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ABSTRACT

An extensive review of literature on trends in the consumption of tobacco; concern regarding tobacco and health; the relationships between smoking and lung cancer, chronic bronchitis, emphysema, and coronary heart disease; effect of smoking on human tissues; chemistry of tobacco smoke; and the smoking habits of students precedes discussion of an investigation conducted to determine smoking habits and attitudes of high school seniors. The questionnaire developed for the study is described, and detailed findings on smoking habits; first smoking experience; relationships of smoking to parental smoking habits and attitudes, academic achievement, participation in athletics, participation in extracurricular activities, and instruction about smoking and health; reasons for smoking or not smoking; and student attitudes and opinions are presented. The implications of the study and recommendations for action are outlined. See TM 000 768 for the questionnaire employed in the study. (DG)

A SURVEY OF THE SMOKING HABITS AND ATTITUDES OF HIGH SCHOOL SENIORS

A Thesis

Presented to the

Faculty of

San Diego State College

In Partial Fulfillment

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Master of Arts

in

Health Education

by

Philip Gilbert Heubach

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Philip Gilbert Heubach

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CHAPTER I

THE PROBLEM AND DEFINITIONS OF TERMS USED

According to current educational philosophy schools must prepare youth to meet the health problems of today and guide them in developing wholesome and worthwhile habits. In view of increasing evidence linking cigarette smoking with lung cancer and other human ailments, it is urgent that educators give instruction and guidance that will effectively discourage the cigarette smoking habit.

Before planning an educational approach to the high school smoking problem, it is desirable to study the smoking habits and attitudes of the high school population.

I. THE PROBLEM

Statement of the problem. It was the purpose of this study to determine the smoking habits and attitudes of a group of twelfth grade students. The study group consisted of seniors at Will C. Crawford High School of the San Diego Unified School District. Data were secured during the spring semester of the 1962-1963 school year. The data collected should provide valuable information regarding: (1) the students' smoking history and habits; (2) characteristics that distinguish smokers from

nonsmokers; and (3) the students' attitudes regarding smoking.

Importance of the study. The Advisory Committee to the Surgeon General of the United States (1:32) reported that cigarette smoking has a detrimental effect on human health. The degree to which health is affected is determined to a large extent by the number of cigarettes smoked and the duration of smoking.

The American Cancer Society (58:51) believes that one of the best ways to combat the increasing problem of lung cancer is to educate the public to the dangers of smoking. The Society contends that this education should begin at the teenage level.

Dr. Daniel Horn and his associates (42:1497) state that the best solution to the increasing threat of lung cancer is to persuade young people not to begin smoking. This could be attempted by informing them of the dangers involved in smoking before they have acquired the smoking habit.

The smoking history of teenagers should provide data to substantiate or disprove claims that today's youth are experimenting and becoming regular smokers at an early age, that youth are smoking more cigarettes than ever before, and that their numbers are steadily increasing.

It is hoped that the findings of this study will

enhance the understanding of educators so that they may better fulfill their role in the education of youth regarding smoking and health.

Limitations of the study. This study was limited to the investigation of smoking habits, history, characteristics, and attitudes of a group of 652 twelfth grade students in the social studies classes at Will C. Crawford High School. The data were obtained through the use of a questionnaire.

II. DEFINITIONS OF TERMS USED

The first six terms were adapted from the Portland study administered by Dr. Daniel Horn, Director of Program Evaluation for the American Cancer Society, and his associates (42).

Never smoked. Students who have never used tobacco.

Experimental smoker. Students who tried smoking just to see what it was like, but did not continue.

Occasional smoker. Students and parents who smoked with a frequency between once a week and once a month at the time of the questionnaire.

Ex-occasional smoker. Students and parents who had at one time smoked with a frequency between once a week and once a month but at the time of the questionnaire were no longer smoking.

Regular smoker. Students and parents who smoked once or more than once a week at the time of the questionnaire.

Ex-regular smoker. Students and parents who had at one time smoked once or more than once a week but at the time of the questionnaire were no longer smoking.

Ex-smoker. Students and parents classified as ex-occasional or ex-regular smokers.

Nonsmoker. Students and parents who at the time of the questionnaire were not smoking. This includes those classified as never smoked, experimental smoker, and ex-smoker.

Upper academic class. Social studies classes in which the enrollment was limited to students who had received superior grades in social studies. These classes include San Diego City College History 4B, Honors, and World Affairs.

