenage population). The implications of this finding will be discussed in Chapter 10 when teenage exposure to media advertising is considered.



TOBACCO USE IN CALIFORNIA

SUMMARY OF FINDINGS

1. Adolescents who were exposed to smokers in the family were significantly more susceptible to smoking than adolescents living in nonsmoking families.
2. Adolescents living in single parent households were more susceptible to smoking than adolescents in two-parent households, regardless of whether anyone in the family smoked.
3. Exposure to friends who smoked also increased adolescent susceptibility to smoking. Best friends who smoked exerted a greater impact than acquaintances who smoked. This effect was especially marked among girls. Girls who had best friends of both sexes who smoked were three times more likely to be susceptible than girls with no smokers in their peer network.
4. A comparison of peer and family influences on adolescent smoking susceptibility suggested that peers who smoked had a greater impact than family members who smoked.
5. Among adolescents who were not exposed to smokers in their family or peer networks, 19.3% were susceptible to smoking. This finding suggests the need to consider other sources of influence on smoking susceptibility beyond the social environment.

Chapter 8

**SMOKING SUSCEPTIBILITY AND THE
SCHOOL ENVIRONMENT**

INTRODUCTION

The school is a popular venue for measures designed to discourage smoking initiation among adolescents. Smoking prevention at school may take the form of a smoke-free policy on school property, strict enforcement of this policy, the incorporation of antismoking education into the curriculum, and the provision of positive exemplars by encouraging teachers and older students not to smoke. One of the few studies to examine the impact of school smoking policies found that more comprehensive bans on smoking (e.g., policies restricting smoking near school grounds as well as in school) were associated with reduced smoking by adolescents.⁶³ However, in this study, information on compliance with the policy was obtained only from school clerks rather than from the students themselves. Some evidence also suggests that school bans on smoking that apply to staff as well as students are more effective in reducing smoking among adolescents.^{64,65}

In the 1990 and 1992 CTS, a number of questions examined the effectiveness of school-based measures to prevent smoking. However, the definition of a smoke-free school in 1992 was less strict than in 1990. Therefore, in assessing the prevalence and impact of smoke-free schools, we report results for the 1990 sample of adolescents only.

THE IMPACT OF SMOKE-FREE SCHOOLS ON SMOKING SUSCEPTIBILITY

The potential effectiveness of a smoke-free policy at school is always qualified by the degree to which that policy is enforced. The 1990 CTS asked adolescents whether a) their school had a smoke-free policy, b) whether they thought the majority of students adhered to that policy, c) how many high school seniors smoked (reported for non high school seniors only), and d) how many teachers smoked.

Figure 8.1 presents the percentage of adolescents with smoke-free schools. A school was defined as smoke-free if adolescents reported that the policy was generally obeyed and that no high school seniors or teachers smoked (We assumed that if teachers were smokers, they smoked at school). As shown, only 1.1% of adolescents could report that their school was entirely smoke-free. Over half (55.8%) of adolescents were exposed to smoking from three sources--peers, teachers, and high school seniors.

Figure 8.2 shows the combined influence of smokers in the school environment on smoking susceptibility. The proportion of adolescents susceptible to smoking increased almost three fold for those who reported that some members of all three school groups (peers, teachers, high school seniors) smoke. This comparison was limited by the very small sample of adolescents who reported a smoke-free school environment. Indeed, with only 1% of the sample reporting smoke-free schools, even a study the size of the 1990 survey (N=7767) can only give an indication of the impact on susceptibility.

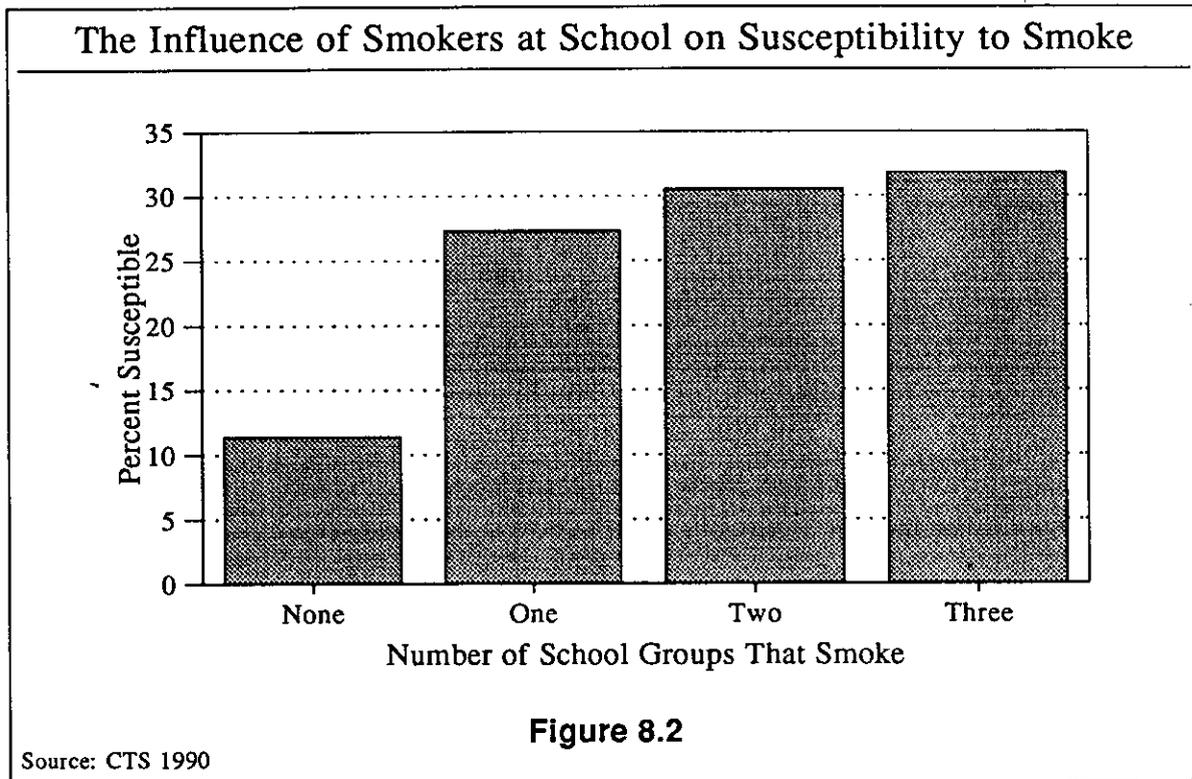
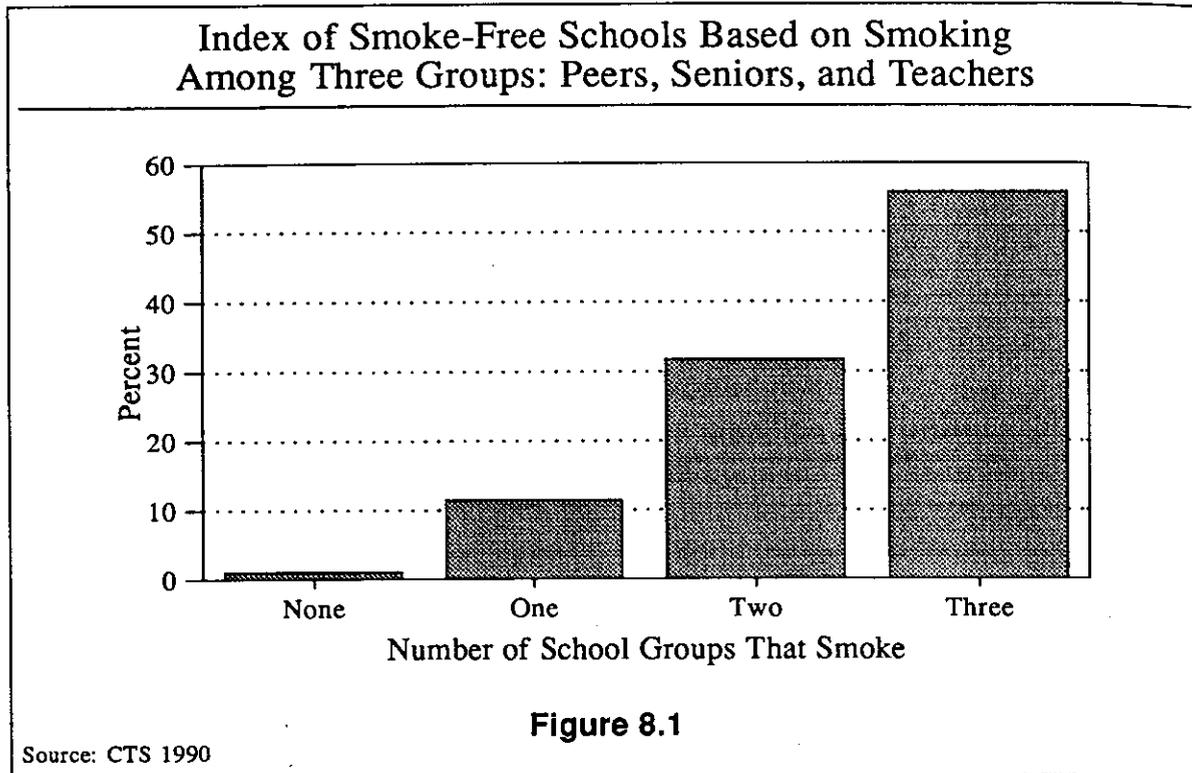
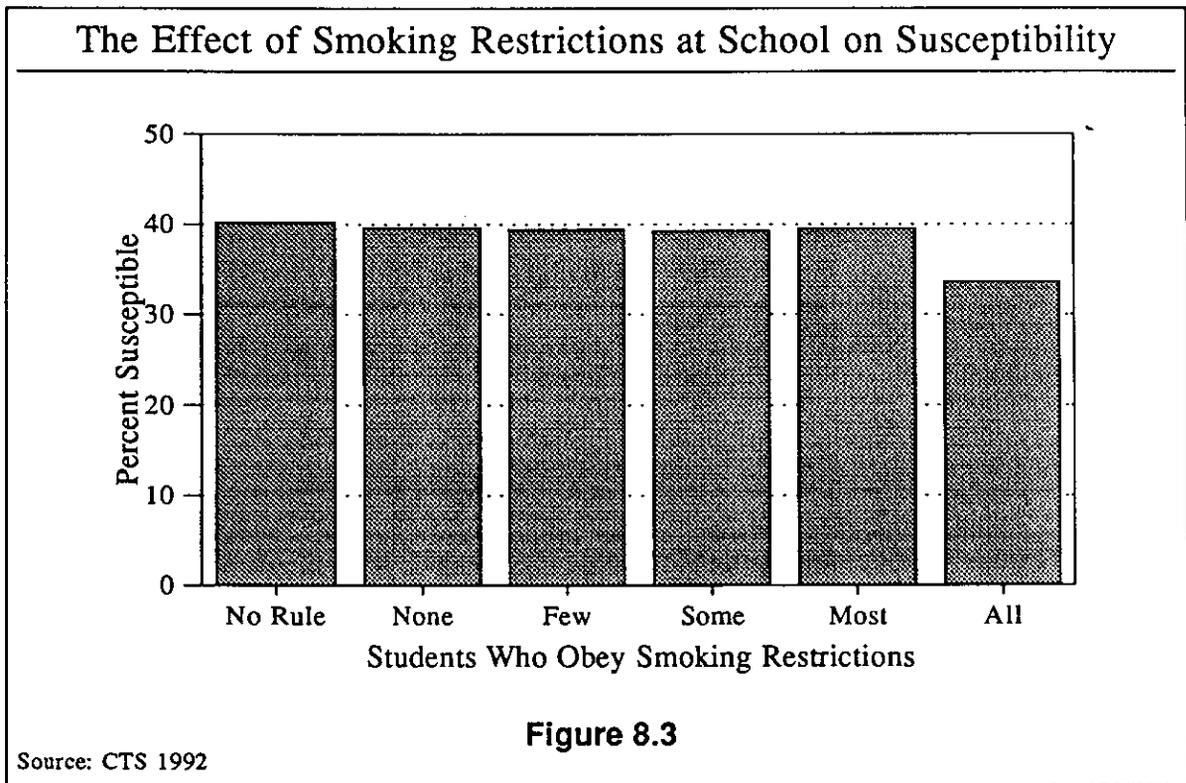


Figure 8.3 compares the effect on smoking susceptibility of schools that place no restrictions on smoking, schools with smoking policies to which few adhere, and schools with smoking policies to which everyone adheres. As this figure demonstrates, the presence of school restrictions on smoking had little effect on adolescent susceptibility unless compliance among students was absolute. In cases where not every student was compliant, the level of susceptibility was similar to that for schools with no smoking restrictions.



THE IMPACT OF SCHOOL ROLE MODELS: TEACHERS AND HIGH SCHOOL SENIORS

The importance of enforcing a smoke-free policy on members of the school environment was supported by our findings for the influence of teachers and seniors separately on adolescent smoking behavior. Adolescents who thought that their teachers smoked were more likely to be susceptible to smoking themselves (Figure 8.4). Overall a majority of adolescents thought that at least a few teachers smoked. Previous reports have demonstrated that teenagers tend to overestimate the prevalence of smoking among teachers.⁴² The data presented here show that the belief, whether justified or not, that some teachers smoke has a strong effect on adolescent susceptibility. Among teenagers who believed that just some of their teachers smoked, 42.7% were susceptible to smoking, compared to 33.4% of those who thought that none of their teachers smoked.

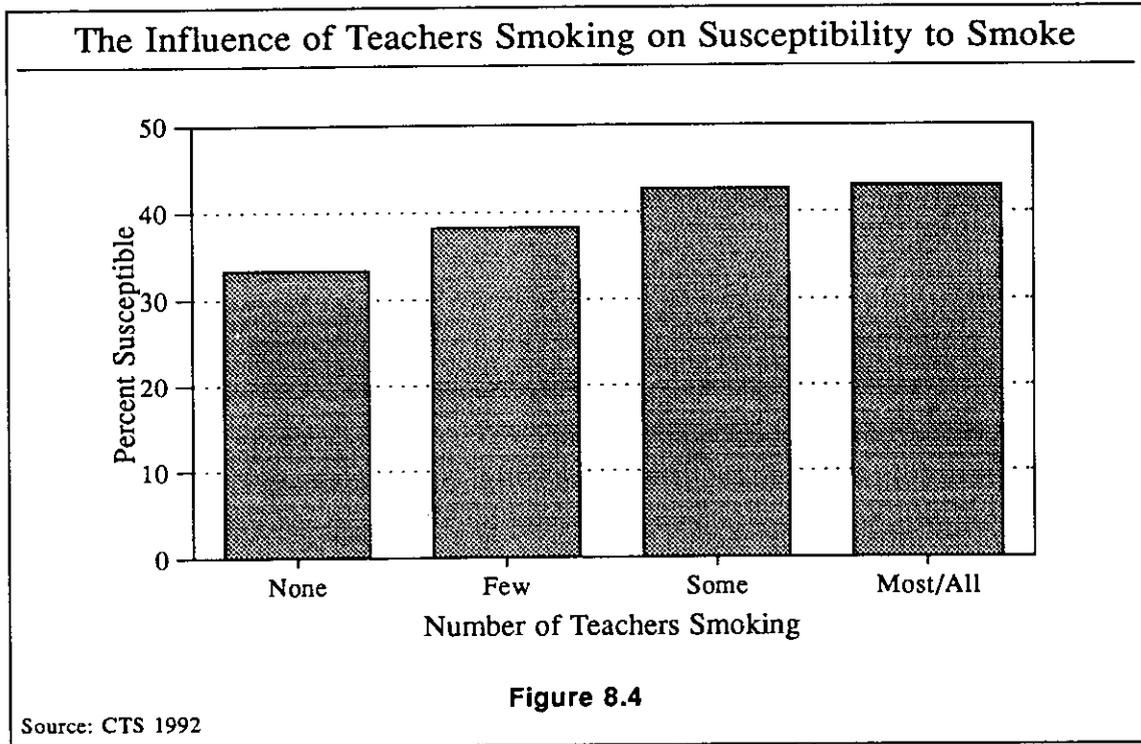


Figure 8.4

The influence of seniors on the smoking behavior of adolescents was also apparent (Figure 8.5). Of adolescents who believed that most seniors were smokers, 37.5% were likely to be susceptible, versus 24.8% of adolescents who thought that no seniors smoked.

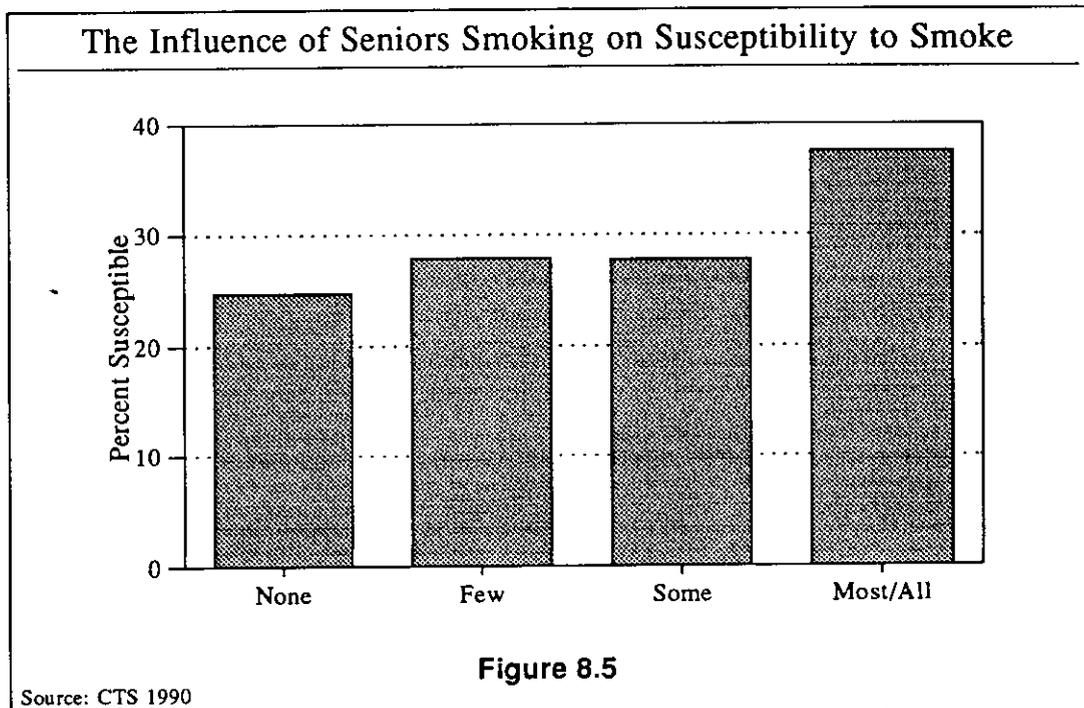


Figure 8.5

While it took the perception of only a few teachers who smoke to increase the susceptibility of adolescents to smoking, in the case of seniors, susceptibility to smoking among adolescents seemed to increase significantly only when smoking was held to be normative among seniors. Adolescents who felt that only a few or some of seniors smoked were not much more likely to be susceptible than those who believed that no senior smoked.

ANTISMOKING EDUCATION AT SCHOOL

All adolescents surveyed were asked if they recalled participating in a class dealing specifically with smoking and its health damaging effects. As shown in Figure 8.6, in 1990, 72.2% of adolescents recalled taking a class on smoking; this proportion rose to 77% in 1992. The increase in the percentage of adolescents recalling a class on smoking from 1990 to 1992 occurred in each age group. Overall, adolescents aged 16-17 years were more likely to recall having taken a class than adolescents in the younger age groups.

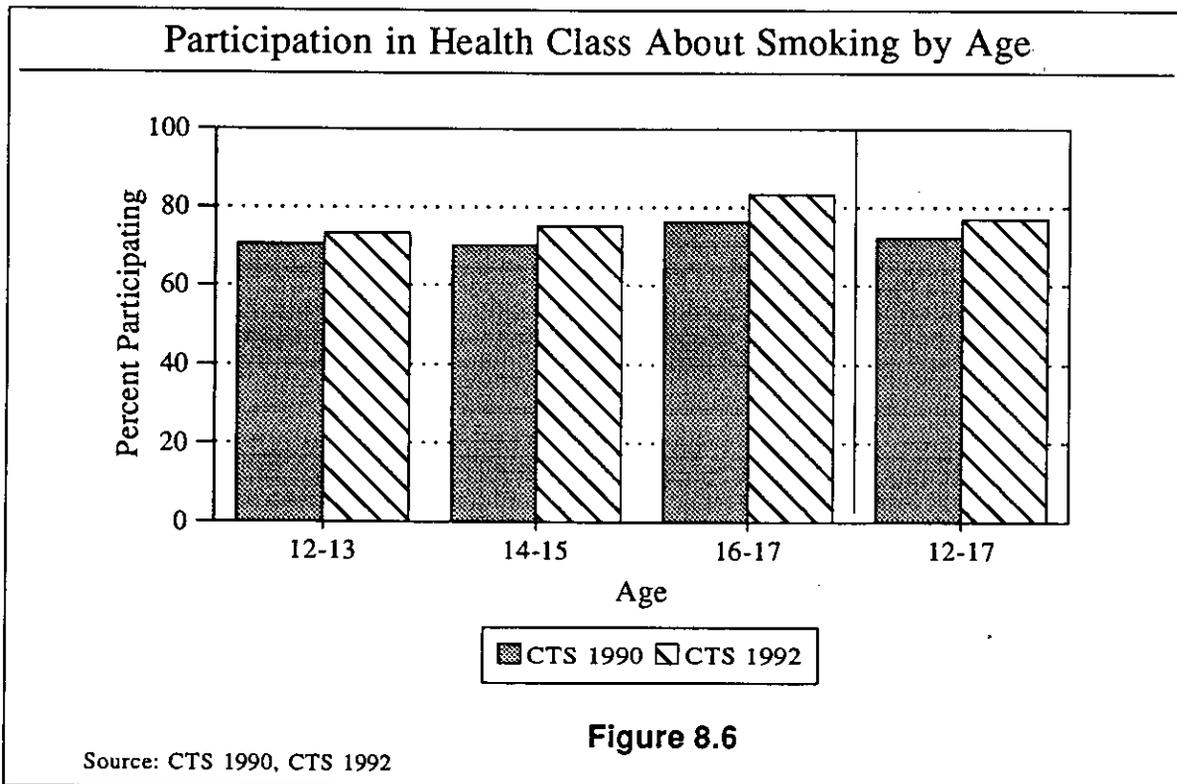
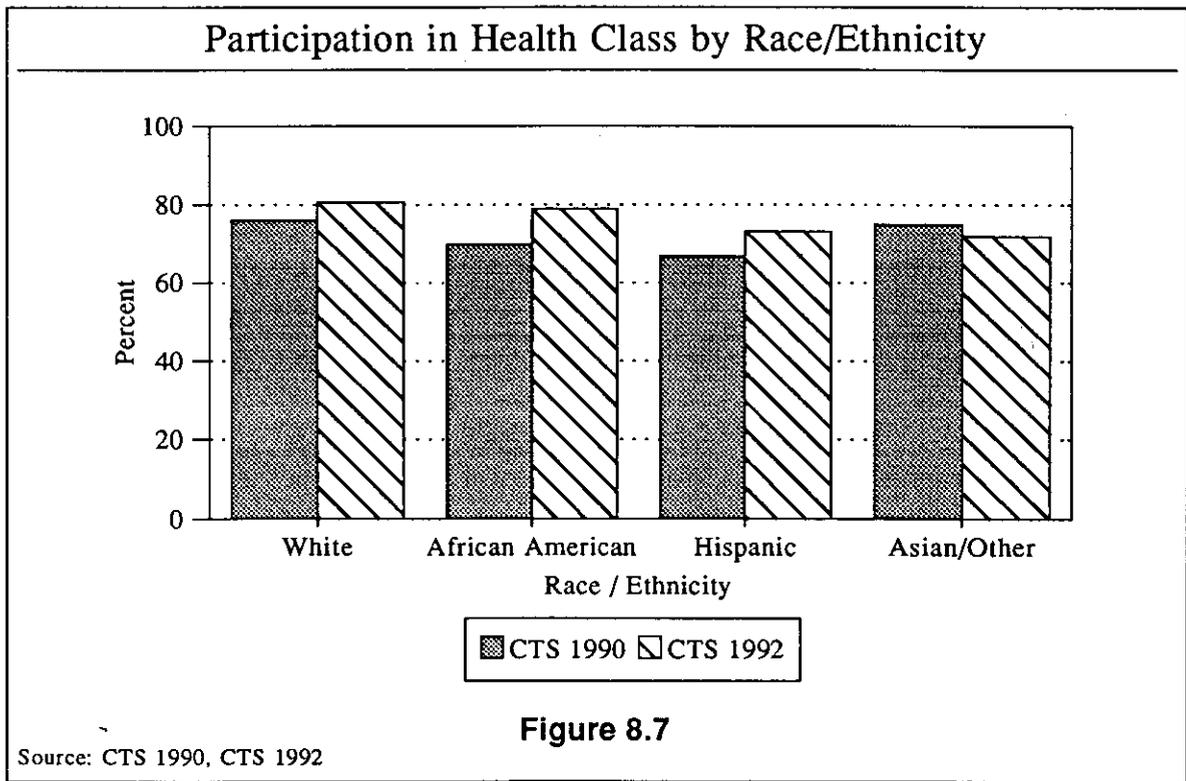


Figure 8.6

Recall of Antismoking Classes by Race/Ethnicity

In 1990, white and Asian adolescents were significantly more likely to recall having taken a class on smoking than either African Americans or Hispanics (Figure 8.7). Hispanic adolescents showed the lowest recall rate, with 66.8% remembering a class on smoking compared to 76% of white adolescents who recalled taking a class. By 1992, these ethnic differences had begun to disappear, owing to a general increase across race/ethnic groups in the proportion of adolescents who recalled taking a class, with the exception of Asian adolescents. African Americans showed the highest increase in class recall, rising from 69.8% in 1990 to 78.8% in 1992.



The Impact of Antismoking Classes on Adolescent Smoking Susceptibility

As shown in Figure 8.8, adolescents who recalled discussing the health risks of smoking in a class were not less susceptible to smoking. To explore reasons for the failure of antismoking classes to reduce the likelihood of youth smoking, we assessed the impact of health classes on intermediate variables that were associated with smoking susceptibility.

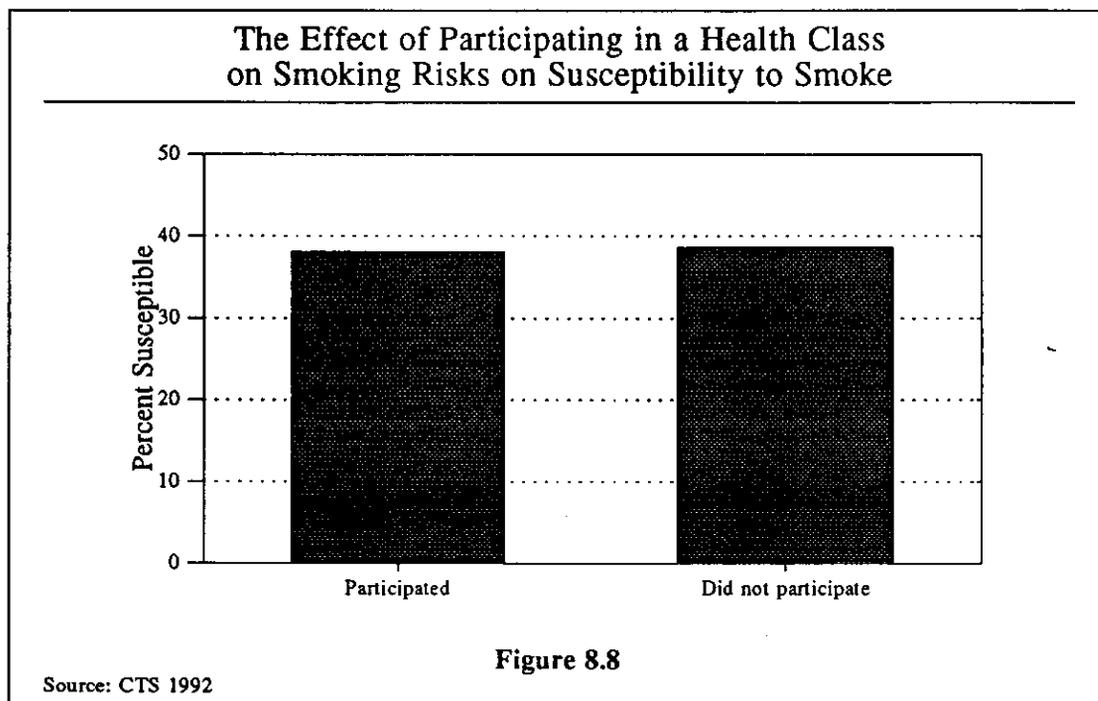
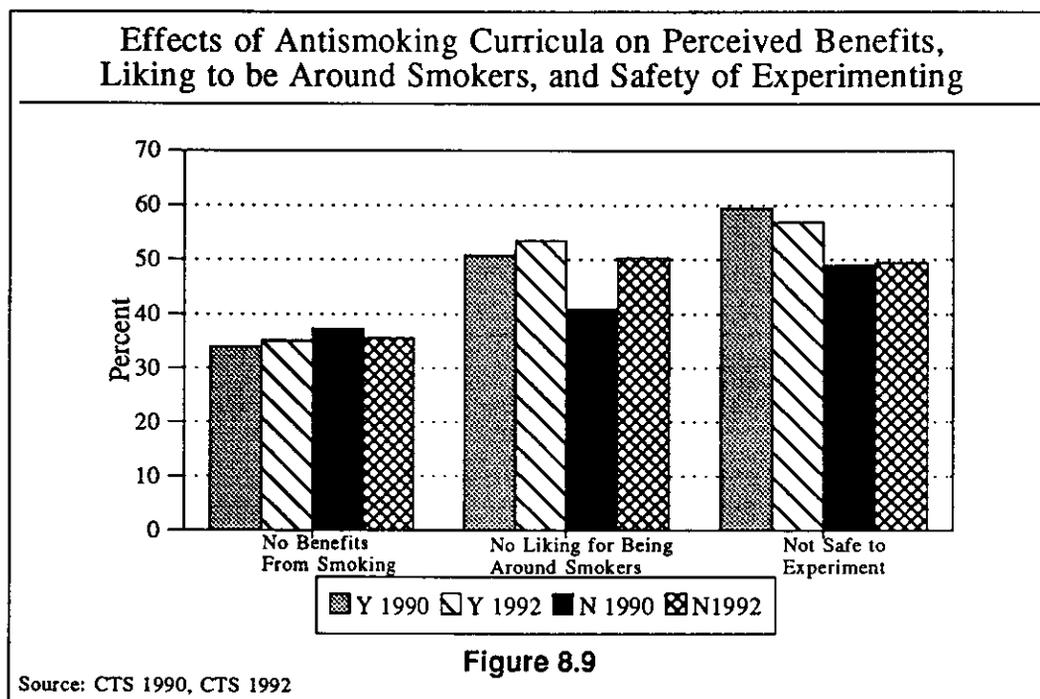


Figure 8.9 presents the effects of antismoking classes on three attitudinal variables: perception of the benefits of smoking, willingness to associate with smokers, and perceived safety of experimenting with cigarettes. Adolescents who recalled a class on smoking are grouped in the "Y" category and adolescents who recalled no class in the "N" category.



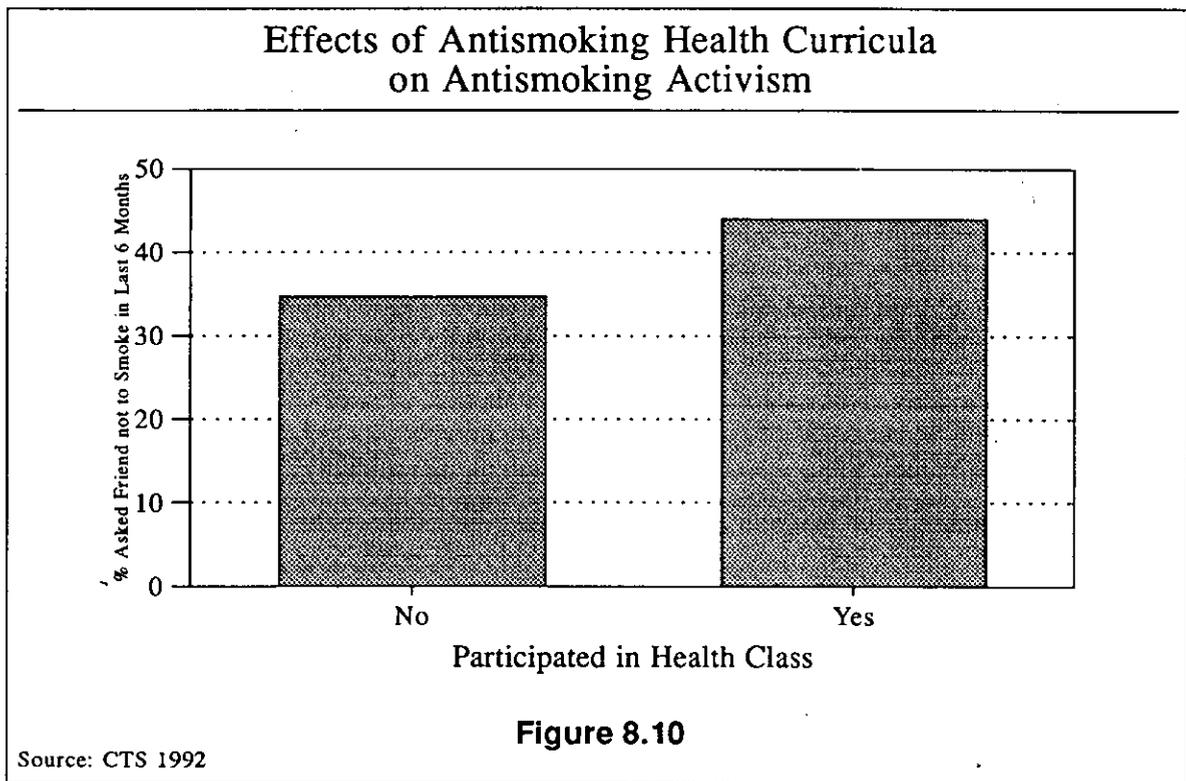
TOBACCO USE IN CALIFORNIA

Participation in a health class on smoking produced a significant increase in the percentage of adolescents who recognized that it was not safe to experiment with cigarettes. In 1990, 59.4% of adolescents who recalled a class agreed that experimentation was risky, compared to 49.0% of those who had not taken a smoking class.

However, health classes on smoking were less successful in changing perceptions of smoking benefits: adolescents who recalled a class and those who did not were equally likely to assert that smoking had no positive consequences.

In 1990 only, adolescents who recalled a class on smoking were less willing to associate with smokers than adolescents who did not remember taking such a class. This difference did not persist in the 1992 data.

Figure 8.10 examines the effect of health classes on antismoking activism among adolescents. Activism was conceptualized here as requesting a friend not to smoke. As shown, adolescents who recalled taking a class on smoking were significantly more likely to have asked a friend not to smoke in the 6 months before the survey.



Altogether these results confirm the urgency of creating school environments that are clearly perceived by adolescents to support and nurture antismoking attitudes and behaviors.

SUMMARY OF FINDINGS

1. When we defined a smoke-free school as a school having a non-smoking policy to which students adhered and having no teachers who were known to be smokers, only 1.1% of adolescents surveyed reported that their school was smoke-free.
2. Based on the small sample of adolescents with smoke-free schools, our findings indicated that adolescents who were not exposed to smokers at school had a greatly reduced susceptibility to smoking. The difference in susceptibility could be as much as three-fold between adolescents with and without smoke-free schools.
3. Teachers, in particular, and seniors who smoke or are perceived to smoke substantially increase the proportion of adolescents in the student population who are susceptible to smoking.
4. Despite the fact that health classes are mandated by law in the State of California, one quarter of adolescents in our survey could not recall being exposed to a class on smoking at school. Absence due to sickness or truancy may have accounted for this finding; however, failures to recall a class may also raise questions about the style of delivery of health information to adolescents.
5. Related to this issue is the finding that a disproportionate number of Hispanics and African Americans failed to recall a class on smoking. This may suggest that the provision of antismoking information must be made more sensitive to ethnic and racial differences in the student population.
6. Adolescents who participated in health classes on smoking were more likely to be aware of the dangers of experimenting with cigarettes. However, recall of health classes did not reduce susceptibility to smoking overall.
7. Given that health classes did not appear to counter student perceptions of the benefits to be derived from smoking, we might speculate on the need to address the social consequences of smoking more strongly in adolescent health education.

Chapter 9

**NORMATIVE INFLUENCES RELATED TO
SMOKING**

INTRODUCTION

Norms refer to the codes established by society that communicate to members which behaviors are acceptable to the group. Individuals are thought to respond to normative pressure either because of the social rewards available to those who conform to group standards, or because the norm has been internalized by the individual.⁶⁶ Group norms for a behavior are manifested in various ways, most obviously through the expression of disapproval or approval for the behavior.⁴⁸ Parents and peers are held to be the key sources of health behavior norms for adolescents.^{35,67-69}

Adolescence is typically characterized as a time of increasing conformity to peer norms and a reduction in the influence of family norms.^{48,54,66} However, the relative importance of peer and family norms is likely to vary with the behavior and across different subgroups of adolescents.⁷¹

The CTS explored adolescents' sense of whether their parents and peers would generally approve or disapprove of teenagers who smoke. Within the peer group, a further distinction was drawn between the perceived smoking norms of best friends and the perceived smoking norms of the adolescent's general peer community. This chapter reports on how much support adolescents perceive for smoking within these different groups and how perceptions of normative support affect their susceptibility to smoke.

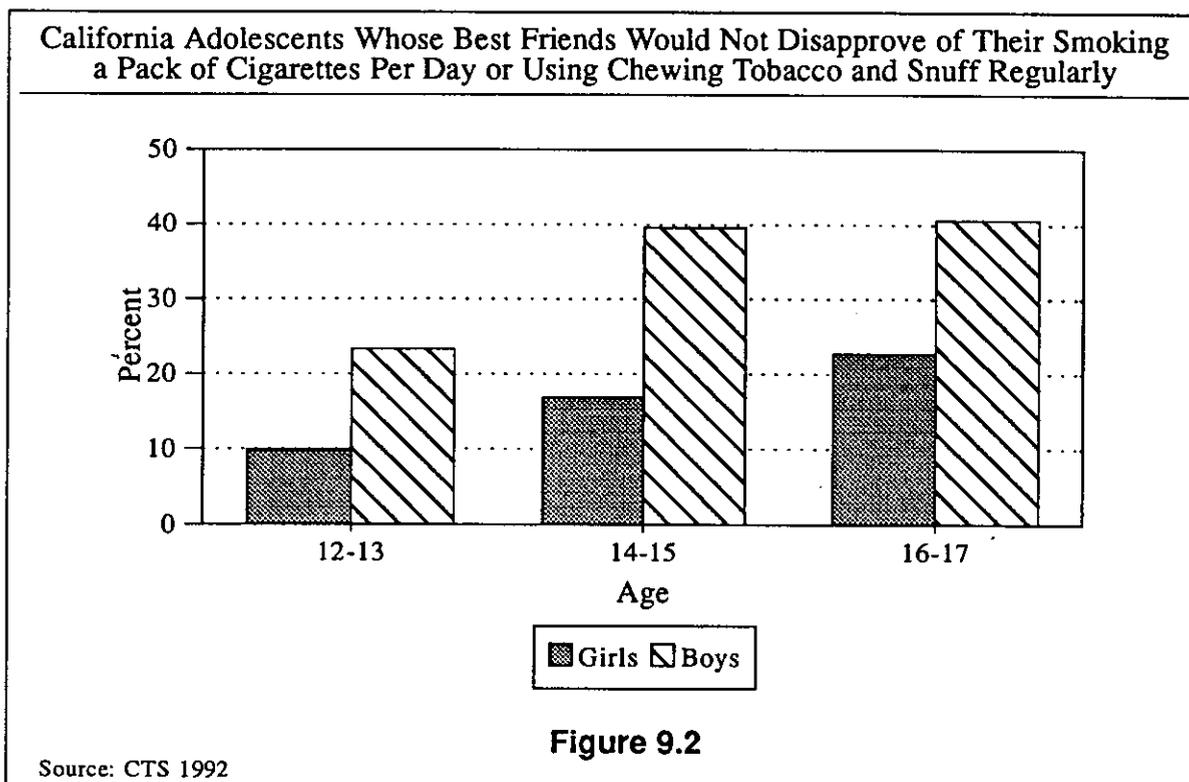
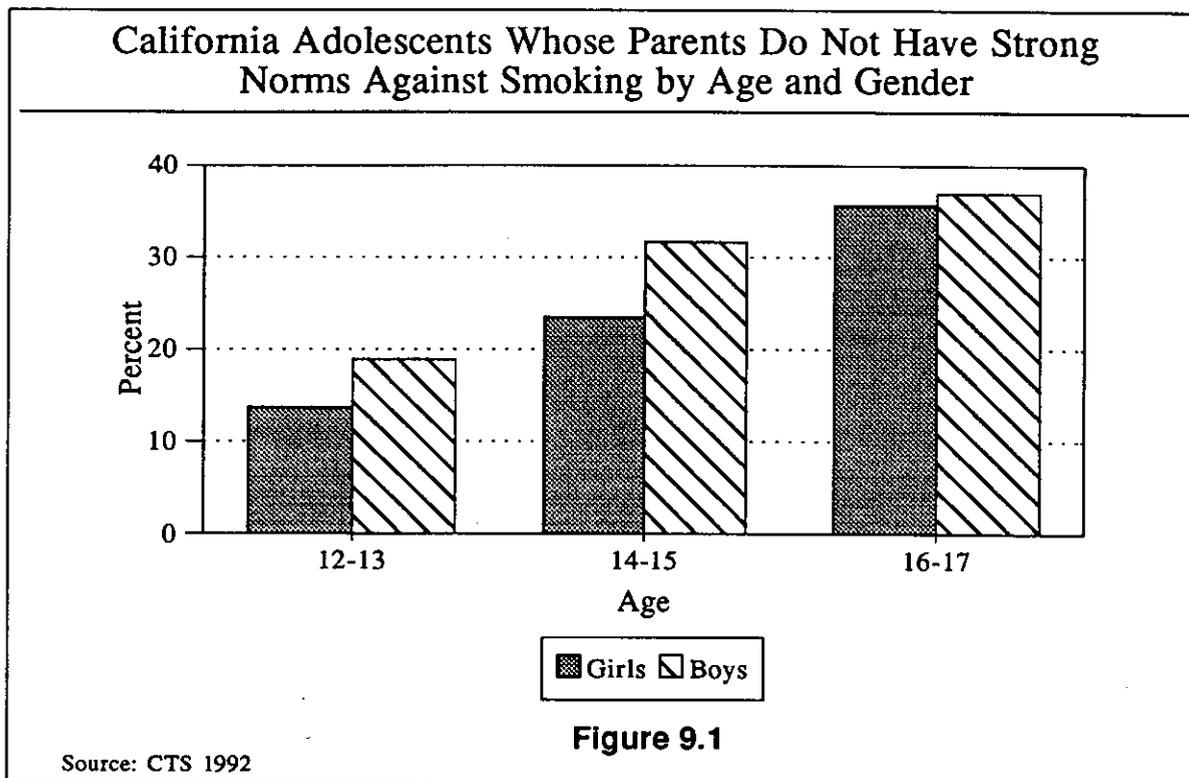
PARENTAL NORMS ON YOUTH SMOKING

In both survey years all adolescents were asked to agree or disagree with "When I'm older, my parents won't mind if I smoke." In addition, in 1992 adolescents were asked how they thought their parents would react if they lit up a cigarette tomorrow in front of them. Any response other than "tell you to stop and would be very upset" was taken to indicate that parents were not strongly opposed to their children smoking. Figure 9.1 shows the proportion of adolescents by age and gender who report that their parents do not have strong norms against smoking.

As expected, few adolescents in the youngest age group thought their parents would not mind if they smoked. Among 12- to 13-year-olds less than 19% of boys and 14% of girls indicated that their parents did not have strong antismoking norms. However, the proportion of adolescents who believed their parents would not mind if they smoked increased with age. By 16-17 years over one third of California adolescents reported that their parents did not have strong norms against smoking.

BEST FRIEND NORMS ON SMOKING

The strength of normative opposition to smoking among best friends is presented in Figure 9.2. Adolescents were asked if their best friends would approve of them smoking a pack or more of cigarettes a day, and how their best friends would feel if they used chewing tobacco or snuff regularly. Any response other than "disapprove" to both questions was taken as an indication of weak antismoking norms among best friends.

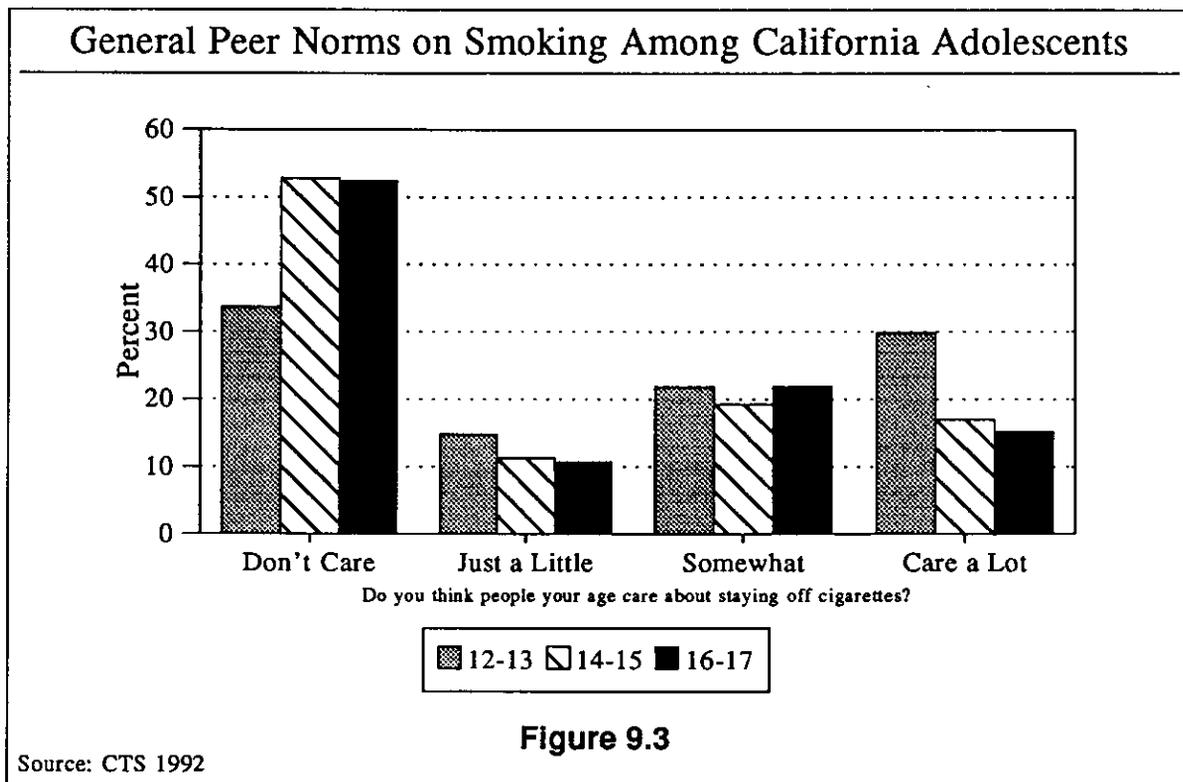


Normative Influences Related to Smoking

Figure 9.2 presents the responses of adolescents to these questions in 1992, categorized by age and gender. Adolescents in the youngest age group reported high disapproval rates among their best friends. In 12- to 13-year-olds, less than a quarter of the boys and less than 10% of girls felt that their best friends would not disapprove of this behavior. However, by age 14 the proportion of boys reporting a lack of disapproval among best friends increased to almost 40% and it stayed at this level through age 17 years. The proportion of girls whose best friends would not disapprove of them smoking increased to just under a quarter (22.8%) by age 16-17 years. Note that consumption of a pack of cigarettes or more per day would constitute very heavy smoking for an adolescent. It is possible that heavy smoking is more normative for boys than for girls during adolescence, and thus boys would perceive less disapproval for heavy smoking among their best friends than girls.