Basic requirement class. Social studies classes

which all students must complete in order to graduate, unless a student was eligible and completed an upper academic class. American Government was the only basic requirement class.

III. ORGANIZATION OF REMAINDER OF THE THESIS

Chapter II contains a review of pertinent literature. The material of the chapter is classified in ten main headings providing a comprehensive overview of current research on various aspects of tobacco use.

Chapter III describes the methods used in gathering the data, including: (1) the selection of the students, (2) the development of the questionnaire, (3) the administration of the questionnaire, and (4) the tabulation of results.

Chapter IV presents the results and interpretation of the findings, concerning: (1) students' smoking history and habits, (2) characteristics that distinguish smokers from nonsmokers, and (3) students' attitudes regarding smoking.

Chapter V includes the following: (1) a summary of the thesis, (2) conclusions reached from the study, and (3) recommendations of the investigator derived from the study.

CHAPTER II

REVIEW OF LITERATURE

The great amount of literature surveyed in the preparation of this study has been organized under the following headings: (1) the trends and consumption of tobacco smoking, (2) the increasing concern regarding smoking and health, (3) the relationship between smoking and lung cancer, (4) the relationship between smoking and chronic bronchitis and emphysema, (5) the relationship between coronary heart disease and smoking, (6) the effect of smoking on human tissues, (7) the chemistry of tobacco smoke, and (8) the smoking habits of students. The chapter concludes with a summary of the major implications derived from this review of the literature.

I. THE TRENDS AND CONSUMPTION OF TOBACCO SMOKING

Tobacco smoking was first introduced in Europe during the sixteenth century. In 1962 it was noted by the Royal College of Physicians (65:2) that in England, throughout the seventeenth century, tobacco consumption continued to increase rapidly, particularly in the form of pipe smoking. Other forms, such as snuff-taking and

tobacco chewing, were popular but on a more limited scale.

The smoking of cigarettes was introduced in Europe about 1850. Since the beginning of the twentieth century, according to the Royal College of Physicians (65:2), cigarette smoking has largely replaced other forms of tobacco consumption in England.

The Royal College of Physicians (65:4) stated that in the early 1960's nearly 75 per cent of the men and 50 per cent of the women in the United Kingdom were regular cigarette smokers during adult life. They reported further that the men and women who smoke cigarettes in the United Kingdom consume an average of nineteen and eleven cigarettes a day, respectively (65:4). Although the consumption by both sexes is significant, it is more striking for the women when one realizes that prior to 1920 women seldom used tobacco in any form.

In 1955 William Haenszel and associates (32) conducted the first nationwide survey of tobacco smoking patterns in the United States. This survey included men and women of the civilian population, eighteen years of age and older. Data were collected from approximately 21,000 households, which included about 45,000 adults.

Haenszel and associates estimated that "approximately forty-seven million persons over eighteen years of age in the civilian population are now or have been

regular cigarette smokers" (32:13). A regular cigarette smoker was defined as a person who smoked one or more cigarettes every day. Upon inclusion of occasional smokers, their estimate was raised to fifty-two million smokers. After allowing for persons not covered in the survey, such as those under eighteen years of age and persons in the Armed Forces, Haenszel (32:13-14) estimated that there were fifty-five million males and females smoking cigarettes.

Haenszel and associates concluded from their collected data that 65 per cent of adult males and 32 per cent of adult females in the United States were regular or occasional cigarette smokers. On the other hand, Haenszel stated that of the civilian population in 1955, "an estimated 11,360,000 males and 37,202,000 females or 22.9 and 67.5 per cent, respectively, have never smoked" (32:11).

Haenszel (32:13) also observed that the most popular form of tobacco consumption was cigarette smoking practiced at some time regularly by 59.1 per cent of all males over eighteen years of age, as compared to pipe smoking practiced by 14.4 per cent and cigar smoking by 8.7 per cent.

Concerning tobacco consumption, the 1963 investigation by the Advisory Committee to the Surgeon General (1:45), strongly substantiated the findings of Haenszel's

study. The Surgeon General's Committee (1:45) stated, on the basis of Department of Agriculture estimates, that approximately seventy million people in the United States, including military personnel, use tobacco on a regular basis. Since 1910, according to the report of the Surgeon General (1:45), the consumption of cigarettes in the United States has risen from 138 cigarettes per capita to 3,958 cigarettes per capita in 1962. This represented an average of nearly eleven cigarettes per day for each person aged fifteen years and over. During the period from 1900 to 1962, the use of cigars, pipes, chewing tobacco, and snuff declined by approximately 68 per cent. During the same period, however, tobacco consumption in all forms increased nearly 32 per cent.