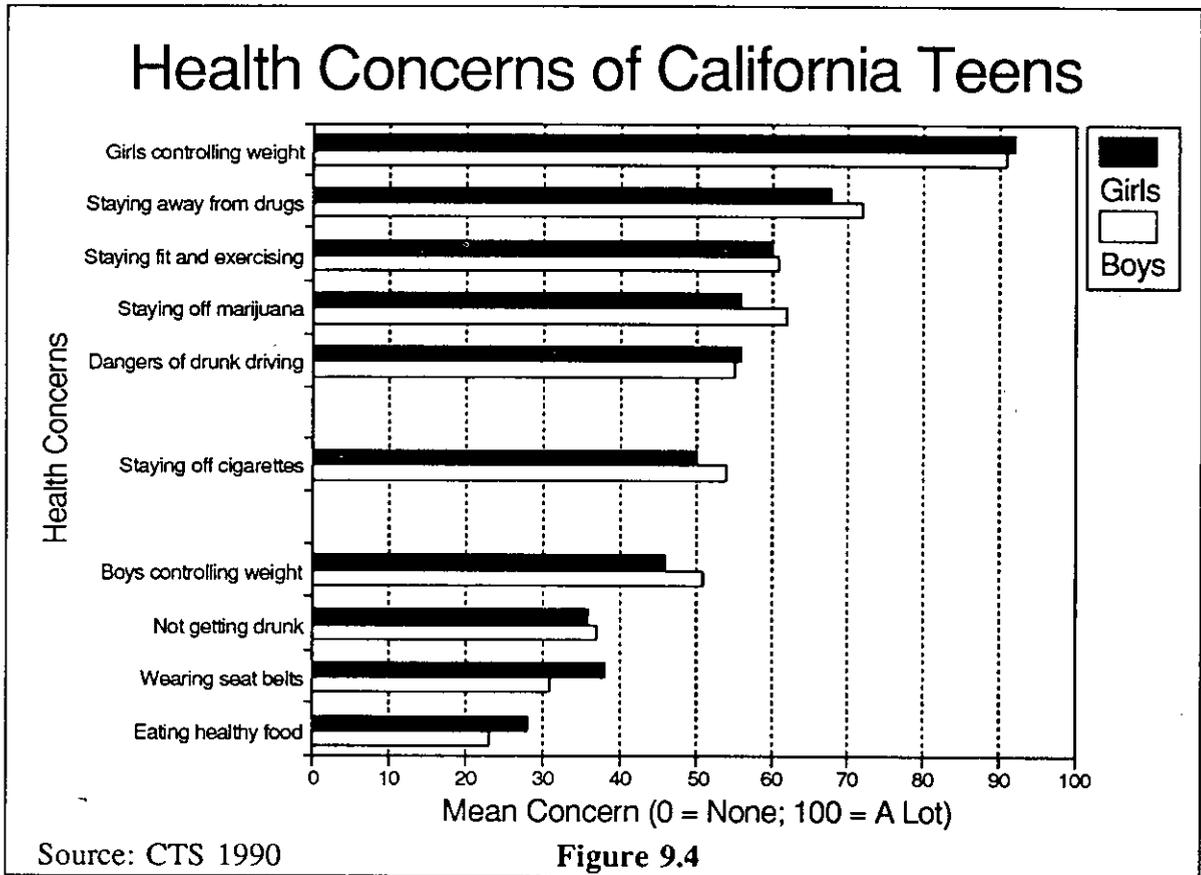
GENERAL PEER NORMS ON SMOKING

To assess the prevalence of anti-smoking norms in the general peer community, all adolescents were asked if they thought people their own age cared about staying off cigarettes. The responses to this question are presented in Figure 9.3. As this figure demonstrates, 12- to 13-year olds are more likely to think that staying off cigarettes is important to their peers than older teenagers. Conversely, more than half of adolescents over the age of 14 believed that the issue of avoiding smoking was not important to people their own age. Thus smoking norms in the general peer community are perceived as less opposed to smoking once teenagers pass the age of 14.



THE RELATIVE IMPORTANCE OF NOT SMOKING COMPARED TO OTHER HEALTH NORMS AMONG PEERS

In the 1990 CTS only, we examined the salience of antismoking norms in the general peer community, compared to norms for other preventive health behaviors. Adolescents were asked how much people their own age cared to avoid various drugs and heavy alcohol consumption, how much they cared about fitness, nutrition, weight control, how concerned they were to wear seatbelts and avoid drunk driving. Each question had four possible responses, ranging from "they care a lot" to "don't care." Figure 9.4 presents the percentage of adolescents who thought people their own age cared "a lot" or "somewhat" about the preventive health behaviors in question.



According to adolescents in California, weight control is by far the most important issue for girls of their own age. Both boys and girls appeared convinced of this fact, with over 90% of either gender affirming the priority of weight control for their female peers. Avoidance of hard drug use was also perceived to be generally supported by adolescents, with 72% of boys and 68% rating this as a high concern among their peers.

Concern about smoking was ranked sixth in importance by California adolescents with approximately half of either gender stating that their peers cared about staying off cigarettes.

Thus in 1990, smoking was ambivalently positioned among adolescent health priorities, less important than keeping fit, but more important than avoiding drunkenness.

Although avoiding marijuana, other hard drugs and drunk driving ranked in the top five of adolescent concerns, the high score for perceived concern about fitness and exercise (60% girls, 61% boys), together with the score for weight control suggests that for teenagers, strong positive norms may be particularly attached to those health behaviors that promise to be socially rewarding. Unfortunately the relatively limited concern that adolescents report among their peers for behaviors such as smoking and drunk driving bears little relation to the actual ranking of these behaviors in terms of the health hazards they pose to this age group.

COMBINED EFFECTS OF SMOKING NORMS ON SUSCEPTIBILITY

Overall, some 30% of adolescents surveyed in 1992 were able to report that neither their parents, nor their best friends, nor their peers in general would approve if they smoked. Thirty-seven percent of adolescents reported that at least one of these three groups were not strongly opposed to smoking, 26% reported weak opposition among two groups, and 7% reported an absence of disapproval among all three groups.

The combined effect of parental norms, general peer norms, and best friend norms on adolescent susceptibility to smoke is presented in Figure 9.5. When there is no normative support for smoking, approximately one quarter of adolescents were susceptible to smoke. Among adolescents who perceive normative support for smoking within one group, the proportion susceptible to smoke increased to 36%. When all three groups had norms that were somewhat supportive of smoking, then a total of 66% of teenagers were susceptible to start to smoke. This level of susceptibility is more than twice the level among adolescents who report no normative support for smoking in their social environment.

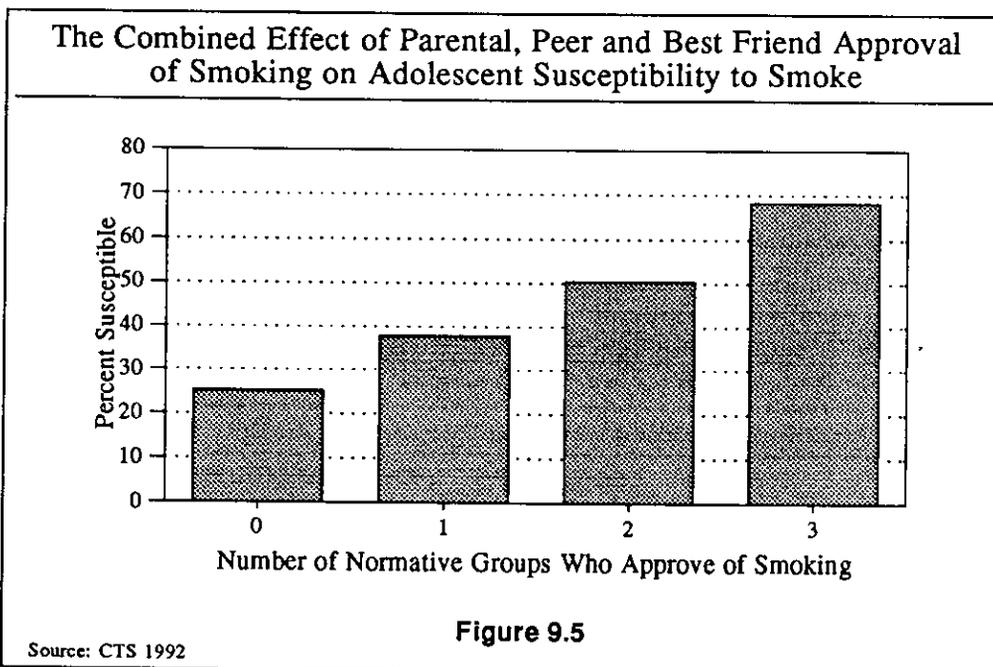


Figure 9.5

SUMMARY OF FINDINGS

1. The majority of teenagers aged 12-13 years believe that their parents are strongly opposed to smoking. However older teenagers are more likely to report parental norms that are not strongly prohibitive of adolescent smoking.
2. In 1992, 40% of boys over the age of 14 years have best friends who would not mind if they smoked heavily. Although norms concerning heavy smoking appeared to be more positive for boys, one quarter of 16- to 17-year-old girls also indicate that their best friends would not disapprove if they smoked heavily.
3. In 1990, opinions in the general adolescent community about smoking were perceived as ambivalent. Approximately one half of California adolescents thought that their peers did not care about staying off cigarettes. The prescription of weight control for girls appeared to be more central to the norms of peers than a prohibition on smoking. Even the issue of staying fit and exercising was felt to be of higher concern to California adolescents than smoking, although avoiding cigarettes was more important than not getting drunk when they drink.
4. Adolescents who perceive widespread normative support for smoking among parents, best friends, and peers in general are twice as likely to be susceptible to smoke.

Chapter 10

**DOES TOBACCO ADVERTISING
INFLUENCE TEENS TO START SMOKING?**

INTRODUCTION

The relationship between tobacco advertising and tobacco consumption has been the subject of much research. In recent years a number of countries have introduced a total ban on tobacco advertising (Norway in 1975, Finland in 1977, Canada in 1989, Australia in 1990, and New Zealand in 1990). A review of the evidence from these countries found that the elimination of tobacco advertising was associated with a significant decline in tobacco consumption.⁷²

The contribution of tobacco advertising to smoking uptake among children has been more difficult to quantify. Evidence from several countries suggests that both smokers and prospective smokers find tobacco advertising more attractive than nonsmokers do.⁷³ In December 1991, this issue was brought into sharp public focus with the publication of three research papers in the *Journal of the American Medical Association (JAMA)*.^{56,74,75} These studies demonstrated that the revitalized campaign for Camel cigarettes in the United States had a stronger impact on the very young than it did on adults. A further survey conducted by the advertising industry and reported in the *Advertising Age*⁷⁶ found that the majority of children aged 8 through 13 years could name cigarette brands. Moreover, this age group was able to describe how these brands were advertised (with a camel and cowboy and not with other images such as dolphins, clowns, etc.).

Publication of these findings produced considerable outrage and prompted several leading figures in the public health community to question the morality of tobacco advertising when directed toward children (*Associated Press; March 10, 1992*). Despite extensive public discussion, no further restriction on the ability of tobacco companies to advertise has ensued.

In this chapter, we revisit the issue of the impact of tobacco advertising. The data presented aims to provide not only additional evidence that tobacco advertising successfully targets young children, but also to promote further research into the impact of advertising on smoking behavior, by elucidating the mechanisms by which tobacco advertising may encourage young children to start smoking.

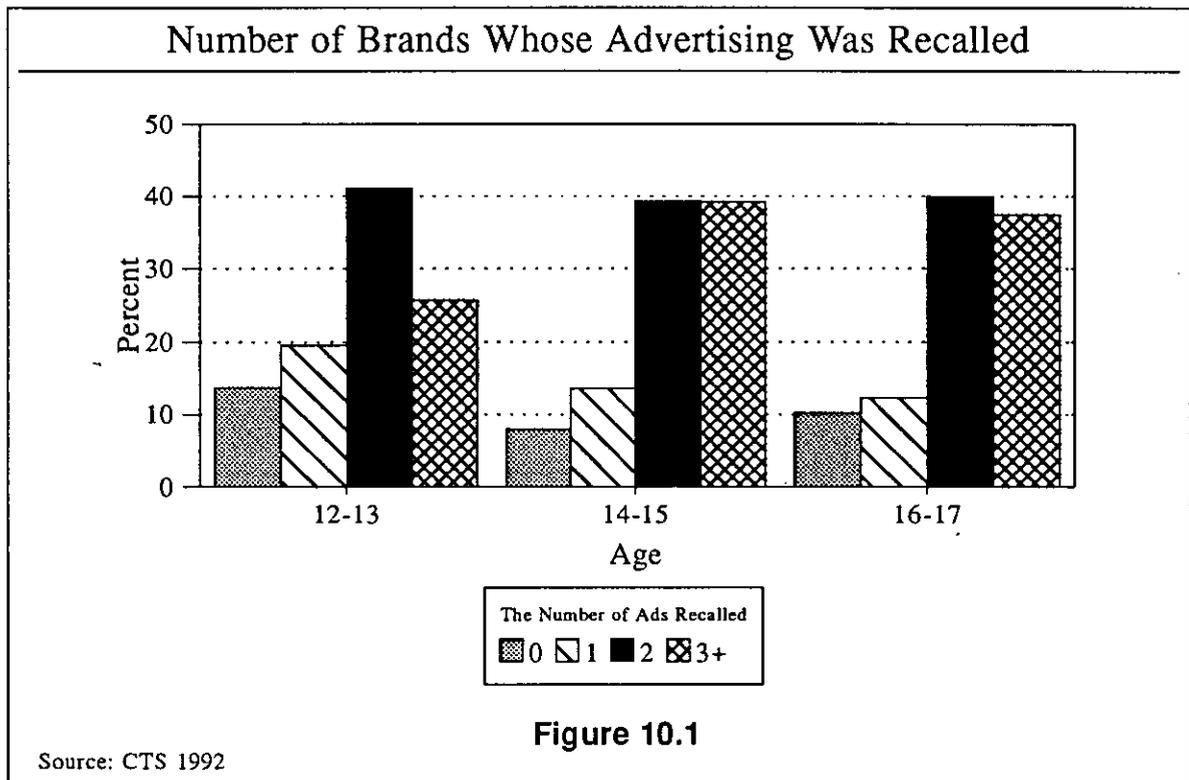
AWARENESS OF CIGARETTE ADVERTISING AMONG TEENS

In the 1992 survey, teenagers were asked to name any cigarette brand that they knew was advertised. Table 10.1 shows which cigarette brands were most often recalled as advertised by age. Among 12- to 13-year-olds, almost two thirds nominated both Marlboro and Camel as advertised brands. A much smaller 13% nominated Virginia Slims as a brand that they knew was advertised, followed by Winston, Salem, and Newport, all with small percentages. This pattern remained essentially the same among older age groups, with slightly higher recall rates. Based on these data we estimated that Camel has achieved 96% of its total penetration among 13-year-old teenagers, Marlboro has achieved 82%, and Virginia Slims 69%.

Table 10.1
Recall of Advertising for Most Recalled Cigarette Brands
by Age in California Teens

	Age		
	12-13	14-15	16-17
Marlboro	62.5	73.7	76.7
Camel	64.3	67.2	67.2
Virginia Slims	12.7	16.5	18.4
Winston	5.5	9.6	11.6
Salem	4.8	11.5	5.6
Newport	3.3	10.2	8.2

Figure 10.1 presents the number of advertised brands recalled by teenagers within age. In the youngest age group, less than 14% of teens could not recall a cigarette brand that was advertised and this proportion decreased with age. Two thirds of 12- to 13-year-olds recalled at least two advertised brands. This increased only slightly to 78% for those aged 16-17 years.



Does Tobacco Advertising Influence Teens to Start Smoking?

These data provide further strong evidence that the impact of tobacco advertising reaches the youngest adolescents in our society.

FAVORITE CIGARETTE ADVERTISEMENTS OF TEENAGERS

Figure 10.2 presents data from the 1992 survey on the targeting of tobacco advertising. Information was obtained by asking adolescents:

"What is the name of the cigarette brand of your favorite cigarette advertisement?"

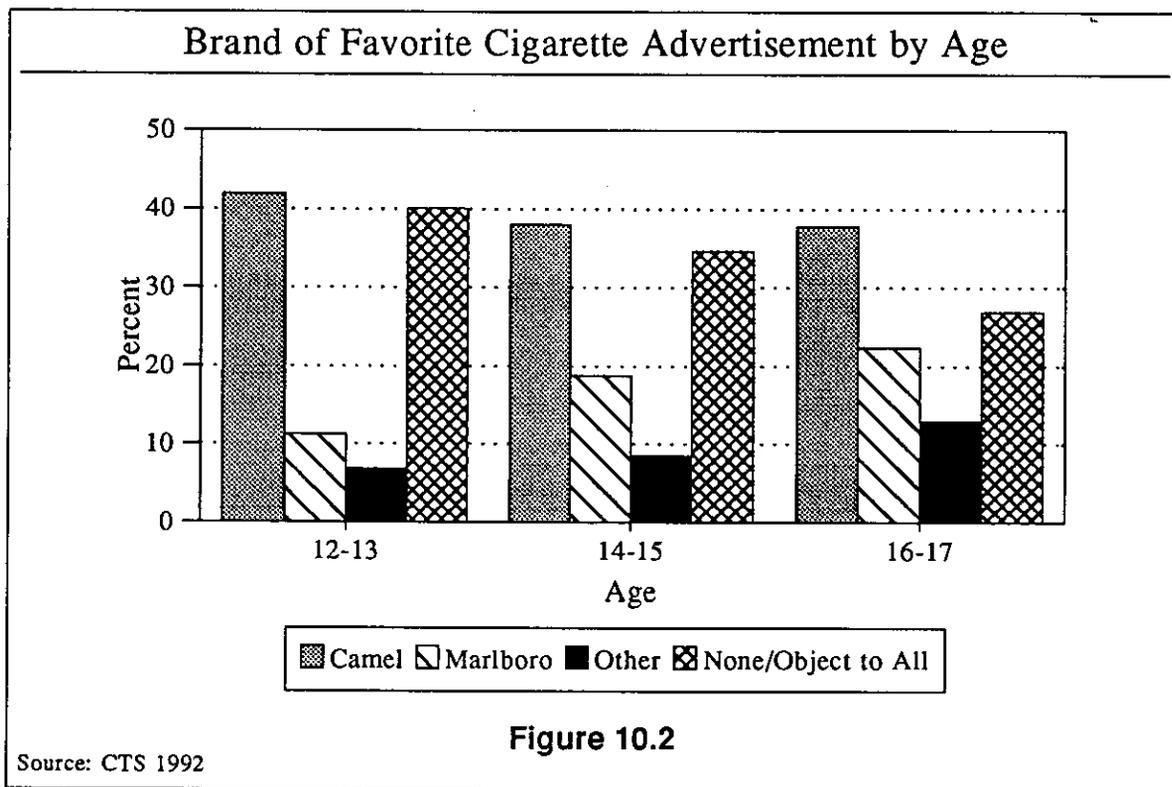


Figure 10.2

Some 40% of 12- to 13-year-olds indicated that they objected to all cigarette advertising or had no favorite advertisement. This number decreased to 35% for 14- to 15-year-olds and to 27% for 16- and 17-year-olds.

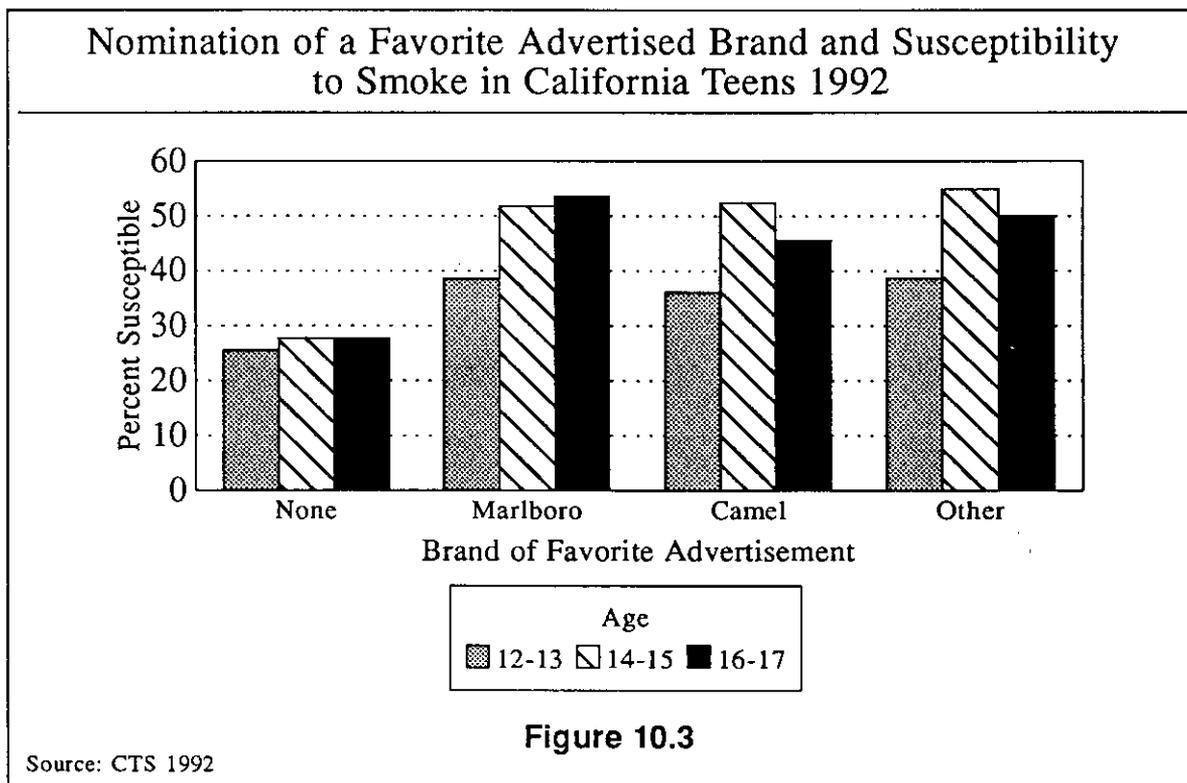
In each age group, the Camel advertisement was much preferred to the Marlboro advertisement. This was particularly true of the 12- to 13-year age group, where nearly four times as many children indicated that Camel was their favorite advertisement as indicated Marlboro. Among 14- to 15-year-olds, twice as many preferred Camel to Marlboro, a proportion that decreased to 69% in 16- to 17-year-olds.

By inviting teenagers to specify their favorite advertised brand we found further support for the high salience of cartoon advertising such as *Joe Camel* among very young adolescents.

TOBACCO USE IN CALIFORNIA

NOMINATION OF A FAVORITE ADVERTISED BRAND AND SUSCEPTIBILITY TO SMOKE

Figure 10.3 compares the susceptibility to smoke among California adolescents of different ages according to whether or not they reported a favorite tobacco advertisement. For those who were unable to nominate a brand as being advertised or indicated that they objected to all tobacco advertising, approximately one quarter were susceptible to smoke regardless of age.



Among 12- to 13-year-olds, nomination of a favorite cigarette ad brand increased the proportion who were susceptible to smoke by more than 40%. This increase in susceptibility did not depend on which brand ad was chosen as the favorite by adolescents. The level of susceptibility remained the same for adolescents who chose Camel, Marlboro, or any other brand as their favorite advertisement.

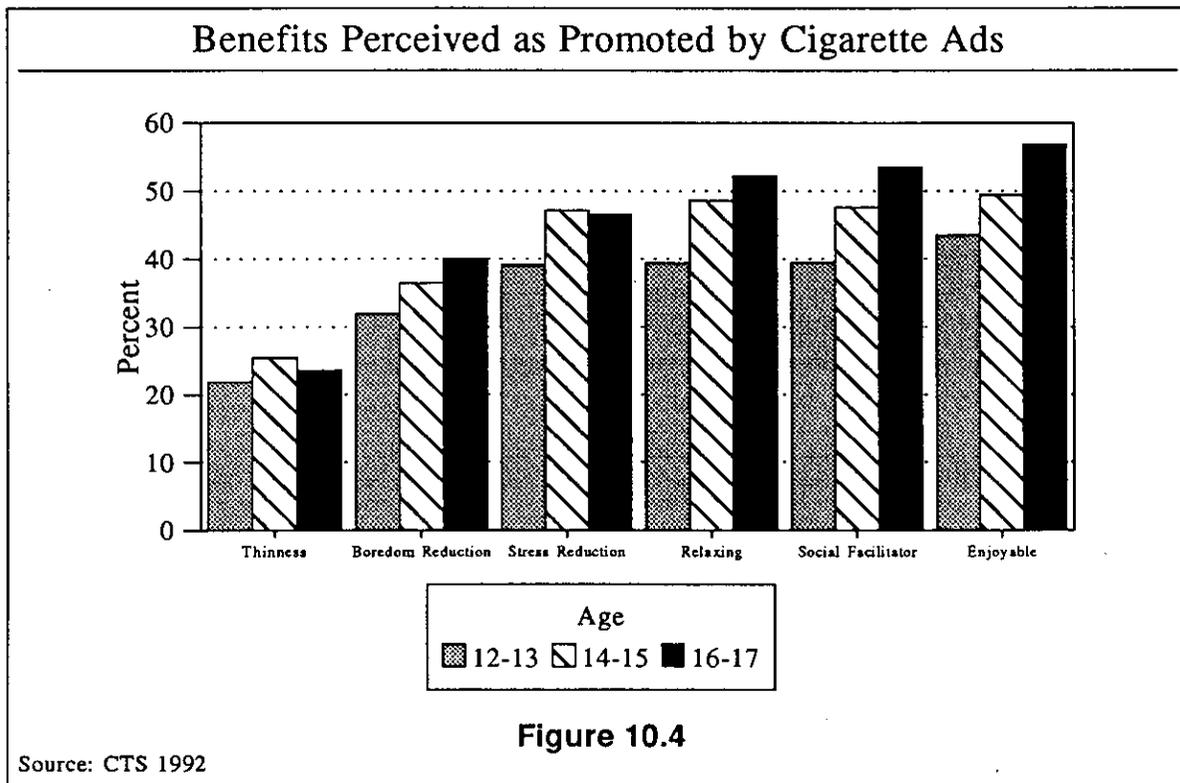
The effect of having a favorite tobacco ad on susceptibility to smoke was similar among older teenagers. Having a favorite brand nearly doubled the proportion of adolescents aged 14 to 17 years who were susceptible to smoke.

DO CIGARETTE ADVERTISEMENTS PROMOTE THE BENEFITS OF SMOKING?

In earlier chapters we showed that teenagers who attached specific benefits to smoking (such as helping people to relax or to feel comfortable in social situations) were more likely to be

susceptible to smoking than teenagers who saw no utility in smoking. Given that advertising is generally concerned to establish the rewards available to anyone using the advertised product, we hypothesize that some of the information teenagers possess about the benefits of smoking might derive from tobacco advertising. We suggest that tobacco advertising may encourage teenagers to smoke by influencing their expectations about the behavior, such that they become aware of the supposed advantages to smoking.

Figure 10.4 shows how teenagers who have a favorite advertisement responded when asked whether cigarette advertising promotes the benefits of smoking. Irrespective of age, most teenagers agree that cigarette advertising made claims about the benefits of smoking, particularly its role in facilitating social intercourse and as a means of relaxing or coping with stressful situations. Although older teenagers were more likely to attribute this function to cigarette advertising, a substantial proportion of the youngest age group were already cognizant of the positive messages contained in cigarette advertising.



The Impact of Nominating Multiple Cigarette Advertisements on Perceptions of Advertising Themes

Is the reception of positive messages about smoking from advertising a cumulative effect that is based on exposure to more than one cigarette advertisement? This question is addressed in

TOBACCO USE IN CALIFORNIA

Figure 10.5, which examines the relationship between the number of brand advertisements recalled and the perception that advertising promotes the benefits of smoking. As shown, a 12- or 13- year-old teenager who could recall at least three cigarette brand advertisements was nearly eight times more likely to feel that cigarette advertising promoted the benefits of smoking compared to teenagers in this age group who could not recall an advertisement.

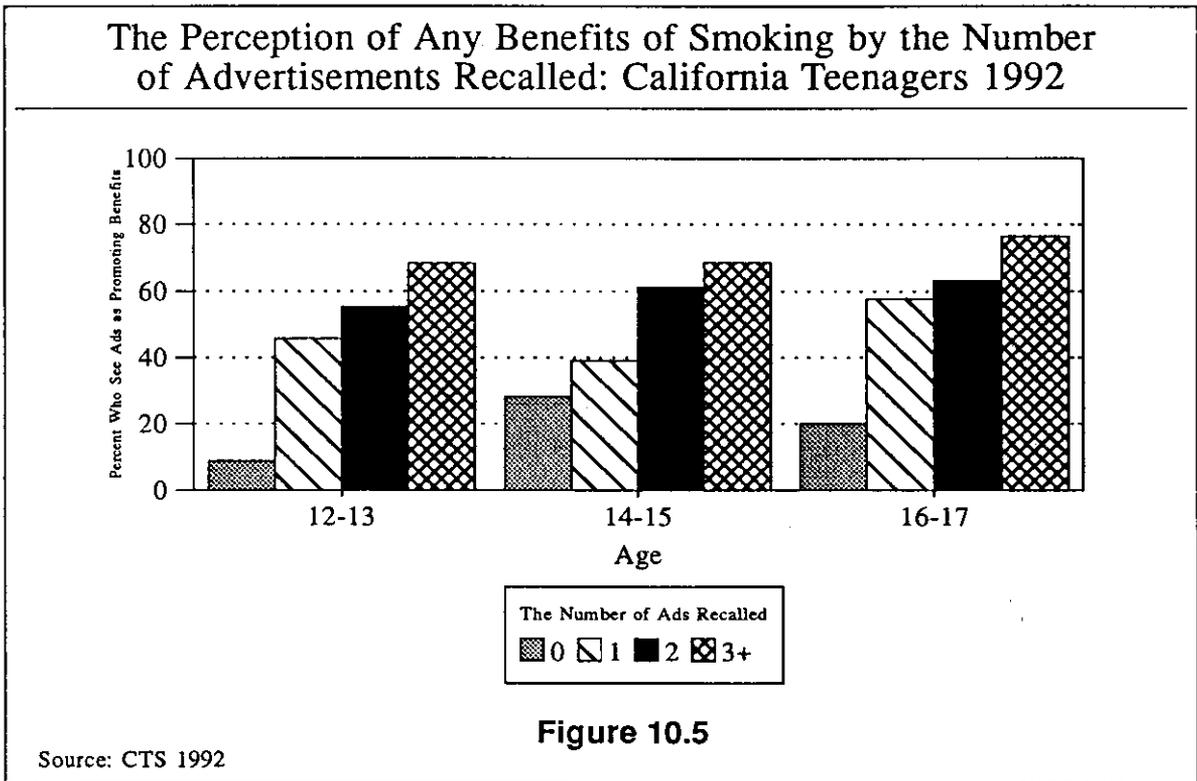


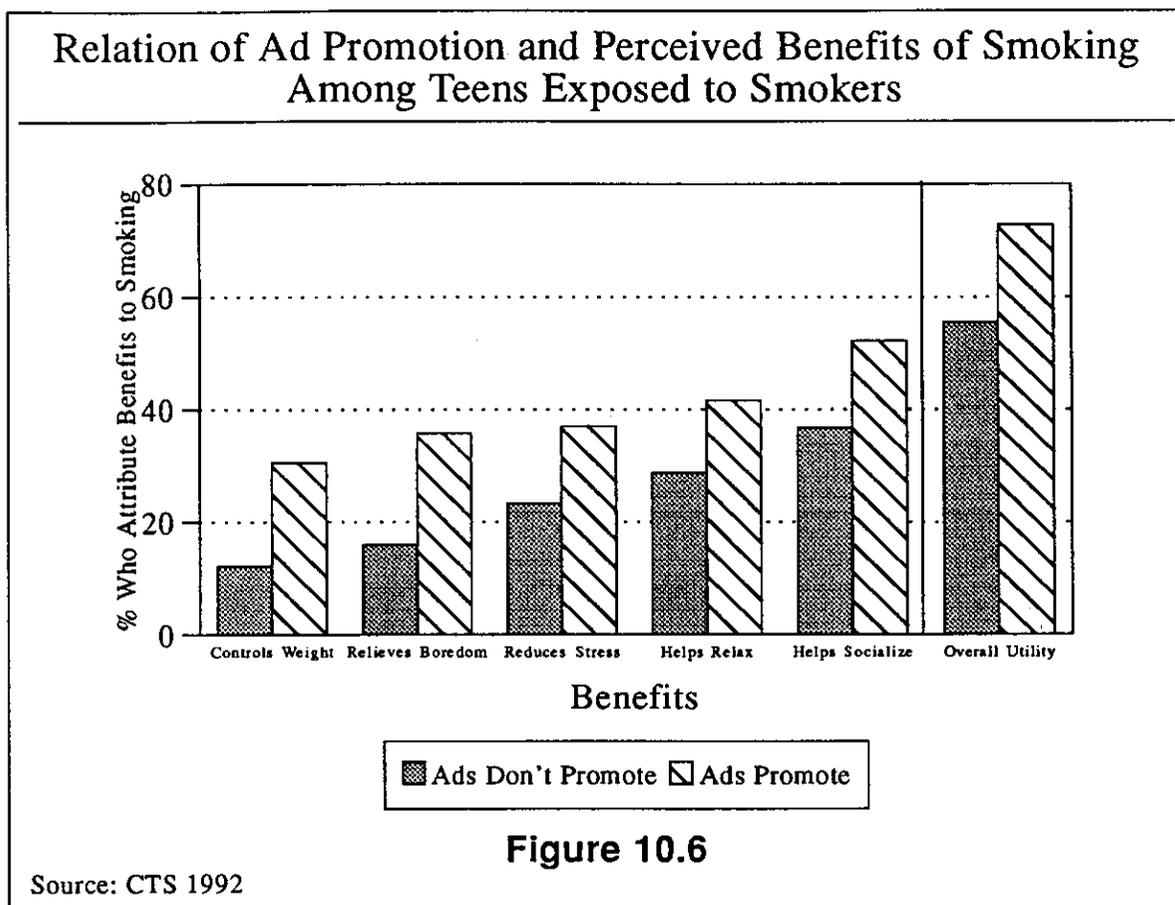
Figure 10.5

CAN THE PERCEPTION OF BENEFITS OF SMOKING BE EXPLAINED BY EXPOSURE TO OTHER SMOKERS IN THE SOCIAL ENVIRONMENT?

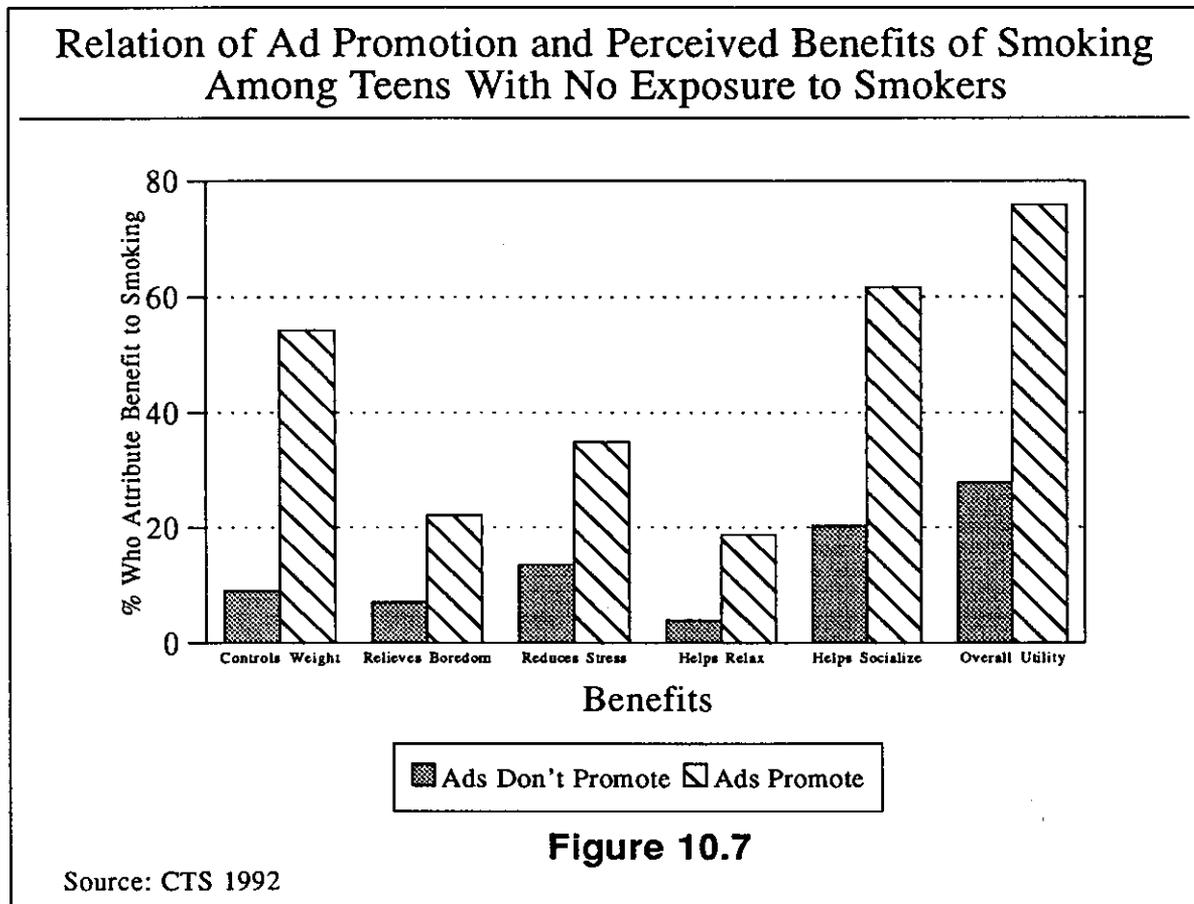
It may be argued that information about the benefits of smoking is acquired primarily from friends who smoke or from smokers in the family, rather than from tobacco advertising. To address this issue, adolescents were divided into two groups: those who knew at least one smoker (Figure 10.6) and those who knew no one who smoked (Figure 10.7). These figures present the relationship between the perception that tobacco advertising promotes the benefits of smoking and the personal belief that smoking is beneficial.

Among adolescents who knew smokers (Figure 10.6), 56% of those who did not think that cigarette advertising promoted any of the benefits of smoking saw smoking as beneficial. Thinking that advertising promoted any smoking benefits increased by one third the proportion seeing smoking as beneficial to 73%. This finding occurred for each benefit individually. The perception that advertising promoted the benefit markedly increased the proportion of adolescents who attributed that benefit to smoking. The proportion doubled when the benefit was weight

control; it increased by 60% when the benefit was handling stressful situations; and increased by 40% when the benefit was social facilitation.



Among adolescents who knew no one who smoked (Figure 10.7), 28% of those who did not think that advertising promoted any smoking benefits saw smoking as beneficial. Among those who saw advertising as promoting any benefit, this proportion increased almost threefold to 76%. Again the effect of perceiving advertising as promoting a benefit had a marked effect on the proportion of adolescents who attributed that benefit to smoking. The proportion increased sixfold when the issue was weight control; it more than doubled when the benefit was stress control; and it increased threefold when the benefit was to increase confidence in social settings.



We can assess the differential effect of knowing a smoker with the effect of seeing advertising by comparing those who did not perceive advertising as promoting smoking benefits in Figure 10.6 with those who did in Figure 10.7. We have reproduced these data in Figure 10.8. Knowing someone who smoked had a larger effect than advertising only in attributing relaxation as a benefit of smoking. For each other perceived benefit, the effect of advertising was greater than the effect of knowing a smoker. The effect of advertising was particularly striking for the attributing of weight control and social facilitation as benefits of smoking.

The Differential Effect of Advertising and Knowing a Smoker on Benefits Attributed to Smoking

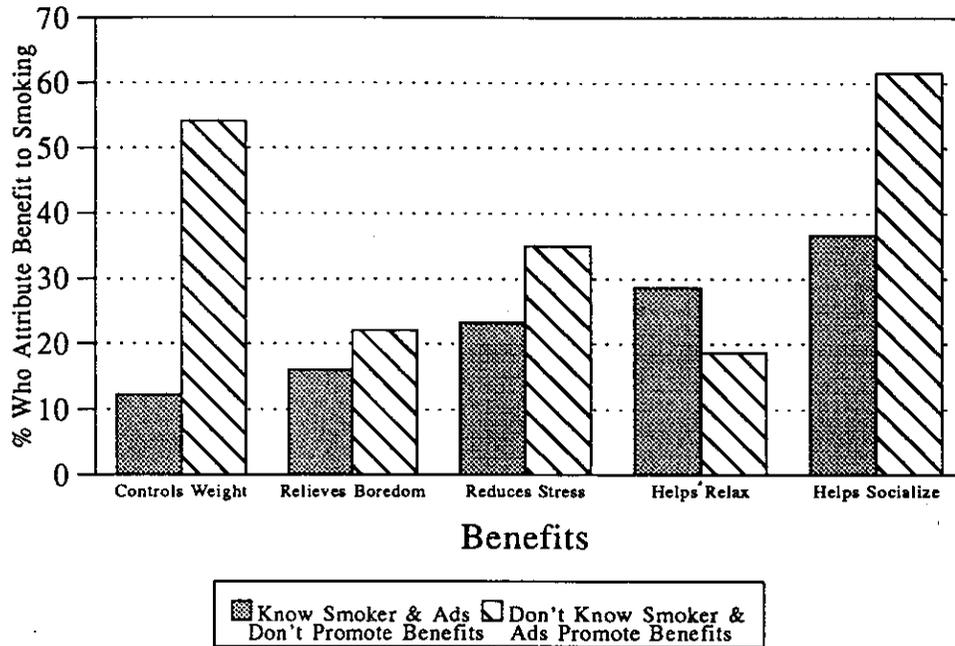


Figure 10.8

Source: CTS 1992

SUMMARY OF FINDINGS

1. Tobacco advertising reaches the very young. Audience awareness of cigarette advertising for the most popular brands is already well established in young adolescence. More than 90% of 12- to 13-year-old children could nominate a brand that was advertised. The cigarette brands most frequently recalled were Camel and Marlboro.
2. The cartoon character, Joe Camel, is particularly salient to the very young. Adolescents under 17 years chose the Camel advertisements as their favorite advertisements at a rate far exceeding that for any other cigarette brand. Among 12- to 13-year-olds, Camel advertisements were chosen as their favorite advertisements almost four times as often as Marlboro advertisements.

TOBACCO USE IN CALIFORNIA

3. Salient advertising may promote future smoking. Having a favorite brand of advertisement doubled the proportion of adolescents over the age of 14 who were susceptible to smoking. It also had a marked effect on the susceptibility of 12- to 13-year-old children.
4. Evidence suggests that tobacco advertising may encourage teenagers to smoke by associating smoking with benefits that they want. Adolescents across age groups were overwhelmingly in agreement that tobacco advertising promotes specific benefits of smoking. The more cigarette advertisements adolescents recalled, the more likely adolescents were to believe that advertising promotes the benefits suggested in the survey.
5. Cigarette advertising appears to be a powerful independent source of information about the benefits of smoking for adolescents, beyond the information they receive from smokers they know. Cigarette advertising was especially associated with attributions that smoking was beneficial for increasing confidence in social settings and in weight control. Having a smoker in the social environment was especially associated with the attribution that relaxation was a benefit of smoking.

Chapter 11

SMOKELESS TOBACCO

INTRODUCTION

The use of chewing tobacco and snuff (smokeless tobacco) has increased substantially since the mid 1970s among adolescent boys.²² As shown in an earlier report,³ in 1990 cigarettes were virtually the only form of tobacco used by California women. However, among men, 6.8% of 18- to 24-year-olds indicated that they were currently using smokeless tobacco. The prevalence of smokeless tobacco use declined with age (3.8% for the 25-44 age group, 1.7% for the 45-64 age group, and 1.4% for the 65+ age group). This higher level of usage among young males fits the pattern found for males across the United States⁷⁷ and suggests that the market for smokeless tobacco might be on the increase in young men. Overall, the use of smokeless tobacco appeared to be confined to white non-Hispanic males.

Smokeless tobacco use is known to be associated with oral cancer.²⁴ Given that some 3 million men under the age of 21 years are estimated to be regular users of smokeless tobacco in the United States, many health experts anticipate the development of an epidemic of oral cancer over the next few years.²³

A further question concerns the likelihood that teenagers who use smokeless tobacco will proceed to become cigarette smokers. The results of a previous survey⁷⁸ showed that psychosocial factors that predicted cigarette use were also predictive of smokeless tobacco use. Elsewhere, a study of adolescents who used smokeless tobacco found some indications that adolescents viewed smokeless tobacco as less addictive than cigarettes and as easier to conceal from parents or other authority figures.⁷⁹

While all adolescent respondents to the 1990 youth survey did not answer the question of current use, we did ascertain the proportion of teens who had ever experimented with smokeless tobacco. The 1992 CTS allowed for a more detailed examination of issues relating to smokeless tobacco including the current use question.