The Surgeon General (1:45) reported that the production of filter tip cigarettes began to increase in 1950, at which time unofficial estimates indicated that less than 0.5 per cent were produced. Six years later the production of filter tips rose to 27.6 per cent. Since 1958 official estimates presented by the Department of Agriculture (1:45) revealed that the production of filter tip cigarettes has continued to increase from 45.3 per cent in 1958 to 54.6 per cent in 1962.

This rapid increase in the use of filter cigarettes may reflect a sincere concern regarding the health hazards

of smoking and an attempt on the part of smokers to protect their health. In 1960 Dr. Roger S. Mitchell stated, however, that "filtering the cigarette smoke has not yet been found to provide in practice the protection that filtering implies" (53:258).

On the basis of these studies, both in England and the United States, it is quite evident that the consumption of cigarettes per person of the general population has increased steadily and apparently is still rising. The real significance of this trend in cigarette consumption is realized when one considers the direct association between smoking and health.

II. THE INCREASING CONCERN REGARDING SMOKING AND HEALTH

Ruth Brecher and her associates (8:123) reported that one person who played a major role in helping to popularize the use of tobacco in Europe was Jean Nicot, who not only introduced the plant in France, but claimed that this American Indian herb had miraculous curative powers. Eric Northrup said that Nicot's claim was so widely accepted throughout the world, including England and the United States, that as recently as 1850, tobacco extract "was used to treat tuberculosis, insomnia, tetanus and a host of other ailments" (55:108-109).

Northrup (55:109) stated, however, that these alleged and pseudo medicinal values of tobacco were dominated by an onslaught of morbid claims that occurred almost as soon as the habit of smoking was introduced.

One bitter critic of the smoking habit was King James I of England, who described tobacco in an unfavorable way when he wrote:

> The lively image and pattern of Hell, a custom Lothesome to the Eye, hatefull to the Nose, harmfulle to the Braine, dangerous to the Lungs, and in the black stinking fumes thereof, neerest resembling the horrible Stigian smoke of the pit that is bottomlesse (55:109).

Northrup (55:108-109) concluded that such adverse criticism of tobacco helped to condemn smoking as a pernicious habit responsible for an assortment of maladies, such as blindness, tuberculosis, epilepsy, insanity, sterility, syphilis, immorality, and social corruption.

This controversy over the merits of tobacco has continued through the years almost unabated. However, the first arguments for and against tobacco were based on personal prejudices, fictitious claims, and superstitions. Tobacco has always had its opponents and advocates, but it was not until the nineteenth century that investigators found valid evidence of its detrimental effects upon human health.

Actually, the first known scientific evidence to indicate any harmful effects of tobacco did not occur

until 1859, when Dr. M. Bouisson examined sixty-eight patients with cancer of the buccal cavity. Dr. E. Cuyler Hammond (34:39) reports that Bouisson discovered that each patient used tobacco in some form, sixty-six being pipe smokers.

The late Professor Raymond Pearl (60) of Johns Hopkins University published a report in 1938 pertaining to the effects of tobacco smoking on life expectancy. Pearl computed standard life tables from material covering the smoking habits of a random selection of 6,813 American white males. Pearl (60:217) found the mortality rate for all causes among cigarette smokers to be twice that of nonsmokers among men from sixty to sixty-five years of age. From the data collected Pearl concluded that tobacco smoking was "statistically associated with an impairment of life duration, and the amount or degree of this impairment increased as the habitual amount of smoking increased" (60:217).

After 1945, as physicians and scientists became aware of the possible ill effects produced by tobacco smoking, scientific studies increased and continued to increase throughout the 1950's and early 1960's. At the request of the American Cancer Society, the American Heart Association, the National Cancer Institute, and the National Heart Institute, the United States Study Group on

Smoking and Health was organized in June 1956. After the study group reviewed the literature on the effects of tobacco smoke on health, they concluded that the "smoking of tobacco, particularly in the form of cigarettes, is an important health hazard" (74:1129).

Since the literature in this field is voluminous, the investigator concentrated on four serious diseases and their relationship with smoking. These diseases are lung cancer, chronic bronchitis, emphysema, and coronary heart disease.