MEASURE OF CURRENT USE STATUS FOR SMOKELESS TOBACCO

The 1992 CTS included a question on the frequency of use of chewing tobacco or snuff in the previous 30 days. Any reported usage in the past 30 days classified an individual as a current user and susceptible to continue using smokeless tobacco. Teenagers who had tried smokeless tobacco but not in the past 30 days were classified as susceptible if they answered yes to the following question:

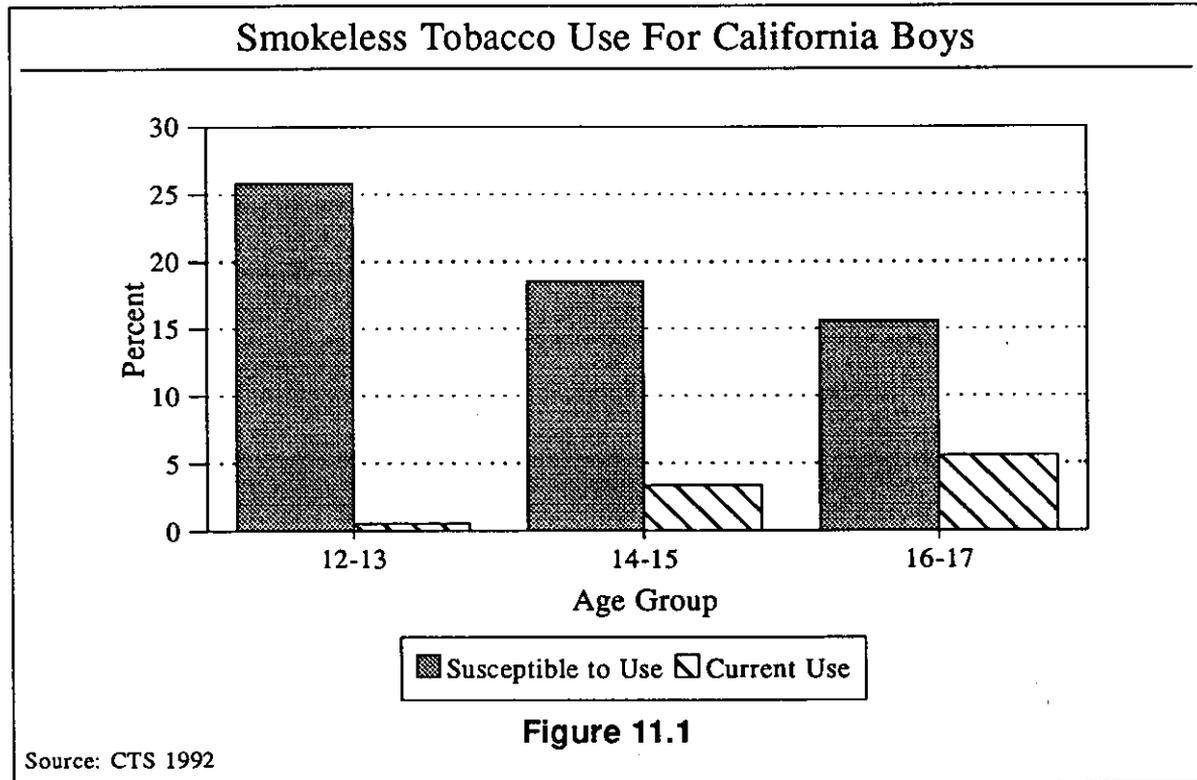
"Do you think that you will use chewing tobacco or snuff again in the next year?"

Teenagers who had never experimented with smokeless tobacco were classified as susceptible unless they answered "definitely not" to the following question:

"Do you think that you will ever use chewing tobacco or snuff?"

TOBACCO USE IN CALIFORNIA

Figure 11.1 shows that less than 1% of 12- to 13-year-old boys were classified as current users of smokeless tobacco. As with smoking, the proportion of current users increased with age to about 3% among 14- to 15 year-olds and to approximately 6% among 16- to 17-year-olds.



However, susceptibility to use smokeless tobacco was much higher than current use, and it was highest in the very young. Twenty-six percent of 12- to 13-year-old boys were classified as susceptible to start using smokeless tobacco. This proportion declined to 18.5% in 14- to 15-year-olds, and to 15.6% in 16- to 17-year-old boys.

HOW DOES SUSCEPTIBILITY TO USE SMOKELESS TOBACCO RELATE TO SUSCEPTIBILITY TO SMOKE CIGARETTES?

As mentioned earlier, teenagers who use smokeless tobacco may later risk switching to cigarette smoking. Figure 11.2 examines whether teenagers classified as susceptible to smokeless tobacco were also more likely to be susceptible to cigarette smoking.

Susceptibility to Smoking Cigarettes and to Using Smokeless Tobacco in California Boys

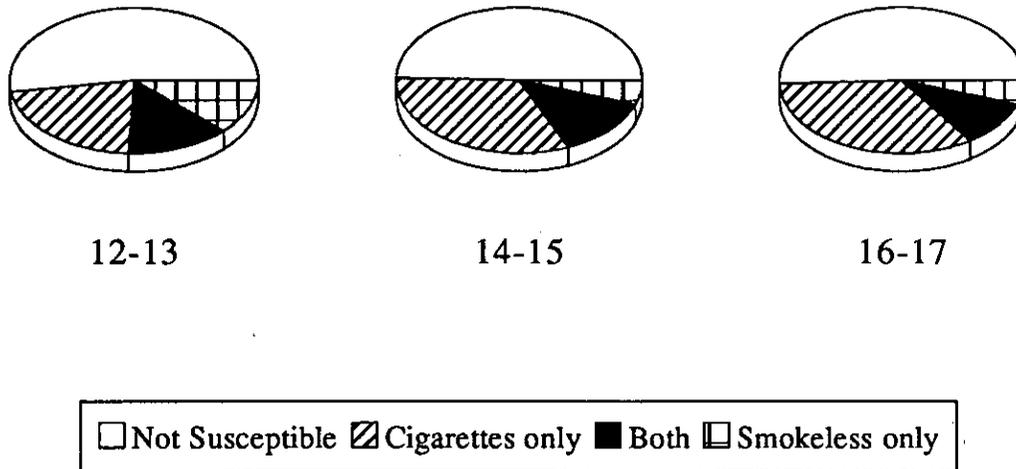


Figure 11.2

Source: CTS 1992

Among 12- to 13-year-old boys, over half were not susceptible to use any tobacco product. This proportion remained stable for every age group.

As indicated in Chapter 4, the proportion of the population susceptible to smoking increased from 35.5% in the youngest adolescents to approximately 45% in those aged 16 to 17 years. Over this age range the proportion of the population susceptible to using smokeless tobacco decreased from 25.8% to 15.6%. Similarly, the proportion of those who were susceptible to smoking who were also susceptible to smokeless decreased from 39% in 12- to 13- year olds to 23% in 16- to 17- year olds.

The pattern of these results indicated that as susceptibility to smoking rose, the proportion of teenagers who were susceptible to smokeless tobacco declined. Hence, our results were consistent with the possibility that teenagers may transfer their allegiance from smokeless tobacco to cigarettes.

TOBACCO USE IN CALIFORNIA

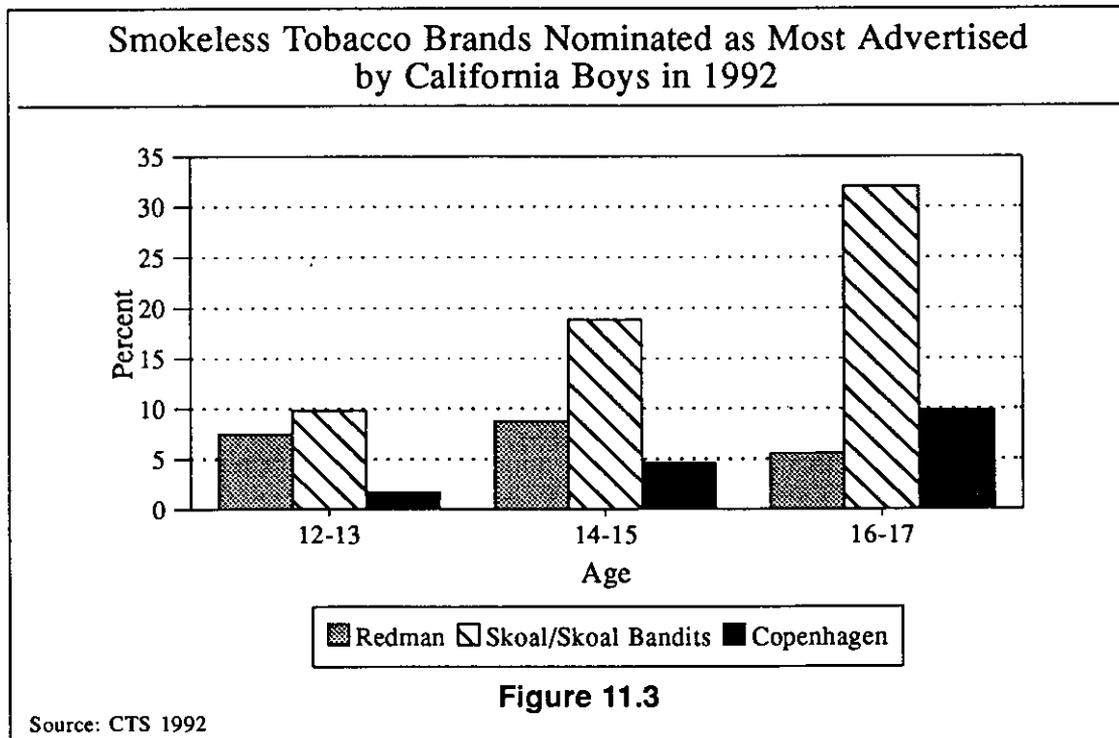
KNOWLEDGE OF SMOKELESS TOBACCO ADVERTISING

In Chapter 10, we presented evidence suggesting that tobacco advertising helps to build expectations of the benefits of tobacco use and that such expectations make teenagers susceptible to smoking. To identify whether advertisements for smokeless tobacco were also making their presence felt among teenage audiences, we asked teenagers in 1992 what brand of chewing tobacco or snuff they thought was most advertised.

In 1992, 37% of boys and 14% of girls in California were able to answer this question by naming a brand. Within each age group of boys, the percentage who could name a brand of smokeless tobacco as most advertised was 23% among 12- to 13-year-olds, 36% among 14- to 15-year-olds, and 47% among 16- to 17-year-olds (see APPENDIX B, TABLE B-26).

The ability to name a brand of smokeless tobacco varied considerably across race/ethnicity groups. Over one third of non-Hispanic whites could suggest a brand of smokeless tobacco as most advertised, whereas only half as many African American or Asian teenagers were able to do so. The proportion of Hispanic teenagers who could name a brand was approximately 19%.

The three brands most frequently suggested by adolescents in response to this question were Skoal/Skoal Bandits, Copenhagen, and Redman. Figure 11.3 shows which brands were chosen most often by California boys at different ages. In the youngest age group (12-13 years), approximately equal proportions of teenagers tended to suggest Redman and Skoal/Bandits as most advertised brands. For teenage boys aged 14 years or over, Skoal/Skoal Bandits was the clear favorite. Among teenagers aged 16-17 years, Skoal/Skoal Bandits was named three times as frequently as Copenhagen, which was named twice as often as Redman.

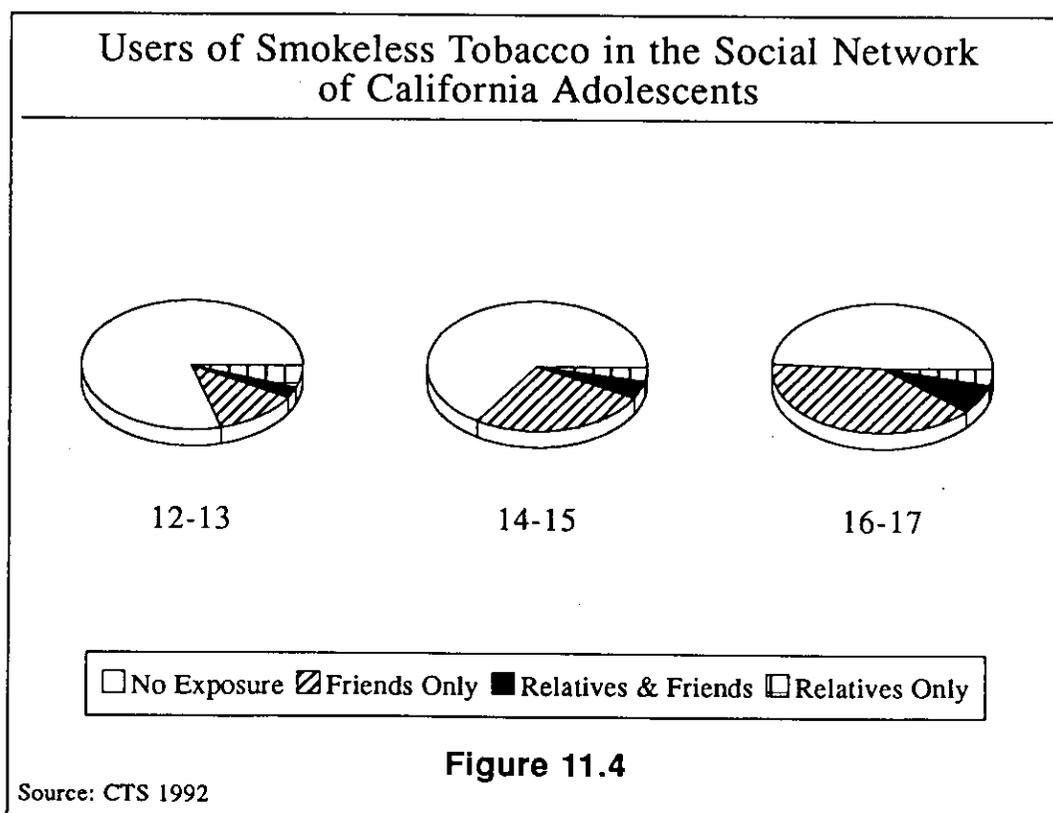


Based on these preliminary investigations, advertising of smokeless tobacco appeared to be quite salient to teenage boys in California. In the 1992 studies, recognition of Skoal/Skoal Bandits and Copenhagen increased across age. However, the recall of Redman was just as high in 12- to 13-year-olds as it was in older teens. We also found indications that the advertising of smokeless tobacco brands may have been particularly targeted at non-Hispanic white males.

EXPOSURE TO SMOKELESS TOBACCO AMONG CALIFORNIA ADOLESCENTS

Information on use of smokeless tobacco among family members and peer groups was obtained from adolescents in both 1990 and 1992 surveys. As in the questions on exposure to smokers, adolescents were asked whether any household members or any relatives living outside the house used smokeless tobacco. Peer use of smokeless tobacco was ascertained by asking adolescents if any of their best male or best female friends (asked separately) chewed tobacco or used snuff. If adolescents had no best friends who used smokeless tobacco, they were then asked if they knew anyone their own age who used smokeless tobacco.

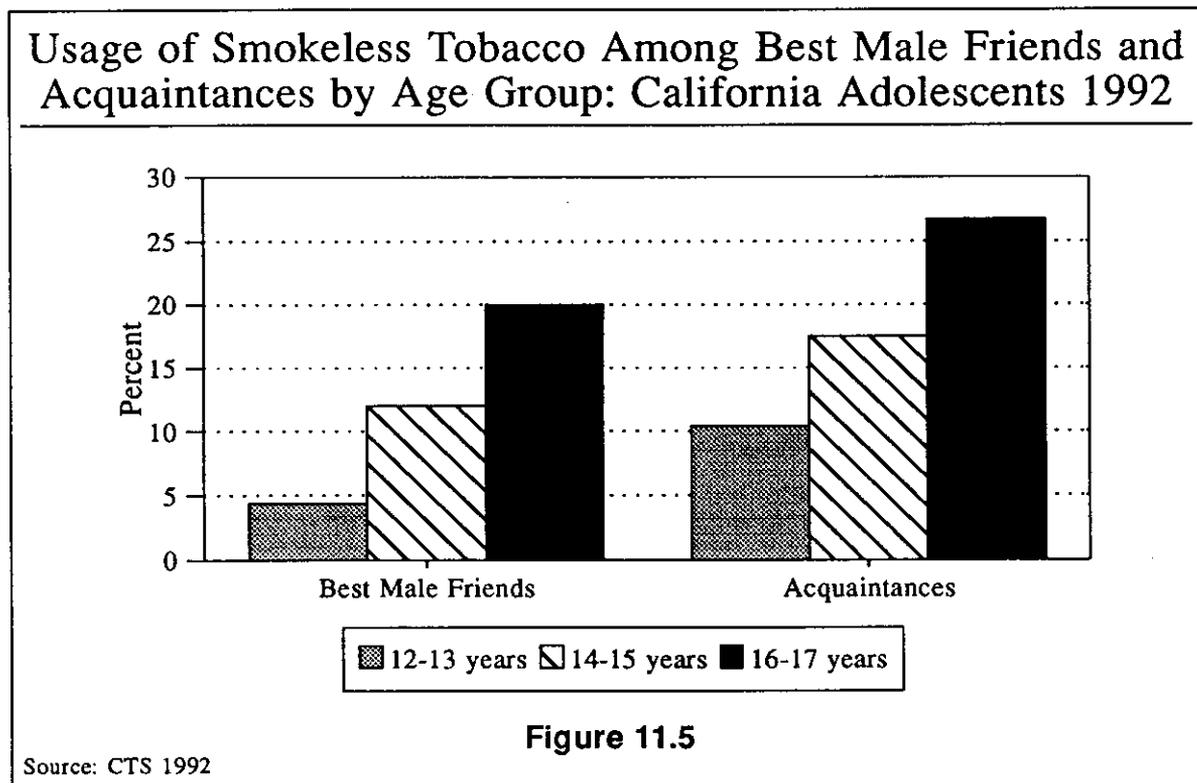
Figure 11.4 shows exposure to family members and peers who used smokeless tobacco for each age group of adolescents surveyed in 1992. As shown, the percentage of teenagers reporting no exposure to anyone using smokeless tobacco shrinks from 79.3% among 12- to 13-year-olds to 49% of 16- to 17-year-olds. Thus, more than half the teenagers in the oldest age group reported knowing a friend or family member who used smokeless tobacco.

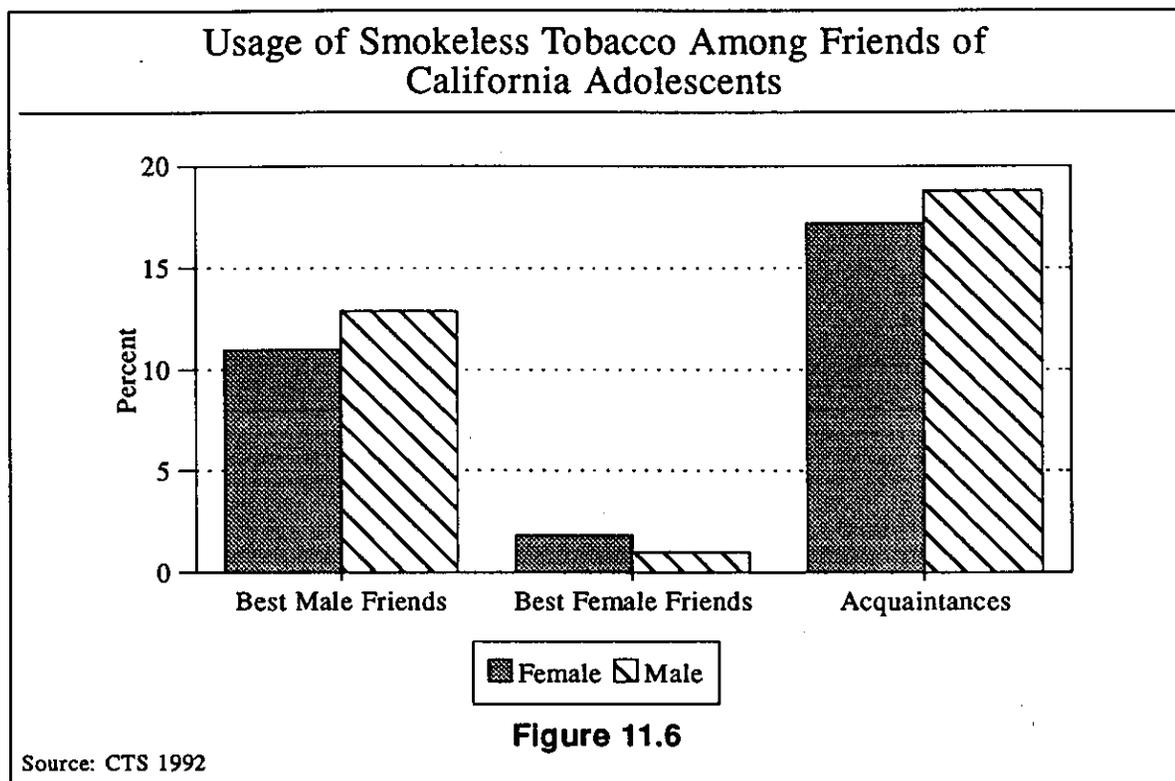


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Across all three age groups the people that teenagers knew to be using smokeless tobacco tended to be friends, rather than relatives. Noticeably, approximately 15% of 12- to 13-year-olds knew friends who used smokeless tobacco. The proportion of teenagers reporting users among their friends increased with age, whereas the proportion who knew relatives using smokeless tobacco did not vary significantly with age.

More detailed information on peer usage is presented in Figures 11.5 and 11.6. The percentage of teenagers with best male friends who use smokeless tobacco increased rapidly with age from 4% among 12- to 13-year-olds to 27% among 16- to 17-year-olds (Fig. 11.5). Over 10% of 12- to 13-year-olds reported that they knew someone who was a user but that none of their best friends were users.





No significant difference was found in the proportion of boys or girls who reported smokeless tobacco use among their best friends or among acquaintances. As expected, the percentage of adolescents of either gender whose best female friends used smokeless tobacco was negligible.

SUMMARY OF FINDINGS

1. In 1992, reported use of smokeless tobacco in the past month was less than 2% for teenagers under 16 years, but rose to 6% among teenagers aged 16 to 17 years.
2. In 1992, 26% of 12- to 13-year-olds were classified as susceptible to use smokeless tobacco.
3. Over one third of boys in California were able to name an advertised brand of smokeless tobacco. Our data suggest that smokeless tobacco advertising may be directed at non-Hispanic white boys. Skoal/Skoal Bandits was the brand named most often.

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4. Some 20% of 12- to 13-year-old boys knew someone who used smokeless tobacco. By age 16-17 years, over half of California boys knew someone who used smokeless tobacco. In most cases, the person known was a friend rather than a family member.
5. Since exposure to peer users is a major predictor of tobacco use, the prevalence of smokeless tobacco use may be expected to increase in the absence of effective interventions.

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Appendix A

SCALES USED IN REPORT

Table A-1
The Perceived Benefits of Smoking

1. "Do you believe smoking can help people when they are bored?"
2. "Do you believe cigarette smoking helps people relax?"
3. "Do you believe cigarette smoking helps reduce stress?"
4. "Do you believe smoking helps people feel more comfortable at parties and in other social situations?"
5. "Do you believe smoking helps people keep their weight down?"

Only YES/NO responses were elicited. Teenagers were categorized based on the total number of benefits perceived.

Table A-2
The Safety of Experimentation with Cigarettes

Safe to Experiment with Cigarettes

1. "Do you believe it's safe to smoke for only a year or two?"
2. "Do you believe there is any harm in having an occasional cigarette?"
3. "If I started to smoke regularly, I could stop smoking any time I wanted."

YES/NO OPINION/NO responses were elicited. An additive index was used based on the number on responses indicating safety. NO OPINION responses were scored as "safe".

**Table A-3
Depression**

1. "During the past 12 months, how often have you felt too tired to do things?"
2. "During the past 12 months, how often have you had trouble going to sleep or staying asleep?"
3. "During the past 12 months, how often have you felt unhappy, sad, or depressed?"
4. "During the past 12 months, how often have you felt hopeless about the future?"
5. "During the past 12 months, how often have you felt nervous or tense?"
6. "During the past 12 months, how often have you worried too much about things?"