III. THE RELATIONSHIP BETWEEN SMOKING AND LUNG CANCER

Increasing Death Rates

According to Dr. Harold F. Dorn (21:7), in the United States, in 1914, 0.7 per cent of the total death rates were attributed to cancer in all forms, and 0.04 per cent of deaths were attributed to lung cancer. Brecher (8:17) reported that this 0.04 per cent amounted to approximately 371 deaths.

In 1948 Dr. Alton Ochsner observed that lung cancer, by superseding stomach cancer, has become "the most frequent cancer in the male sex in the United States and for Western European countries as well" (56:86).

In 1959 Dr. Leroy E. Burney, who was at that time

the Surgeon General of the United States Public Health Service, stated they were "deeply concerned with the increasing death rate from lung cancer in the United States and in other parts of the world" (11:1829). Dr. Burney stated that lung cancer was increasing more rapidly and causing more deaths than any other form of cancer in the male adult population of the United States.

In 1960 Dr. Hammond (34:40), after examining the trends in total death rates among men in the United States, said that lung cancer is a conspicuous exception to the rapidly declining total death rates during the past fifty years. Dr. Hammond said:

> In 1960, 86 per cent of those who died from lung cancer were men. Between 1935 and 1960 the age-standardized death rate from lung cancer among United States men (death rate adjusted for age differences in the composition of the population) increased 600 per cent; among women it increased 125 per cent. And for the past several years lung cancer has been the principal form of fatal cancer among men (34:40).

The Surgeon General's report (1:25) stated that the total deaths due to lung cancer in the United States increased from less than 3,000 in 1930 to 18,000 in 1950, to 27,000 in 1955, and to 41,000 in 1962.

The Surgeon General continued by saying that since 1930 lung cancer mortality for males has increased at a fairly consistent rate. The trend has also been constantly rising for females, but at a much slower rate.

"Lung cancer," according to the Surgeon General, "was responsible for the deaths of approximately 5,700 women and 33,200 men in the United States in 1961" (1:135).

Based on their findings, the Surgeon General concluded:

> While part of the rising trend for lung cancer is attributable to improvements in diagnosis, the continuing experience of the State registers and the autopsy series of large general hospitals leave little doubt that a true increase in the lung cancer death rate has taken place (1:229).

If the current trends continue, admonished the American Public Health Association (8:20), one million children in the United States will die of lung cancer before they reach the age of seventy years.

These observations make it quite evident that lung cancer has changed from an infrequent to a major cause of death since 1925. Because of this real and significant increase, it seems necessary to determine the different agents to which man has been exposed during the twentieth century. "Cigarette smoke is such an agent," concluded the Royal College of Physicians, "and there is a great deal of evidence that it is an important cause of this disease" (65:12).

Retrospective Studies

Ruth Brecher and her colleagues (8:26) stated that well-documented observations made prior to 1940 suggested

a causal association between lung cancer and smoking. However, these observations, while suggestive, were criticized as too limited to prove or disprove the causal relationship between smoking and cancer, particularly lung cancer.

To overcome this and other limitations, investigators conducted controlled retrospective studies. These studies were concerned with lung cancer patients and their personal history, which included smoking habits, medical and mortality records as compared with a controlled group without lung cancer. To determine significant differences between the lung cancer patients and the controls, the two distinct groups were matched as closely as possible according to age, sex, residence and occupations held.

The Doll and Hill study. An excellent example of a retrospective study was conducted by two British physicians, Drs. W. Richard Doll and A. Bradford Hill (20). From twenty London hospitals they obtained 1,465 (1,357 men and 108 women) lung cancer patients aged twenty-five to seventy-four years. Each of these patients was matched by age and sex with a patient who did not have lung cancer. After observing the two groups from 1949 to 1952, Doll and Hill (20:1285) presented the following results:

1. Of the male lung cancer group, 25 per cent smoked twenty-five cigarettes or more a day, as compared

to 13.4 per cent for the male controls.

2. The same trend was observed among the women, showing a rising association of lung cancer with daily cigarette consumption, but the study contained too few cases for statistical significance.

Based on their data Doll and Hill (20:1285) concluded that in their male population there was a significant association between cigarette smoking and lung cancer, and the risk of developing this disease increased steadily as the amount smoked increased.

Additional studies. The data of other retrospective studies have shown comparable results, indicating a close relationship between smoking and lung cancer.

Dr. Lester Breslow (9), Dr. Morton L. Levin (45), and Drs. William J. Watson and Alexander J. Conte (75) have conducted three independent studies. Without exception these studies found more cigarette smokers among the lung cancer patients than among the controls. Each study indicated a higher percentage of nonsmokers among the control groups than among the lung cancer groups. However, the results of each study showed that the estimates of the extent of increased risk to lung cancer suffered by cigarette smokers vary greatly from one study to another. Dr. Harold F. Dorn (21:9) explained that these variations among the reported data developed from

differences in definitions of a smoker and a heavy smoker.

Dr. Breslow of the California State Health Department (9:174) was primarily investigating the relationship between certain occupations in California and lung cancer. Although the Breslow study found that certain occupations had higher rates of lung cancer, the most significant factor associated with lung cancer was heavy smoking.

In his conclusion, Dr. Levin said that "known occupational hazards do not account for more than a relatively small proportion of lung cancer cases" (45:776). Levin went on to say that the evidence "indicates that the relationship between cigarette smoking and lung cancer is causal and not merely an 'association'" (45:777).

Conclusion. After the Royal College of Physicians (65:12-16) reviewed twenty-three retrospective studies which took place in nine countries, they concluded in 1962 that each study showed a statistical association between smoking and the occurrence of lung cancer. They continued by stating:

> Not only have these studies all shown the same association, but among those dealing with larger numbers it is quantitatively similar, even though the investigations have been made in different countries (65:16).

The findings of the Royal College were corroborated by the Surgeon General who reviewed twenty-nine such studies and concluded:

> It is indeed striking that every one of the retrospective studies of male lung cancer cases showed an association between smoking and lung cancer. All have shown that proportionately more heavy smokers are found among the lung cancer patients than in the control populations and proportionately fewer non-smokers among the cases than among the controls. Furthermore, the disparities in proportions of heavy smokers between "test" groups and controls are statistically significant in all the studies (1:151).

Prospective Studies

Although the retrospective studies show a similar cigarette-lung cancer relationship, they are not in themselves conclusive. The results, however, of the retrospective studies have been fully confirmed by prospective studies. Since 1951 prospective studies have provided even more impressive evidence indicating the direct association between lung cancer and smoking, especially cigarette smoking.

These investigations start with a group of men and women who are chosen at random or from a defined population. The subjects are observed for an indefinite period of years or until they die, the causes of death being determined.

In their extensive study the Royal College of Physicians (65:16) reported that the findings of four independent prospective studies in three different countries all showed a constant rise in deaths from lung cancer with increasing cigarette consumption, and were in

close quantitative agreement with each other and with most of the retrospective studies.

The Doll and Hill study. One important prospective study was conducted in England from November 1, 1951 to March 31, 1956 by Drs. Doll and Hill (17,18). For this study Doll and Hill confined their preliminary investigation to 24,389 British physicians aged thirty-five and older. After following these physicians for fifty-three months, Drs. Doll and Hill (17:1073, 18:1452) made the following conclusions:

1. Deaths from lung cancer increased steadily with increasing amounts of tobacco smoking.

2. Those who continued to smoke more than twenty-five cigarettes a day from the beginning of the study in 1951 had a mortality from lung cancer nearly forty times that of nonsmokers.

3. Regular cigarette smokers who had stopped smoking before the start of the study had a lower mortality rate than those who continued to smoke, but remained higher than for those who were nonsmokers.

The Doll-Hill prospective study has been criticized on two accounts: (1) the study was on a relatively small scale, and (2) British physicians as subjects are not necessarily representative of the general population. However, the prospective study by Drs. E. Cuyler Hammond

and Daniel Horn (37,38) was not affected by either of these two possible qualifications, and their findings were similar to those observed by the Doll-Hill study.

The Hammond and Horn study. The purpose of the Hammond and Horn (37,38) study was to examine the death rates from specific causes in relation to smoking habits. The study included questionnaires from 187,783 white males aged fifty to sixty-nine who appeared healthy. After January of 1952 these men were observed for the next forty-four months.

During this span of time a total of 11,870 deaths were reported, including 2,249 attributed to cancer. The most important finding, concluded Hammond and Horn (37:1160), was that the men with a history of regular cigarette smoking had by far the highest death rate for all causes combined. Men who had never smoked had the lowest death rate.

Hammond and Horn (37:1160) also noticed, as in the Doll-Hill (17,18) study, that men who had stopped smoking had significantly lower death rates than those who continued to smoke. The longer the ex-smoker had abstained, the more his death rate resembled that of the nonsmoker; however, it remained at least 8 per cent higher than the death rate for the nonsmoker. The mortality rate for lung cancer, concluded Hammond and Horn (38:1298), was eleven

times more frequent for regular cigarette smokers than for those who never smoked.