There was a 4 point response choice for each question (OFTEN/SOMETIMES/RARELY/NEVER). Items were added to form a scale which was categorized on either the median or the quartiles for analysis.

**Table A-4
Rebelliousness**

1. "I get a kick out of doing things every now and then that are a little risky or dangerous."
2. "During the past year, have you been in a physical fight that involved hitting, pushing, shoving, or any other kind of physical contact?" (Do not include family fights, such as fights with brothers and sisters.)
3. "My family looks for things to nag me about."
4. "I have a lot of arguments with my family."
5. "If anyone upsets me I usually try to get revenge."
6. "I don't mind getting into trouble telling lies if it helps my friends."
7. "I don't mind lying to keep my friends out of trouble with the authorities."

Responses were AGREE/DISAGREE. Only the first 2 items were used in 1990 and teenagers were classified as not rebellious if both questions were answered in the negative. The expanded question list was used in 1992, and the reliability index of this scale was 0.66 (Cronbach's α).

Appendix B

**BACKGROUND SOCIODEMOGRAPHIC
DATA ON MAJOR TOPICS IN REPORT**

**Table B-1
Adult Smoking Prevalence CTS 1990**

OVERALL		Current Smoker (%)	Former Smoker in Last 5 Years (%)	Quit Ratio in Last 5 Years (%)	Population Size (N)	Sample Size (N)
Total		22.2	9.9	30.9	21,562,588	118,448
Sex	Male	25.5	10.8	29.7	10,465,195	57,524
	Female	19.1	9.1	32.3	11,097,393	60,924
Age	18-24	21.5	6.9	24.4	3,271,952	20,406
	25-44	24.5	10.1	29.3	10,168,495	55,491
	45-64	23.7	11.6	32.8	5,105,892	28,190
	65+	12.9	9.7	42.9	3,016,249	14,361
Race/Ethnicity	Non-Hispanic White	23.3	10.6	31.4	13,318,072	71,000
	African-American	27.5	9.0	24.5	1,356,812	8,343
	Hispanic	19.4	9.2	32.3	4,831,543	27,785
	Asian/Pacific Islander	15.9	7.2	31.3	1,732,772	9,669
	Other	32.8	8.6	20.7	323,389	1,651
Educational Level	<12 years	27.0	9.5	26.0	5,084,426	16,774
	12 years	26.5	10.7	28.7	6,938,291	37,117
	13-15 years	19.9	10.2	33.8	5,018,626	34,834
	16+ years	12.8	8.9	41.1	4,521,245	29,723

**Table B-2
Adult Smoking Prevalence CTS 1992**

OVERALL		Current Smoker (%)	Former Smoker in Last 5 Years (%)	Quit Ratio in Last 5 Years (%)	Population Size (N)	Sample Size (N)
Total		20.0	9.5	32.1	21,587,607	21,872
Sex	Male	22.8	10.8	32.1	10,515,890	10,586
	Female	17.4	8.2	32.1	11,071,717	11,286
Age	18-24	18.9	5.6	23.0	3,258,230	3,412
	25-44	22.8	9.7	29.9	10,111,306	10,014
	45-64	20.9	11.2	34.9	5,015,768	5,470
	65+	11.0	9.7	47.0	3,202,303	2,976
Race/Ethnicity	Non-Hispanic White	21.7	10.2	31.9	13,339,026	14,306
	African-American	21.3	9.3	30.5	1,359,140	1,297
	Hispanic	17.0	8.1	32.3	4,817,815	4,404
	Asian/Pacific Islander	13.9	6.8	32.7	1,763,859	1,591
	Other	23.1	15.8	40.6	307,767	274
Educational Level	<12 years	22.4	9.3	29.5	5,021,719	2,756
	12 years	25.7	10.3	28.6	7,015,324	7,118
	13-15 years	18.2	9.6	34.5	4,877,230	6,377
	16+ years	10.8	8.1	42.9	4,673,334	5,621

**Table B-3
Adolescent Smoking Status 1990**

OVERALL		Not Susceptible		Susceptible		Smoked Last 30 Days (%)	Daily Smoker (%)	Population Size (N)	Sample Size (N)
		Never Tried (%)	Tried (%)	Never Tried (%)	Tried (%)				
Total		49.8	19.0	13.6	8.5	9.1	2.8	2 341 433	7767
Sex	Male	46.7	20.5	13.9	9.5	9.4	3.3	1 157 465	3912
	Female	52.8	17.6	13.4	7.5	8.7	2.4	1 183 968	3855
Age	12-13	61.4	9.1	19.9	6.3	3.2	0.1	825 457	2619
	14-15	48.7	18.8	14.0	10.8	7.7	1.9	781 391	2636
	16-17	37.9	30.4	6.2	8.4	17.1	6.8	734 585	2512
Race/ Ethnicity	Non-Hispanic White	49.2	20.9	12.0	7.3	10.6	4.4	1 094 845	2972
	African-American	60.7	17.3	9.1	8.5	4.5	0.0	208 260	689
	Hispanic	45.9	18.2	16.3	10.2	9.3	1.8	795 116	3239
	Asian/Other	56.1	14.7	15.9	7.7	5.6	1.7	243 212	867
School Performance	Much Better than Average	60.7	17.2	12.2	5.8	4.1	0.7	435 745	1411
	Better than Average	52.4	20.1	13.4	7.2	6.9	1.9	853 876	2692
	Average and Below	43.2	18.9	14.4	10.6	12.9	4.5	1 051 812	3664

MALE

Age	12-13	49.0	28.0	14.8	6.6	1.6	0.1	385 965	1282
	14-15	44.2	21.1	15.3	12.3	7.0	1.7	398 954	1341
	16-17	35.0	30.0	6.5	9.6	18.9	8.4	372 546	1289
Race/ Ethnicity	Non-Hispanic White	47.6	22.3	12.1	8.0	9.9	4.7	550 159	1513
	African-American	65.3	15.6	7.3	7.5	4.3	0.0	97 761	338
	Hispanic	39.9	20.4	16.9	11.6	11.2	2.5	394 908	1631
	Asian/Other	50.0	16.1	17.5	11.0	5.5	2.1	114 637	430
School Performance	Much Better than Average	56.6	18.2	13.7	6.5	5.0	1.0	201 711	669
	Better than Average	50.6	22.1	12.4	9.2	5.7	1.2	405 883	1325
	Average and Below	40.3	20.2	15.0	10.7	13.8	5.7	549 871	1918

FEMALE

Age	12-13	62.2	7.6	20.3	6.3	3.6	0.2	439 492	1337
	14-15	53.4	16.5	12.5	9.2	8.4	2.2	382 437	1295
	16-17	40.9	30.8	5.9	7.1	15.3	5.2	362 039	1223
Race/ Ethnicity	Non-Hispanic White	50.7	19.4	11.9	6.7	11.3	4.1	544 686	1459
	African-American	56.6	18.8	10.6	9.4	4.7	0.0	110 499	351
	Hispanic	51.9	16.1	15.8	8.9	7.4	1.0	400 208	1608
	Asian/Other	61.5	13.4	14.5	4.8	5.7	1.4	128 575	437
School Performance	Much Better than Average	64.3	16.3	10.9	5.2	3.4	0.5	234 034	742
	Better than Average	54.1	18.3	14.3	5.4	8.0	2.5	447 993	1367
	Average and Below	46.4	17.5	13.8	10.4	12.0	3.1	501 941	1746

**Table B-4
Adolescent Smoking Status 1992**

OVERALL		Not Susceptible		Susceptible		Smoked Last 30 Days (%)	Daily Smoker (%)	Population Size (N)	Sample Size (N)
		Not Tried (%)	Tried (%)	Not Tried (%)	Tried (%)				
Total		48.2	13.4	17.1	12.7	8.7	2.5	2 344 472	1789
Sex	Male	47.0	11.6	18.5	15.0	8.0	2.1	1 159 912	883
	Female	49.5	15.1	15.6	10.4	9.4	2.9	1 184 560	906
Age	12-13	62.5	6.1	22.8	7.2	1.5	0.0	807 456	625
	14-15	44.9	11.9	18.3	15.1	9.8	1.6	797 848	611
	16-17	36.3	22.9	9.5	16.0	15.4	6.2	739 168	553
Race/ Ethnicity	Non-Hispanic White	50.0	12.9	13.9	12.9	10.3	4.0	1 095 588	932
	African-American	57.6	12.2	11.8	12.4	6.0	1.0	208 529	117
	Hispanic	39.9	16.0	23.4	13.0	7.8	1.4	792 622	550
	Asian/Other	59.2	8.2	15.1	10.6	6.9	0.8	247 733	190
School Performance	Much Better than Average	59.6	12.0	15.4	10.0	2.9	0.5	425 199	332
	Better than Average	53.8	12.6	15.7	11.6	6.2	1.7	838 658	638
	Average and Below	39.4	14.5	18.7	14.5	12.9	3.9	1 080 616	819

MALE

Age	12-13	60.3	4.2	24.5	9.5	1.4	0.0	400 262	313
	14-15	42.9	11.9	19.0	16.7	9.5	1.9	400 080	298
	16-17	36.7	19.4	11.3	19.0	13.6	4.5	359 560	272
Race/ Ethnicity	Non-Hispanic White	50.6	10.1	14.8	14.9	9.6	3.8	519 922	440
	African-American	58.6	14.1	12.5	8.1	6.7	0.0	107 090	61
	Hispanic	36.1	14.5	24.2	16.9	8.3	1.0	411 818	287
	Asian/Other	58.2	5.8	20.5	14.6	0.9	0.2	121 081	95
School Performance	Much Better than Average	57.6	8.2	19.7	11.3	3.2	0.6	194 400	151
	Better than Average	53.5	10.4	14.9	14.4	6.9	1.0	406 595	303
	Average and Below	38.6	13.6	20.7	16.7	10.5	3.3	558 917	429

FEMALE

Age	12-13	64.6	8.0	21.0	4.9	1.6	0.0	407 194	312
	14-15	47.0	11.9	17.9	13.5	10.1	1.3	397 758	313
	16-17	35.9	26.3	7.7	13.1	17.1	7.9	379 609	281
Race/ Ethnicity	Non-Hispanic White	49.5	15.4	13.2	11.1	10.8	4.3	575 666	492
	African-American	56.6	10.3	11.1	16.8	5.3	2.0	101 439	56
	Hispanic	43.9	17.6	22.4	8.8	7.3	1.8	380 804	263
	Asian/Other	60.2	10.5	9.8	6.8	12.7	1.3	126 651	95
School Performance	Much Better than Average	61.2	15.3	11.8	9.1	2.6	0.4	230 799	181
	Better than Average	54.2	14.7	16.5	9.0	5.6	2.4	432 063	335
	Average and Below	40.4	15.4	16.6	12.1	15.6	4.6	521 699	390

**Table B-5
Adolescent Susceptibility to Tobacco Use**

OVERALL		Cigarettes Only (%)	Smokeless Only (%)	Cigarettes and Smokeless (%)	Population Size (N)	Sample Size (N)
Total		30.7	4.3	7.7	2 344 472	1789
Sex	Male	28.8	7.7	12.6	1 159 912	883
	Female	32.5	1.1	3.0	1 184 560	906
Age	12-13	22.3	6.7	9.2	807 456	625
	14-15	35.4	2.9	7.8	797 848	611
	16-17	34.7	3.3	6.1	739 168	553
Race/Ethnicity	Non-Hispanic White	29.2	4.2	7.9	1 095 588	932
	African-American	28.0	3.4	2.2	208 529	117
	Hispanic	34.3	4.7	9.9	792 622	550
	Asian/Other	27.4	4.7	5.2	247 733	190
School Performance	Much Better than Average	23.7	3.9	4.7	425 199	332
	Better than Average	25.8	4.1	7.8	838 658	638
	Average and Below	37.2	4.7	8.9	1 080 616	819

MALE

Age	12-13	21.6	12.1	13.9	400 262	313
	14-15	31.7	5.3	13.5	400 090	298
	16-17	33.7	5.4	10.2	359 560	272
Race/Ethnicity	Non-Hispanic White	26.0	7.4	13.3	519 922	440
	African-American	23.1	6.5	4.2	107 090	61
	Hispanic	34.3	7.9	15.2	411 818	287
	Asian/Other	27.6	9.1	8.4	121 081	95
School Performance	Much Better than Average	25.8	7.0	8.5	194 400	151
	Better than Average	21.0	7.7	15.1	406 595	303
	Average and Below	35.6	7.9	12.3	558 917	429

FEMALE

Age	12-13	23.0	1.4	4.5	407 194	312
	14-15	39.1	0.6	2.0	397 758	313
	16-17	35.6	1.2	2.3	379 609	281
Race/Ethnicity	Non-Hispanic White	32.2	1.2	2.9	575 666	492
	African-American	33.2	0.0	0.0	101 439	56
	Hispanic	34.4	1.3	4.1	380 804	263
	Asian/Other	27.3	0.4	2.1	126 651	95
School Performance	Much Better than Average	22.0	1.3	1.5	230 799	181
	Better than Average	30.2	0.7	0.9	432 063	335
	Average and Below	38.9	1.3	5.3	521 699	390

Table B-6
The Benefits Adolescents Attribute to Smoking

OVERALL		Control Weight (%)	Relieves Boredom (%)	Relieves Stress (%)	Helps Relax (%)	Helps Socialize (%)	Population Size (N)	Sample Size (N)
Total		16.6	22.8	29.1	33.9	43.7	2 344 472	1789
Sex	Male	15.5	25.5	32.1	38.1	47.6	1 159 912	883
	Female	17.6	20.1	26.1	29.8	39.8	1 184 560	906
Age	12-13	15.4	19.0	26.5	26.4	41.8	807 456	625
	14-15	17.1	27.0	31.0	38.2	44.5	797 848	611
	16-17	17.2	22.4	29.8	37.4	44.9	739 168	553
Race/Ethnicity	Non-Hispanic White	15.1	24.0	29.4	34.9	44.4	1 095 588	932
	African-American	26.6	27.2	35.8	32.0	41.9	208 529	117
	Hispanic	16.1	20.1	28.5	34.2	43.6	792 622	550
	Asian/Other	16.2	22.5	24.1	30.1	42.0	247 733	190
School Performance	Much Better than Average	16.6	20.6	26.6	33.0	43.1	425 199	332
	Better than Average	16.7	19.3	24.3	29.6	40.0	838 658	638
	Average and Below	16.4	26.4	33.8	37.6	46.8	1 080 616	819

MALE

Age	12-13	16.9	21.6	26.6	31.0	46.4	400 262	313
	14-15	17.6	29.1	36.2	43.2	48.1	400 090	298
	16-17	11.6	25.8	33.9	40.3	48.4	359 560	272
Race/Ethnicity	Non-Hispanic White	14.1	26.7	32.7	38.2	48.8	519 922	440
	African-American	26.5	20.1	39.6	28.0	39.2	107 090	61
	Hispanic	15.0	25.6	30.2	41.6	48.0	411 818	287
	Asian/Other	13.8	24.9	29.6	34.6	48.6	121 081	95
School Performance	Much Better than Average	18.6	25.1	26.4	35.4	50.1	194 400	151
	Better than Average	16.9	21.9	29.6	35.9	47.0	406 595	303
	Average and Below	13.4	28.2	36.0	40.6	47.2	558 917	429

FEMALE

Age	12-13	13.9	16.5	26.4	21.9	37.2	407 194	312
	14-15	16.6	24.8	26.0	33.2	40.8	397 758	313
	16-17	22.4	19.1	25.9	34.7	41.5	379 609	281
Race/Ethnicity	Non-Hispanic White	16.0	21.6	26.3	32.0	40.4	575 666	492
	African-American	26.7	34.7	31.9	36.1	44.7	101 439	56
	Hispanic	17.2	14.1	26.7	26.1	38.9	380 804	263
	Asian/Other	18.4	20.2	18.8	25.8	35.7	126 651	95
School Performance	Much Better than Average	14.9	16.8	26.9	30.9	37.2	230 799	181
	Better than Average	16.5	16.8	19.2	23.7	33.4	432 063	335
	Average and Below	19.6	24.4	31.5	34.4	46.3	521 699	390

Table B-7
The Number of Benefits (Utilities) of Smoking Perceived by Adolescents

OVERALL		None (%)	One (%)	Two (%)	Three (%)	Four or Five (%)	Population Size (N)	Sample Size (N)
Total		35.1	23.5	15.7	13.8	11.9	2 344 472	1789
Sex	Male	30.9	24.1	15.7	15.5	13.8	1 159 912	883
	Female	39.2	22.8	15.7	12.2	10.1	1 184 560	906
Age	12-13	40.6	23.8	13.1	11.9	10.6	807 456	625
	14-15	32.0	21.6	18.4	14.9	13.1	797 848	611
	16-17	32.3	25.0	15.6	14.9	12.2	739 168	553
Race/Ethnicity	Non-Hispanic White	34.3	23.3	17.2	12.9	12.3	1 095 588	932
	African-American	28.1	24.5	20.0	13.3	14.1	208 529	117
	Hispanic	36.9	23.3	13.2	15.3	11.3	805 475	559
	Asian/Other	38.9	24.0	13.0	13.7	10.4	234 880	181
School Performance	Much Better than Average	36.3	25.6	14.1	11.3	12.7	425 199	332
	Better than Average	39.8	23.4	14.8	12.8	9.3	838 658	638
	Average and Below	30.9	22.7	17.0	15.7	13.7	1 080 615	819

MALE

Age	12-13	36.6	23.8	13.2	14.5	11.9	400 262	313
	14-15	25.9	24.2	17.7	16.8	15.4	400 090	298
	16-17	30.1	24.4	16.1	15.1	14.2	359 560	272
Race/Ethnicity	Non-Hispanic White	30.4	24.3	17.0	12.3	16.0	519 922	440
	African-American	26.2	27.8	22.2	16.2	7.6	107 090	61
	Hispanic	32.6	22.3	13.1	18.8	13.2	420 980	293
	Asian/Other	31.1	26.9	12.8	17.1	12.1	111 920	89
School Performance	Much Better than Average	28.6	30.9	14.5	10.8	15.2	194 400	151
	Better than Average	33.7	24.3	13.6	15.4	13.0	406 595	303
	Average and Below	29.7	21.7	17.5	17.1	14.0	558 917	429

FEMALE

Age	12-13	44.6	23.9	12.9	9.3	9.3	407 194	312
	14-15	38.2	19.0	19.1	12.9	10.7	397 758	313
	16-17	34.5	25.6	15.0	14.7	10.2	379 608	281
Race/Ethnicity	Non-Hispanic White	37.7	22.4	17.5	13.4	9.0	575 666	492
	African-American	30.1	21.1	17.7	10.2	20.9	101 439	56
	Hispanic	41.6	24.4	13.2	11.6	9.2	384 495	266
	Asian/Other	46.0	21.4	13.1	10.5	9.0	122 960	92
School Performance	Much Better than Average	42.8	21.2	13.8	11.7	10.5	230 798	181
	Better than Average	45.6	22.5	15.8	10.3	5.8	432 063	335
	Average and Below	32.3	23.9	16.3	14.1	13.4	521 699	390

Table B-8
The Number of Utilities Perceived as Promoted by Cigarette Advertising

OVERALL		None (%)	1-2 (%)	3 (%)	4 (%)	5 (%)	Population Size (N)	Sample Size (N)
Total		42.8	12.6	15.0	16.1	13.5	2 344 472	1789
Sex	Male	37.7	15.9	18.0	16.8	11.6	1 159 912	883
	Female	47.8	9.3	12.0	15.5	15.4	1 184 560	906
Age	12-13	49.5	12.3	11.0	15.7	11.5	807 456	625
	14-15	41.5	12.2	16.0	15.2	15.2	797 848	611
	16-17	36.9	13.4	18.2	17.7	13.9	739 168	553
Race/Ethnicity	Non-Hispanic White	40.6	11.4	15.9	16.3	15.9	1 095 588	932
	African-American	39.9	12.4	11.5	23.9	12.3	208 529	117
	Hispanic	43.3	14.6	15.1	14.9	12.2	792 622	550
	Asian/Other	53.8	11.7	13.7	13.0	7.9	247 713	190
School Performance	Much Better than Average	42.2	10.1	16.0	14.6	17.1	425 199	332
	Better than Average	47.4	11.6	11.7	16.4	12.9	838 658	638
	Average and Below	39.6	14.3	17.2	16.5	12.5	1 080 616	819

MALE

Age	12-13	45.1	16.9	11.2	17.3	9.5	400 262	313
	14-15	36.5	14.3	19.2	14.9	15.1	400 090	298
	16-17	30.9	16.5	24.3	18.4	10.0	359 560	272
Race/Ethnicity	Non-Hispanic White	34.6	16.0	19.7	16.5	13.2	519 922	440
	African-American	43.5	14.9	16.7	20.3	4.8	107 090	61
	Hispanic	38.3	16.1	16.9	16.7	12.0	411 818	287
	Asian/Other	44.4	15.3	15.8	15.3	9.1	121 081	95
School Performance	Much Better than Average	34.6	15.0	16.6	20.4	13.5	194 400	151
	Better than Average	42.2	16.1	14.9	15.5	11.3	406 595	303
	Average and Below	35.6	16.1	20.8	16.5	11.1	558 917	429

FEMALE

Age	12-13	53.9	7.8	10.8	14.1	13.5	407 194	312
	14-15	46.6	10.0	12.8	15.4	15.3	397 759	313
	16-17	42.7	10.3	12.4	17.1	17.5	379 609	281
Race/Ethnicity	Non-Hispanic White	46.0	7.2	12.4	16.1	18.4	575 666	492
	African-American	36.2	9.7	6.0	27.8	20.3	101 439	56
	Hispanic	48.7	12.9	13.1	12.9	12.4	380 804	263
	Asian/Other	62.7	8.2	11.7	10.7	6.7	126 651	95
School Performance	Much Better than Average	48.6	6.0	15.5	9.8	20.1	230 799	181
	Better than Average	52.2	7.5	8.6	17.3	14.4	432 063	335
	Average and Below	43.9	12.4	13.2	16.5	14.1	521 699	390

Table B-9
The Perceived Safety of Cigarettes Among Adolescents

OVERALL		Not Safe (%)	Somewhat Safe (%)	Safe (%)	Very Safe (%)	Population Size (N)	Sample Size (N)
Total		55.1	31.2	11.1	2.6	2 344 472	1789
Sex	Male	52.1	33.1	12.4	2.4	1 159 912	883
	Female	58.1	29.3	9.9	2.7	1 184 560	906
Age	12-13	62.8	28.8	7.1	1.3	807 456	625
	14-15	51.7	32.2	13.2	3.0	797 848	611
	16-17	50.5	32.7	13.4	3.5	739 168	553
Race/Ethnicity	Non-Hispanic White	63.2	25.4	9.4	2.0	1 095 588	932
	African-American	49.5	39.5	8.2	2.9	208 529	117
	Hispanic	45.0	36.6	15.1	3.3	792 622	550
	Asian/Other	56.6	32.2	8.8	2.5	247 733	190
School Performance	Much Better than Average	59.4	28.2	11.1	1.2	425 199	332
	Better than Average	59.4	28.9	9.5	2.2	838 658	638
	Average and Below	50.1	34.1	12.4	3.4	1 080 616	819

MALE

Age	12-13	60.9	29.9	6.6	2.6	400 262	313
	14-15	46.6	35.6	15.6	2.2	400 090	298
	16-17	48.5	33.7	15.3	2.5	359 560	272
Race/Ethnicity	Non-Hispanic White	59.6	28.4	10.9	1.1	519 922	440
	African-American	36.3	54.9	5.1	3.7	107 090	61
	Hispanic	44.2	34.7	16.9	4.2	411 818	287
	Asian/Other	60.9	28.3	9.9	0.9	121 081	95
School Performance	Much Better than Average	60.4	24.8	13.9	1.0	194 400	151
	Better than Average	51.4	35.2	11.1	2.4	406 595	303
	Average and Below	49.8	34.4	12.9	3.0	558 917	429

FEMALE

Age	12-13	64.7	27.6	7.6	0.1	407 194	312
	14-15	56.8	28.7	10.7	3.8	397 759	313
	16-17	52.3	31.8	11.5	4.4	379 609	281
Race/Ethnicity	Non-Hispanic White	66.5	22.8	8.0	2.8	575 666	492
	African-American	63.4	23.2	11.4	2.0	101 439	56
	Hispanic	45.9	38.6	13.0	2.4	380 804	263
	Asian/Other	52.4	35.9	7.7	4.0	126 651	95
School Performance	Much Better than Average	58.7	31.1	8.8	1.4	230 799	181
	Better than Average	66.9	23.1	8.0	2.0	432 063	335
	Average and Below	50.5	33.7	11.9	3.9	521 699	390

Table B-10
Adolescent Exposure to Peer Smokers

OVERALL		None (%)	Friends and Acquaintances (%)	Best Friends of One Sex (%)	Best Friends of Both Sexes (%)	Population Size (N)	Sample Size (N)
Total		18.9	40.0	26.3	14.8	2 344 472	1789
Sex	Male	19.8	41.1	27.5	11.7	1 159 912	883
	Female	18.1	39.0	25.1	17.8	1 184 560	906
Age	12-13	39.5	37.6	17.8	5.1	807 456	625
	14-15	11.3	43.0	29.5	16.3	797 848	611
	16-17	4.7	39.5	32.1	23.8	739 168	553
Race/Ethnicity	Non-Hispanic White	16.7	41.2	24.8	17.3	1 095 588	932
	African-American	23.7	39.0	27.1	10.2	208 529	117
	Hispanic	19.3	36.8	28.8	15.1	792 622	550
	Asian/Other	23.3	46.3	24.1	6.3	247 733	190
School Performance	Much Better than Average	22.2	43.0	22.0	12.8	425 199	332
	Better than Average	21.7	43.3	24.9	10.1	838 658	638
	Average and Below	15.5	36.3	29.0	19.2	1 080 616	819

MALE

Age	12-13	41.3	37.9	15.6	5.2	400 262	313
	14-15	12.7	45.9	28.7	12.7	400 090	298
	16-17	3.6	39.2	39.4	17.7	359 560	272
Race/Ethnicity	Non-Hispanic White	16.6	44.7	24.0	14.7	519 922	440
	African-American	30.4	36.7	29.9	3.0	107 090	61
	Hispanic	19.8	34.9	33.1	12.2	411 818	287
	Asian/Other	23.8	50.3	21.4	4.5	121 081	95
School Performance	Much Better than Average	22.4	45.1	20.8	11.7	194 400	151
	Better than Average	21.9	45.9	23.3	8.9	406 595	303
	Average and Below	17.3	36.2	32.9	13.6	558 917	429

FEMALE

Age	12-13	37.7	37.3	20.0	5.1	407 194	312
	14-15	9.8	40.0	30.3	19.9	397 758	313
	16-17	5.7	39.7	25.1	29.5	379 609	281
Race/Ethnicity	Non-Hispanic White	16.8	38.0	25.6	19.7	575 666	492
	African-American	16.7	41.4	24.5	17.7	101 439	56
	Hispanic	18.8	38.8	24.0	18.4	380 804	263
	Asian/Other	22.9	42.4	26.6	8.1	126 651	95
School Performance	Much Better than Average	22.0	41.3	23.0	13.7	230 799	181
	Better than Average	21.5	40.8	26.4	11.3	432 063	335
	Average and Below	13.5	36.5	24.9	25.1	521 699	390

**Table B-11
Adolescent Exposure to Smokers in the Family**

OVERALL		2-Parent Family (%)			1-Parent Family (%)			Population Size (N)	Sample Size (N)
		Number of Smokers			Number of Smokers				
		0	1	2+	0	1	2+		
Total		46.8	16.2	8.3	20.7	7.1	0.9	2 341 433	7767
Sex	Male	47.6	16.6	8.6	19.6	6.5	1.2	1 157 465	3912
	Female	46.0	15.9	8.0	21.7	7.8	0.6	1 183 968	3855
Age	12-13	49.3	17.3	7.2	18.9	6.8	0.6	825 457	2619
	14-15	47.4	14.3	9.3	20.4	7.2	1.4	781 391	2636
	16-17	43.3	17.1	8.5	23.0	7.4	0.6	734 585	2512
Race/Ethnicity	Non-Hispanic White	49.4	14.9	11.2	17.2	6.6	0.7	1 094 845	2972
	African-American	29.4	12.3	7.2	37.5	12.6	0.9	208 260	689
	Hispanic	46.2	18.7	5.4	21.6	7.0	1.0	795 116	3239
	Asian/Other	51.8	17.6	5.9	18.8	4.9	1.0	243 212	867
School Performance	Much Better than Average	52.2	15.9	7.0	19.5	5.0	0.4	435 745	1411
	Better than Average	52.3	15.7	6.6	18.9	6.0	0.6	853 876	2692
	Average and Below	40.1	16.8	10.3	22.7	9.0	1.2	1 051 812	3664

MALE

Age	12-13	49.6	17.5	7.8	17.7	6.4	1.0	385 965	1282
	14-15	48.6	15.0	9.9	18.4	6.4	1.7	398 954	1341
	16-17	44.5	17.3	7.9	23.0	6.6	0.7	372 546	1289
Race/Ethnicity	Non-Hispanic White	49.5	15.2	10.8	16.9	6.3	1.2	550 159	1513
	African-American	28.5	11.4	9.4	36.2	14.0	0.5	97 761	338
	Hispanic	47.5	19.7	5.8	20.3	5.6	1.2	394 908	1631
	Asian/Other	54.8	16.9	6.6	16.4	3.7	1.5	114 637	430
School Performance	Much Better than Average	50.8	18.6	8.7	17.5	4.0	0.3	201 711	669
	Better than Average	53.8	15.4	5.9	19.2	4.8	0.8	405 883	1325
	Average and Below	41.8	16.7	10.5	20.7	8.6	1.7	549 871	1918

FEMALE

Age	12-13	49.1	17.0	6.6	20.0	7.1	0.2	439 492	1337
	14-15	46.1	13.5	8.7	22.5	8.0	1.1	382 437	1295
	16-17	42.2	16.9	9.2	23.0	8.3	0.4	362 039	1223
Race/Ethnicity	Non-Hispanic White	49.3	14.5	11.5	17.6	6.9	0.2	544 686	1459
	African-American	30.2	13.1	5.3	38.7	11.5	1.3	110 499	351
	Hispanic	44.9	17.8	5.0	22.9	8.5	0.9	400 208	1608
	Asian/Other	49.2	18.2	5.3	20.9	5.9	0.4	128 575	437
School Performance	Much Better than Average	53.4	13.6	5.5	21.2	5.7	0.6	234 034	742
	Better than Average	50.9	15.9	7.1	18.5	7.1	0.4	447 993	1367
	Average and Below	38.2	16.9	10.1	24.8	9.3	0.7	501 941	1746

Table B-12
Adolescent Exposure to Family and Peer Smokers

OVERALL		None (%)	Family Only (%)	Peer Only (%)	Family and Peer (%)	Population Size (N)	Sample Size (N)
Total		5.2	13.4	21.5	59.9	2 344 472	1789
Sex	Male	6.0	13.5	21.0	59.5	1 159 912	883
	Female	4.4	13.3	22.0	60.3	1 184 560	906
Age	12-13	11.2	28.2	17.5	43.2	807 456	625
	14-15	2.9	7.7	23.0	66.4	797 848	611
	16-17	1.2	3.4	24.3	71.2	739 168	553
Race/Ethnicity	Non-Hispanic White	4.5	12.0	22.4	61.1	1 095 588	932
	African-American	6.1	16.9	20.8	56.3	208 529	117
	Hispanic	6.2	12.7	21.3	59.9	792 622	550
	Asian/Other	4.6	18.8	19.0	57.7	247 733	190
School Performance	Much Better than Average	6.9	14.9	21.8	56.4	425 199	332
	Better than Average	5.4	15.8	24.6	54.2	838 658	638
	Average and Below	4.4	10.9	19.0	65.7	1 080 615	819

MALE

Age	12-13	12.7	28.6	17.5	41.2	400 262	313
	14-15	3.4	8.5	24.5	63.6	400 090	298
	16-17	1.4	2.3	21.0	75.4	359 560	272
Race/Ethnicity	Non-Hispanic White	4.7	11.7	21.3	62.3	519 922	440
	African-American	9.3	19.6	25.9	45.2	107 090	61
	Hispanic	6.6	13.1	21.4	59.0	411 818	287
	Asian/Other	6.4	17.4	14.2	62.0	121 081	95
School Performance	Much Better than Average	8.6	13.0	19.3	59.2	194 400	151
	Better than Average	7.3	14.2	24.3	54.3	406 595	303
	Average and Below	4.1	13.2	19.2	63.5	558 917	429

FEMALE

Age	12-13	9.6	27.7	17.6	45.1	407 194	312
	14-15	2.5	6.9	21.5	69.2	397 758	313
	16-17	1.0	4.5	27.4	67.2	379 609	281
Race/Ethnicity	Non-Hispanic White	4.3	12.3	23.4	60.0	575 666	492
	African-American	2.8	14.0	15.4	67.9	101 439	56
	Hispanic	5.7	12.3	21.2	60.9	380 804	263
	Asian/Other	2.8	20.1	23.5	53.6	126 651	95
School Performance	Much Better than Average	5.5	16.5	23.9	54.1	230 799	181
	Better than Average	3.5	17.3	25.0	54.2	432 063	335
	Average and Below	4.7	8.5	18.7	68.1	521 699	390

Table B-13
Adolescent Exposure to Peers who Use Smokeless Tobacco

OVERALL		None (%)	Acquaintances (%)	Best Friends (%)	Population Size (N)	Sample Size (N)
Total		69.5	17.9	12.5	2 344 472	1789
Sex	Male	67.9	18.8	13.3	1 159 912	883
	Female	71.1	17.2	11.8	1 184 560	906
Age	12-13	84.9	10.4	4.8	807 456	625
	14-15	69.3	17.5	13.2	797 848	611
	16-17	53.0	26.7	20.3	739 168	553
Race/Ethnicity	Non-Hispanic White	61.0	21.6	17.4	1 095 588	932
	African-American	78.9	11.0	10.1	208 529	117
	Hispanic	74.8	16.0	9.2	792 622	550
	Asian/Other	82.7	13.8	3.6	247 733	190
School Performance	Much Better than Average	68.1	19.4	12.5	425 199	332
	Better than Average	70.8	17.0	12.2	838 658	638
	Average and Below	69.2	18.1	12.8	1 080 616	819

MALE

Age	12-13	83.9	10.2	5.8	400 262	313
	14-15	68.8	17.6	13.7	400 090	298
	16-17	49.2	29.6	21.2	359 560	272
Race/Ethnicity	Non-Hispanic White	57.1	24.1	18.8	519 922	440
	African-American	86.4	7.7	5.9	107 090	61
	Hispanic	72.7	16.5	10.9	411 818	287
	Asian/Other	82.3	13.2	4.5	121 081	95
School Performance	Much Better than Average	68.1	19.3	12.6	194 400	151
	Better than Average	66.9	18.9	14.2	406 595	303
	Average and Below	68.7	18.4	12.9	558 917	429

FEMALE

Age	12-13	85.8	10.5	3.8	407 194	312
	14-15	69.9	17.4	12.7	397 758	313
	16-17	56.6	24.0	19.4	379 609	281
Race/Ethnicity	Non-Hispanic White	64.5	19.3	16.2	575 666	492
	African-American	71.1	14.4	14.6	101 439	56
	Hispanic	77.1	15.6	7.3	380 804	263
	Asian/Other	83.0	14.3	2.7	126 651	95
School Performance	Much Better than Average	68.1	19.4	12.4	230 799	181
	Better than Average	74.4	15.3	10.3	1432 063	335
	Average and Below	69.7	17.7	12.7	521 699	390

**Table B-14
Adolescent Liking for School**

OVERALL		A Lot (%)	Some (%)	A Little (%)	Not at All (%)	Population Size (N)	Sample Size (N)
Total		36.2	49.7	11.2	2.9	2 344 472	1789
Sex	Male	33.8	50.8	12.5	3.0	1 159 912	883
	Female	38.7	48.6	9.9	2.8	1 184 560	906
Age	12-13	37.4	49.8	10.6	2.3	807 456	625
	14-15	34.8	54.2	8.3	2.7	797 848	611
	16-17	36.5	44.7	15.0	3.8	739 168	553
Race/Ethnicity	Non-Hispanic White	34.2	50.6	11.7	3.6	1 095 588	932
	African-American	41.8	40.8	15.3	2.1	208 529	117
	Hispanic	36.1	50.2	11.0	2.7	792 622	550
	Asian/Other	41.3	51.2	6.3	1.3	247 733	190
School Performance	Much Better than Average	59.2	34.6	5.2	1.0	425 199	332
	Better than Average	37.9	55.0	6.1	1.1	838 658	638
	Average and Below	25.9	51.5	17.5	5.1	1 080 616	819

MALE

Age	12-13	35.1	52.2	9.6	3.2	400 262	313
	14-15	31.9	54.5	11.4	2.2	400 090	298
	16-17	34.4	45.0	17.0	3.6	359 560	272
Race/Ethnicity	Non-Hispanic White	29.3	52.9	13.2	4.6	519 922	440
	African-American	43.8	40.1	12.9	3.2	107 090	61
	Hispanic	34.8	49.6	14.4	1.2	411 818	287
	Asian/Other	40.5	54.6	2.6	2.3	121 081	95
School Performance	Much Better than Average	60.0	34.2	4.8	0.9	194 400	151
	Better than Average	36.5	56.2	5.5	1.8	406 595	303
	Average and Below	22.6	52.6	20.2	4.6	558 917	429

FEMALE

Age	12-13	39.8	47.4	11.5	1.4	407 194	312
	14-15	37.7	53.9	5.2	3.2	397 758	313
	16-17	38.6	44.3	13.1	4.0	379 609	281
Race/Ethnicity	Non-Hispanic White	38.5	48.5	10.3	2.7	575 666	492
	African-American	39.6	41.5	17.9	1.0	101 439	56
	Hispanic	37.5	50.8	7.3	4.3	380 804	263
	Asian/Other	41.9	48.0	9.7	0.4	126 651	95
School Performance	Much Better than Average	58.5	34.9	5.5	1.1	230 799	181
	Better than Average	39.1	53.8	6.6	0.4	432 063	335
	Average and Below	29.5	50.3	14.6	5.6	521 699	390

Table B-15
Number of Rebelliousness Items Endorsed by Adolescents

OVERALL		None (%)	One (%)	Two or Three (%)	Four or Five (%)	Six or Seven (%)	Population Size (N)	Sample Size (N)
Total		19.8	19.9	33.4	20.5	6.4	2 344 472	1789
Sex	Male	13.3	17.5	33.8	26.2	9.2	1 159 912	883
	Female	26.2	22.2	33.0	14.9	3.8	1 184 560	906
Age	12-13	23.5	22.9	31.6	17.5	4.5	807 456	625
	14-15	17.2	19.2	32.1	23.1	8.5	797 848	611
	16-17	18.7	17.4	36.7	20.9	4.4	739 168	553
Race/Ethnicity	Non-Hispanic White	19.9	21.6	34.1	19.8	4.6	1 095 588	932
	African-American	15.8	15.7	37.0	26.2	5.2	208 529	117
	Hispanic	19.1	18.1	32.0	22.0	8.8	792 622	550
	Asian/Other	25.0	21.8	31.7	13.2	8.3	247 733	190
School Performance	Much Better than Average	24.5	27.1	27.7	15.6	5.1	425 199	332
	Better than Average	24.1	20.2	34.8	17.0	4.0	838 658	638
	Average and Below	14.6	16.9	34.6	25.1	8.9	1 080 616	819

MALE

Age	12-13	18.5	22.4	32.5	20.3	6.3	400 262	313
	14-15	9.7	14.1	32.7	32.9	10.7	400 090	298
	16-17	11.7	16.0	36.5	25.2	10.7	359 560	272
Race/Ethnicity	Non-Hispanic White	11.2	18.4	35.6	27.9	7.0	519 922	440
	African-American	9.7	12.1	44.4	27.5	6.3	107 090	61
	Hispanic	14.8	17.1	29.4	26.0	12.7	411 818	267
	Asian/Other	20.8	20.2	31.5	18.4	9.2	121 081	95
School Performance	Much Better than Average	17.7	25.9	26.9	21.4	8.2	194 400	151
	Better than Average	13.3	19.2	36.7	24.9	5.9	406 595	303
	Average and Below	11.9	13.4	34.1	28.8	11.9	558 917	429

FEMALE

Age	12-13	28.4	23.4	30.7	14.7	2.9	407 194	312
	14-15	24.7	24.4	31.6	13.2	6.2	397 759	313
	16-17	25.2	18.8	36.9	16.8	2.3	379 609	281
Race/Ethnicity	Non-Hispanic White	27.8	24.5	32.7	12.6	2.4	575 666	492
	African-American	22.3	19.6	29.2	24.9	4.1	101 439	56
	Hispanic	23.6	19.2	34.9	17.8	4.6	380 804	263
	Asian/Other	29.1	24.4	31.8	8.4	7.4	126 651	95
School Performance	Much Better than Average	30.2	28.1	28.4	10.8	2.5	230 799	181
	Better than Average	34.2	21.1	33.0	9.5	2.1	432 063	335
	Average and Below	17.6	20.6	35.0	21.1	5.7	521 699	390

**Table B-16
Depression Among Adolescents**

OVERALL		Low (%)	Mod-Low (%)	Mod-High (%)	High (%)	Population Size (N)	Sample Size (N)
Total		22.8	27.4	27.4	22.4	2 344 472	1789
Sex	Male	19.9	28.2	27.9	24.0	1 159 912	883
	Female	25.6	26.5	26.9	20.9	1 184 560	906
Age	12-13	19.0	25.5	26.2	29.3	807 456	625
	14-15	23.9	26.7	28.5	20.8	797 848	611
	16-17	25.7	30.2	27.5	16.6	739 168	553
Race/Ethnicity	Non-Hispanic White	20.2	29.2	28.4	22.2	1 095 588	932
	African-American	22.0	29.6	27.9	20.5	208 529	117
	Hispanic	26.6	24.4	25.7	23.4	792 622	550
	Asian/Other	22.9	26.9	28.3	21.9	247 733	190
School Performance	Much Better than Average	17.6	24.0	28.7	29.7	425 199	332
	Better than Average	18.3	28.1	29.5	24.2	838 658	638
	Average and Below	28.3	28.2	25.3	18.2	1 080 616	819

MALE

Age	12-13	18.8	24.6	29.1	27.5	400 262	313
	14-15	18.5	33.2	25.7	22.6	400 090	298
	16-17	22.7	26.7	29.1	21.6	359 560	272
Race/Ethnicity	Non-Hispanic White	18.1	30.7	27.2	24.0	519 922	440
	African-American	21.9	33.7	28.1	16.3	107 090	61
	Hispanic	21.4	23.2	29.9	25.5	411 818	287
	Asian/Other	21.1	29.6	23.9	25.4	121 081	95
School Performance	Much Better than Average	9.3	26.2	30.3	34.3	194 400	151
	Better than Average	18.0	28.3	30.4	23.4	406 595	303
	Average and Below	25.0	28.8	25.3	20.9	558 917	429

FEMALE

Age	12-13	19.3	26.3	23.4	31.0	407 194	312
	14-15	29.3	20.2	31.4	19.1	397 759	313
	16-17	28.5	33.5	26.1	12.0	379 608	281
Race/Ethnicity	Non-Hispanic White	22.0	27.9	29.5	20.6	575 666	492
	African-American	22.1	25.2	27.7	25.0	101 439	56
	Hispanic	32.2	25.7	21.1	21.1	380 804	263
	Asian/Other	24.7	24.3	32.4	18.6	126 651	95
School Performance	Much Better than Average	24.6	22.1	27.5	25.8	230 799	181
	Better than Average	18.5	27.9	28.6	24.9	432 063	335
	Average and Below	31.9	27.5	25.3	15.4	521 699	390

Table B-17
Adolescent Unaided Awareness of Cigarette Advertisements by Brand

OVERALL		None (%)	Other (%)	Marlboro (%)	Camel (%)	Population Size (N)	Sample Size (N)
Total		10.7	52.3	70.8	66.2	2 344 472	1789
Sex	Male	8.1	51.1	75.3	70.7	1 159 912	883
	Female	13.2	53.4	66.4	61.8	1 184 560	906
Age	12-13	13.8	43.7	62.5	64.3	807 456	625
	14-15	7.9	58.6	73.7	67.2	797 848	611
	16-17	10.2	54.8	76.7	67.2	739 168	553
Race/Ethnicity	Non-Hispanic White	7.9	56.5	73.9	70.2	1 095 588	932
	African-American	8.6	73.4	55.5	59.6	208 529	117
	Hispanic	12.4	43.3	73.8	63.1	805 475	559
	Asian/Other	19.3	44.5	59.3	64.2	234 880	181
School Performance	Much Better than Average	9.0	55.5	70.2	73.8	425 199	332
	Better than Average	11.8	53.0	68.4	66.1	838 658	638
	Average and Below	10.4	50.4	72.9	63.4	1 080 615	819

MALE

Age	12-13	10.7	42.5	70.2	65.8	400 262	313
	14-15	4.2	58.8	76.7	73.0	400 090	298
	16-17	9.5	52.2	79.4	73.7	359 560	272
Race/Ethnicity	Non-Hispanic White	7.0	55.5	79.0	74.6	519 922	440
	African-American	8.4	68.8	57.0	61.4	6107 090	61
	Hispanic	8.2	42.6	77.3	67.7	420 980	293
	Asian/Other	12.2	46.3	68.5	73.3	111 920	89
School Performance	Much Better than Average	7.3	52.0	74.1	78.3	194 400	151
	Better than Average	8.0	53.7	74.5	72.7	406 595	303
	Average and Below	8.4	49.0	76.3	66.7	558 917	429

FEMALE

Age	12-13	16.8	44.8	54.9	62.9	407 194	312
	14-15	11.7	58.3	70.8	61.4	397 758	313
	16-17	10.9	57.4	74.0	61.0	379 608	281
Race/Ethnicity	Non-Hispanic White	8.8	57.4	69.4	66.3	575 666	492
	African-American	8.9	78.2	53.9	57.7	101 439	56
	Hispanic	16.9	44.2	70.1	58.0	384 495	266
	Asian/Other	25.7	42.8	50.8	55.9	122 960	92
School Performance	Much Better than Average	10.3	58.5	67.0	70.0	230 798	181
	Better than Average	15.5	52.4	62.5	59.8	432 063	335
	Average and Below	12.6	51.9	69.2	59.8	521 699	390

Table 18
Number of Cigarette Brands that Adolescents are Able to Identify

OVERALL		Zero (%)	One (%)	Two (%)	Three (%)	Population Size (N)	Sample Size (N)
Total		15.2	50.8	24.0	10.1	2 344 472	1789
Sex	Male	13.9	51.0	23.7	11.3	1 159 912	883
	Female	16.5	50.5	24.2	8.8	1 184 560	906
Age	12-13	19.5	54.8	22.1	3.5	807 456	625
	14-15	13.6	47.2	27.5	11.8	797 848	611
	16-17	12.3	50.2	22.1	15.4	739 168	553
Race/Ethnicity	Non-Hispanic White	14.5	47.7	25.6	12.3	1 095 588	932
	African-American	11.3	48.1	26.1	14.5	208 529	117
	Hispanic	16.6	55.1	22.3	6.0	792 622	550
	Asian/Other	17.6	52.8	20.3	9.4	247 733	190
School Performance	Much Better than Average	15.3	46.3	28.0	10.4	425 199	332
	Better than Average	15.8	49.0	23.7	11.6	838 658	638
	Average and Below	14.8	53.9	22.6	8.8	1 080 616	819

MALE

Age	12-13	18.6	55.3	21.3	4.7	400 262	313
	14-15	13.4	45.6	28.6	12.5	400 090	298
	16-17	9.2	52.4	21.1	17.4	359 560	272
Race/Ethnicity	Non-Hispanic White	12.1	46.4	26.8	14.7	519 922	440
	African-American	11.8	48.9	22.0	17.3	107 090	61
	Hispanic	16.7	56.3	20.4	6.6	411 818	287
	Asian/Other	13.9	54.9	23.7	7.5	121 081	95
School Performance	Much Better than Average	13.1	48.4	25.0	13.5	194 400	151
	Better than Average	14.4	46.6	25.8	13.3	406 595	303
	Average and Below	13.8	55.2	21.8	9.2	558 917	429

FEMALE

Age	12-13	20.4	54.4	22.9	2.4	407 194	312
	14-15	13.8	48.7	26.4	11.0	397 759	313
	16-17	15.3	48.2	23.1	13.5	379 609	281
Race/Ethnicity	Non-Hispanic White	16.6	48.8	24.5	10.1	575 666	492
	African-American	10.7	47.4	30.4	11.5	101 439	56
	Hispanic	16.5	53.8	24.3	5.4	380 804	263
	Asian/Other	21.1	50.8	17.0	11.1	126 651	95
School Performance	Much Better than Average	17.2	44.6	30.5	7.8	230 799	181
	Better than Average	17.0	51.3	21.7	10.0	432 063	335
	Average and Below	15.8	52.4	23.4	8.4	521 699	390

Table B-19
Favorite Cigarette Advertisement Among Adolescents

OVERALL		None (%)	Other (%)	Marlboro (%)	Camel (%)	Population Size (N)	Sample Size (N)
Total		38.8	8.5	16.8	35.9	2 344 472	1789
Sex	Male	33.4	4.0	19.9	42.8	1 159 912	883
	Female	44.2	12.9	13.8	29.1	1 184 560	906
Age	12-13	46.7	6.0	10.4	36.9	807 456	625
	14-15	37.4	7.8	18.9	35.9	797 848	611
	16-17	31.8	11.9	21.6	34.7	739 168	553
Race/Ethnicity	Non-Hispanic White	36.6	9.3	17.4	36.8	1 095 588	932
	African-American	37.2	15.3	6.3	41.2	208 529	117
	Hispanic	39.0	5.1	20.1	35.8	792 622	550
	Asian/Other	49.6	10.1	12.6	27.7	247 733	190
School Performance	Much Better than Average	17.9	20.7	13.1	38.9	425 199	332
	Better than Average	39.6	37.5	13.4	34.7	838 658	638
	Average and Below	42.5	41.8	20.9	35.6	1 080 616	819

MALE

Age	12-13	41.2	4.0	14.5	40.2	400 262	313
	14-15	31.6	3.1	20.8	44.5	400 090	298
	16-17	26.7	4.9	24.7	43.7	359 560	272
Race/Ethnicity	Non-Hispanic White	30.6	5.8	18.8	44.8	519 922	440
	African-American	39.3	6.5	10.5	43.7	107 090	61
	Hispanic	33.4	1.9	24.8	39.9	411 818	287
	Asian/Other	40.4	0.9	15.6	43.1	121 081	95
School Performance	Much Better than Average	28.2	3.5	19.4	49.0	194 400	151
	Better than Average	38.5	3.6	15.6	42.3	406 595	303
	Average and Below	31.5	4.4	23.1	41.0	558 917	429

FEMALE

Age	12-13	52.1	8.0	6.4	33.6	407 194	312
	14-15	43.2	12.6	17.0	27.3	397 758	313
	16-17	36.7	18.5	18.6	26.2	379 609	281
Race/Ethnicity	Non-Hispanic White	42.0	12.5	16.0	29.5	575 666	492
	African-American	34.9	24.5	1.9	38.7	101 439	56
	Hispanic	45.2	8.4	15.1	31.3	380 804	263
	Asian/Other	58.4	18.8	9.8	13.0	126 651	95
School Performance	Much Better than Average	46.9	15.0	7.8	30.4	230 799	181
	Better than Average	47.2	13.9	11.4	27.6	432 063	335
	Average and Below	40.5	11.2	18.6	29.8	521 699	390

Table B-20
Adherence to Smoking Policies at School

OVERALL		No Policy (%)	Students Who Obey (%)					Population Size (N)	Sample Size (N)
			None	Few	Some	Most	All		
Total		6.4	11.4	22.8	14.4	23.1	22.0	2 297 153	1753
Sex	Male	7.5	13.2	21.1	13.1	21.8	23.3	1 136 933	863
	Female	5.4	9.6	24.4	15.6	24.3	20.7	1 160 220	890
Age	12-13	7.1	10.8	14.0	11.0	20.9	36.3	802 074	620
	14-15	5.4	11.1	28.1	16.5	21.9	17.1	789 948	605
	16-17	6.8	12.5	26.9	15.8	26.8	11.2	705 131	528
Race/Ethnicity	Non-Hispanic White	5.2	11.1	20.9	13.3	26.8	22.8	1 081 598	919
	African-American	10.7	13.8	21.4	17.7	13.7	22.7	207 031	116
	Hispanic	7.2	10.1	27.0	12.0	21.3	22.4	762 429	529
	Asian/Other	6.1	14.9	19.1	23.4	19.9	16.6	246 095	189
School Performance	Much Better than Average	5.4	8.5	21.9	16.4	23.0	24.8	419 441	328
	Better than Average	6.7	11.9	22.3	14.2	21.9	23.1	830 956	631
	Average and Below	6.6	12.2	23.6	13.6	24.0	20.0	1 046 756	794

MALE

Age	12-13	7.8	11.9	10.1	10.3	21.2	38.7	396 583	310
	14-15	6.7	13.7	29.0	13.8	17.8	19.0	394 728	294
	16-17	7.9	14.3	24.7	15.6	27.2	10.4	345 622	259
Race/Ethnicity	Non-Hispanic White	6.9	12.7	18.3	12.4	23.4	26.3	513 619	433
	African-American	11.3	15.4	20.7	13.4	17.5	21.7	107 090	61
	Hispanic	7.0	12.3	25.6	12.6	19.2	23.3	396 780	275
	Asian/Other	8.0	16.5	18.5	17.4	27.7	11.8	119 444	94
School Performance	Much Better than Average	5.0	11.0	22.3	13.1	22.0	26.7	192 092	149
	Better than Average	8.3	14.4	21.8	11.5	19.1	24.9	404 596	301
	Average and Below	7.7	13.2	20.1	14.4	23.8	20.8	540 244	413

FEMALE

Age	12-13	6.4	9.6	17.7	11.7	20.7	34.0	405 491	310
	14-15	4.1	8.4	27.1	19.2	26.0	15.2	395 220	311
	16-17	5.8	10.9	29.1	16.0	26.4	11.9	359 509	269
Race/Ethnicity	Non-Hispanic White	3.6	9.6	23.3	14.0	29.9	19.6	567 979	486
	African-American	10.1	12.1	22.1	22.3	9.6	23.9	99 941	55
	Hispanic	7.3	7.7	28.5	11.4	23.6	21.5	365 649	254
	Asian/Other	4.3	13.4	19.7	29.0	12.6	21.0	126 651	95
School Performance	Much Better than Average	5.8	6.5	21.6	19.2	23.8	23.1	227 348	179
	Better than Average	5.2	9.5	22.7	16.9	24.5	21.3	426 360	330
	Average and Below	5.5	11.1	27.2	12.8	24.2	19.2	506 511	381

Table B-21
Adolescent Exposure to Teachers Who Smoke

OVERALL		None (%)	A Few (%)	Some (%)	Most (%)	All (%)	Population Size (N)	Sample Size (N)
Total		30.3	38.2	26.3	4.9	0.2	2 297 153	1753
Sex	Male	33.0	38.3	22.9	5.5	0.3	1 136 933	863
	Female	27.6	38.2	29.7	4.4	0.1	1 160 220	890
Age	12-13	40.5	37.8	17.7	3.3	0.6	802 074	620
	14-15	28.8	36.1	29.1	6.0	0.0	789 948	605
	16-17	20.3	41.1	33.0	5.6	0.0	705 131	528
Race/Ethnicity	Non-Hispanic White	25.9	40.4	29.4	4.3	0.1	1 081 598	919
	African-American	37.6	25.8	26.0	10.7	0.0	207 031	116
	Hispanic	32.8	38.1	23.5	5.1	0.6	762 429	529
	Asian/Other	35.5	39.7	22.2	2.5	0.0	246 095	189
School Performance	Much Better than Average	27.6	39.9	26.7	5.1	0.7	419 441	328
	Better than Average	32.6	39.0	25.0	3.3	0.2	830 956	631
	Average and Below	29.5	37.0	27.3	6.1	0.1	1 046 756	794

MALE

Age	12-13	44.0	35.8	17.0	2.2	0.9	396 583	310
	14-15	30.9	37.1	23.7	8.4	0.0	394 728	294
	16-17	22.9	42.4	28.8	6.0	0.0	345 622	259
Race/Ethnicity	Non-Hispanic White	31.8	38.0	25.8	4.3	0.1	513 619	433
	African-American	34.6	37.5	13.2	14.7	0.0	107 090	61
	Hispanic	34.7	37.8	21.8	5.0	0.8	396 780	275
	Asian/Other	31.1	41.8	22.8	4.3	0.0	119 444	94
School Performance	Much Better than Average	27.2	40.6	23.6	7.1	1.6	192 092	149
	Better than Average	38.7	37.3	21.6	2.5	0.0	404 596	301
	Average and Below	30.9	38.2	23.6	7.2	0.1	540 244	413

FEMALE

Age	12-13	37.1	39.8	18.5	4.4	0.3	405 491	310
	14-15	26.7	35.1	34.6	3.6	0.0	395 220	311
	16-17	17.9	39.9	37.1	5.2	0.0	359 509	269
Race/Ethnicity	Non-Hispanic White	20.6	42.5	32.6	4.3	0.0	567 979	486
	African-American	40.8	13.2	39.6	6.3	0.0	99 941	55
	Hispanic	30.7	38.5	25.3	5.2	0.3	365 649	254
	Asian/Other	39.7	37.8	21.7	0.9	0.0	126 651	95
School Performance	Much Better than Average	28.0	39.3	29.3	3.4	0.0	227 348	179
	Better than Average	26.9	40.5	28.2	4.1	0.3	426 360	330
	Average and Below	28.1	35.7	31.2	5.0	0.0	506 511	381

Table B-22
Adolescent Exposure to High School Seniors Who Smoke

OVERALL		Seniors Who Smoke (%)				Population Size (N)	Sample Size (N)
		None	Few	Some	Most		
Total		7.0	27.9	34.2	30.9	1 967 324	6527
Sex	Male	7.5	28.9	35.2	28.5	978 496	3279
	Female	6.6	26.9	33.3	33.3	988 828	3248
Age	12-13	9.8	25.6	29.7	34.9	810 882	2559
	14-15	5.3	28.6	37.0	29.1	742 901	2496
	16-17	4.8	30.9	38.2	26.1	413 541	1472
Race/Ethnicity	Non-Hispanic White	6.4	26.6	38.3	28.7	908 859	2497
	African-American	8.5	32.1	23.7	35.6	178 921	577
	Hispanic	7.5	29.9	30.4	32.3	669 097	2704
	Asian/Other	7.4	23.2	37.8	31.6	210 447	749
School Performance	Much Better than Average	8.7	26.9	37.4	27.0	367 061	1184
	Better than Average	5.9	27.6	38.2	28.3	707 504	2259
	Average and Below	7.3	28.5	29.7	34.5	892 759	3084

MALE

Age	12-13	11.1	24.7	29.7	34.6	379 087	1252
	14-15	5.5	30.2	39.9	24.4	375 981	1258
	16-17	4.8	33.7	36.5	25.0	223 428	769
Race/Ethnicity	Non-Hispanic White	6.8	28.7	38.9	25.6	468 783	1288
	African-American	6.7	25.5	29.7	38.1	83 201	280
	Hispanic	9.0	31.7	29.3	30.1	328 264	1345
	Asian/Other	7.2	22.8	41.4	28.7	98 248	366
School Performance	Much Better than Average	8.3	31.4	37.5	22.8	172 117	557
	Better than Average	6.6	26.3	39.6	27.5	343 540	1121
	Average and Below	8.0	29.8	31.0	31.3	462 839	1601

FEMALE

Age	12-13	8.7	26.5	29.6	35.2	431 795	1307
	14-15	5.1	26.9	34.1	34.0	366 920	1238
	16-17	4.7	27.7	40.1	27.5	190 113	703
Race/Ethnicity	Non-Hispanic White	6.0	24.4	37.6	32.1	440 076	1209
	African-American	10.1	37.9	18.6	33.5	95 720	297
	Hispanic	6.0	28.0	31.4	34.5	340 833	1359
	Asian/Other	7.6	23.6	34.7	34.2	112 199	383
School Performance	Much Better than Average	9.1	22.9	37.4	30.7	194 944	627
	Better than Average	5.2	28.8	36.9	29.1	363 964	1138
	Average and Below	6.6	27.0	28.4	38.0	429 920	1483

Table B-23
Recall of School Health Class on Smoking

OVERALL		Recalled (%)	Population Size (N)	Sample Size (N)
Total		77.0	2 297 153	1753
Sex	Male	75.7	1 136 933	863
	Female	78.3	1 160 220	890
Age	12-13	73.4	802 074	620
	14-15	75.1	789 948	605
	16-17	83.3	705 131	528
Race/Ethnicity	Non-Hispanic White	80.6	1 081 598	919
	African-American	78.8	207 031	116
	Hispanic	73.2	762 429	529
	Asian/Other	71.7	246 095	189
School Performance	Much Better than Average	80.6	419 441	328
	Better than Average	81.6	830 956	631
	Average and Below	72.0	1 046 756	794

MALE

Age	12-13	72.4	396 583	310
	14-15	75.2	394 728	294
	16-17	80.1	345 622	259
Race/Ethnicity	Non-Hispanic White	80.2	513 619	433
	African-American	74.6	107 090	61
	Hispanic	71.4	396 780	275
	Asian/Other	71.8	119 444	94
School Performance	Much Better than Average	79.3	192 092	149
	Better than Average	77.3	404 596	301
	Average and Below	73.3	540 244	413

FEMALE

Age	12-13	74.5	405 491	310
	14-15	75.0	395 220	311
	16-17	86.4	359 509	269
Race/Ethnicity	Non-Hispanic White	80.9	567 979	486
	African-American	83.3	99 941	55
	Hispanic	75.2	365 649	254
	Asian/Other	71.5	126 651	95
School Performance	Much Better than Average	81.6	227 348	179
	Better than Average	85.8	426 360	330
	Average and Below	70.6	506 511	381

Table B-24
Norms of Parents, Best Friends, and Peers Perceived as NOT Anti-Smoking

OVERALL		Parent's Norms (%)	Best Friend's Norms (%)	Peer Norms (%)	Population Size (N)	Sample Size (N)
Total		26.5	25.3	58.6	2 344 472	1789
Sex	Male	28.9	34.3	58.6	1 159 912	883
	Female	24.1	16.4	58.6	1 184 560	906
Age	12-13	16.3	16.6	48.7	807 456	625
	14-15	27.6	28.3	64.5	797 848	611
	16-17	36.4	31.5	63.1	739 168	553
Race/Ethnicity	Non-Hispanic White	25.2	23.9	51.9	1 095 588	932
	African-American	29.9	17.0	69.6	208 529	117
	Hispanic	27.5	30.8	68.4	792 622	550
	Asian/Other	26.1	20.3	47.9	247 733	190
School Performance	Much Better than Average	20.9	18.4	47.0	425 199	332
	Better than Average	24.8	23.3	57.0	838 658	638
	Average and Below	30.0	29.5	64.4	1 080 616	819

MALE

Age	12-13	18.9	23.4	47.7	400 262	313
	14-15	31.7	39.6	65.3	400 090	298
	16-17	37.0	40.6	63.3	359 560	272
Race/Ethnicity	Non-Hispanic White	27.9	32.0	50.8	519 922	440
	African-American	36.4	20.1	73.2	107 090	61
	Hispanic	27.2	42.7	68.4	411 818	287
	Asian/Other	32.8	28.7	46.4	121 081	95
School Performance	Much Better than Average	26.1	27.6	46.8	194 400	151
	Better than Average	26.5	30.3	59.0	406 595	303
	Average and Below	31.6	39.6	62.5	558 917	429

FEMALE

Age	12-13	13.7	9.9	49.7	407 194	312
	14-15	23.5	16.9	63.7	397 758	313
	16-17	35.7	22.8	62.9	379 609	281
Race/Ethnicity	Non-Hispanic White	22.7	16.7	52.9	575 666	492
	African-American	23.0	13.7	65.9	101 439	56
	Hispanic	27.8	18.0	68.3	380 804	263
	Asian/Other	19.8	12.4	49.3	126 651	95
School Performance	Much Better than Average	16.5	10.6	47.2	230 799	181
	Better than Average	23.2	16.7	55.2	432 063	335
	Average and Below	28.1	18.7	66.5	521 699	390

Table B-25
The Number of Normative Groups that Approve of Adolescent Tobacco Use

OVERALL		Zero (%)	One (%)	Two (%)	Three (%)	Population Size (N)	Sample Size (N)
Total		31.7	40.0	23.6	4.8	2 344 472	1789
Sex	Male	28.1	37.2	28.0	6.8	1 159 912	883
	Female	35.2	42.6	19.2	3.0	1 184 560	906
Age	12-13	41.5	41.9	14.8	1.8	807 456	625
	14-15	27.1	39.8	26.1	7.0	797 848	611
	16-17	25.8	38.1	30.3	5.8	739 168	553
Race/Ethnicity	Non-Hispanic White	38.9	36.8	19.6	4.8	1 095 588	932
	African-American	25.6	43.8	27.6	3.1	208 529	117
	Hispanic	21.3	43.1	30.0	5.7	792 622	550
	Asian/Other	38.1	41.1	17.2	3.7	247 733	190
School Performance	Much Better than Average	42.9	37.2	15.8	4.1	425 199	332
	Better than Average	35.4	40.0	20.1	4.5	838 658	638
	Average and Below	24.4	41.0	29.2	5.4	1 080 616	819

MALE

Age	12-13	38.5	41.1	17.1	3.3	400 262	313
	14-15	24.2	33.0	33.4	9.5	400 090	298
	16-17	20.8	37.7	34.0	7.6	359 560	272
Race/Ethnicity	Non-Hispanic White	35.9	34.2	23.3	6.6	519 922	440
	African-American	22.0	43.1	29.9	5.1	107 090	61
	Hispanic	18.6	37.9	35.6	8.0	411 818	287
	Asian/Other	31.9	42.8	20.5	4.9	121 081	95
School Performance	Much Better than Average	36.3	37.5	20.0	6.2	194 400	151
	Better than Average	31.8	38.5	23.2	6.5	406 595	303
	Average and Below	22.5	36.2	34.2	7.1	558 917	429

FEMALE

Age	12-13	44.5	42.7	12.5	0.4	407 194	312
	14-15	30.1	46.6	18.9	4.5	397 758	313
	16-17	30.6	38.4	26.9	4.2	379 609	281
Race/Ethnicity	Non-Hispanic White	41.5	39.0	16.2	3.3	575 666	492
	African-American	29.3	44.5	25.2	1.0	101 439	56
	Hispanic	24.3	48.6	23.9	3.2	380 804	263
	Asian/Other	44.0	39.4	14.1	2.4	126 651	95
School Performance	Much Better than Average	48.4	36.9	12.3	2.4	230 799	181
	Better than Average	38.8	41.5	17.2	2.5	432 063	335
	Average and Below	26.4	46.1	24.0	3.6	521 699	390

Table B-26
Adolescent Unaided Awareness of Smokeless Tobacco Advertisements by Brand

OVERALL		None (%)	Other (%)	Redman (%)	Copenhagen (%)	Skoal/ Skoal Bandits (%)	Population Size (N)	Sample Size (N)
Total		74.4	3.5	4.4	4.5	13.2	2 344 472	1789
Sex	Male	63.0	4.7	7.4	5.2	19.8	1 159 912	883
	Female	85.6	2.4	1.5	3.8	6.7	1 184 560	906
Age	12-13	84.0	3.6	4.6	1.9	5.9	807 456	625
	14-15	74.3	2.9	5.1	4.4	13.3	797 848	611
	16-17	64.0	4.2	3.4	7.5	21.0	739 168	553
Race/Ethnicity	Non-Hispanic White	65.7	4.3	4.6	7.7	17.7	1 095 588	932
	African-American	82.3	2.5	2.6	2.1	10.6	208 529	117
	Hispanic	80.6	3.2	4.4	2.0	9.7	792 622	550
	Asian/Other	86.1	1.9	4.9	0.8	6.3	247 733	190
School Performance	Much Better than Average	73.4	4.2	2.4	5.9	14.2	425 199	332
	Better than Average	76.2	2.1	4.8	4.2	12.7	838 658	638
	Average and Below	73.4	4.4	4.9	4.3	13.1	1 080 616	819

MALE

Age	12-13	76.8	4.2	7.5	1.7	9.8	400 262	313
	14-15	63.6	4.2	8.8	4.6	18.8	400 090	298
	16-17	46.9	5.7	5.6	9.8	32.0	359 560	272
Race/Ethnicity	Non-Hispanic White	51.0	5.6	8.2	9.0	26.3	519 922	440
	African-American	70.0	3.7	5.0	4.0	17.3	107 090	61
	Hispanic	71.4	4.0	6.9	2.3	15.4	411 818	287
	Asian/Other	80.0	4.0	7.4	0.0	8.7	121 081	95
School Performance	Much Better than Average	62.9	7.2	4.9	6.6	18.5	194 400	151
	Better than Average	63.4	2.9	8.1	5.0	20.6	406 595	303
	Average and Below	62.7	5.1	7.7	4.9	19.7	558 917	429

FEMALE

Age	12-13	91.1	3.0	1.8	2.2	2.0	407 194	312
	14-15	85.0	1.5	1.4	4.2	7.9	397 758	313
	16-17	80.3	2.7	1.3	5.3	10.5	379 609	281
Race/Ethnicity	Non-Hispanic White	79.1	3.2	1.4	6.5	9.9	575 666	492
	African-American	95.3	1.1	0.0	0.0	3.5	101 439	56
	Hispanic	90.7	2.4	1.8	1.6	3.6	380 804	263
	Asian/Other	92.0	0.0	2.5	1.6	3.9	126 651	95
School Performance	Much Better than Average	82.3	1.6	0.3	5.2	10.6	230 799	181
	Better than Average	88.2	1.3	1.8	3.4	5.3	432 063	335
	Average and Below	84.8	3.7	1.8	3.6	6.1	521 699	390