The Dorn study. In 1954, with the cooperation of the United States Public Health Service, the late Dr. Harold F. Dorn (22) began a prospective study similar to the Doll-Hill and the Hammond-Horn studies.

Dr. Harold F. Dorn (22) observed 249,000 policy-holders of United States life insurance who served in the Armed Forces between 1917 and 1940. These veterans were followed for two and one-half years, during which time 7,382 deaths occurred. Dorn (22:581) reported that in this population the mortality rate for lung cancer was nearly ten times higher for regular cigarette smokers than for nonsmokers. Dorn (22:590) also observed that men who smoked more than twenty cigarettes a day had a lung cancer death rate sixteen times greater than that of nonsmokers.

The Hammond study. The most recent and the most comprehensive of the prospective studies, conducted by Dr. E. Cuyler Hammond (34) under the auspices of the American Cancer Society, was launched in 1959 and is still in progress. This study comprises 1,079,000 men and women over the age of thirty living in twenty-five states. Hammond plans to follow each person for six years, extending the study through 1964.

Preliminary findings are available for the first ten and one-half months of Hammond's continual study, and in no way do they contradict the data of previous studies. Moreover, the study apparently is providing significant evidence previously lacking or incomplete. For example, Hammond reported "in relation to total death rates, the degree of inhalation is as important, and perhaps more important, than the amount of smoking" (34:43).

Conclusion. By 1963, reported the Surgeon General, there have been seven prospective studies in three countries, five of which are still active, and thus far all have disclosed "a remarkable consistency in the significantly elevated mortality ratios of smokers particularly among the 'cigarettes only' smoking class" (1:162).

In reviewing these cases the Surgeon General concluded:

> 1. Cigarette smoking is causally related to lung cancer in men; the magnitude of the effect of cigarette smoking far outweighs all other factors. The data for women, though less extensive, point in the same direction.
>
> 2. The risk of developing lung cancer increases with duration of smoking and the number of cigarettes smoked per day, and is diminished by discontinuing smoking.
>
> 3. The risk of developing cancer of the lung for the combined group of pipe smokers, cigar smokers, and pipe and cigar smokers is greater than in nonsmokers, but much less than for cigarette smokers. The data are insufficient to warrant a conclusion for each group individually (1:232-233).

IV. THE RELATIONSHIP BETWEEN SMOKING AND CHRONIC BRONCHITIS AND EMPHYSEMA

Limited Scope Studies

After investigating the smoking records of 5,844 clerical Civil Service employees in 1955, Drs. Neville C. Oswald and V. C. Medvei (59) found a high prevalence of bronchitis in both sexes among smokers, indicating that men and women with similar smoking habits are equally affected by chronic bronchitis.

Three years later, after observing 734 hospital patients, Dr. I. T. T. Higgins (40) concluded that the evidence available indicated that smoking is an important factor in the etiology of chronic bronchitis and emphysema. Higgins (40:329) also noticed that persistent coughs, chest illnesses, wheezing, and breathlessness were more prevalent among heavy smokers than among nonsmokers, and that the degree of incidence rose with increased cigarette consumption.

In 1959, supporting this study by Oswald and Medvei, Dr. Felicity Edwards and associates (26:199) examined 1,753 men over the age of sixty and reported that chronic bronchitis was closely associated quantitatively to smoking habits.

That same year Dr. G. Ide and associates (43)

performed autopsies within six hours after death on males between the ages of thirty to eighty-eight years and reported that pathological evidence of chronic bronchitis was found more frequently in smokers than in nonsmokers and more frequently in heavier smokers than in lighter smokers.

Prospective Studies

Consistent with previous reports, the 1956 Doll-Hill prospective study of more than 40,000 British physicians found a steady increase of bronchitis death rates with an increase in heavy smoking. These investigators (17:1079) observed that the death rate for this disease was six times higher among smokers who consumed twenty-five or more cigarettes a day than among nonsmokers. Dr. Dorn (22:592) found that deaths from bronchitis and emphysema were three times as frequent in regular cigarette smokers as in nonsmokers. Dorn stated, however, that light cigarette smokers, cigar, and pipe smokers were not appreciably affected.

Conclusion

The Advisory Committee to the Surgeon General concluded:

> Cigarette smoking is the most important of the causes of chronic bronchitis in the United States, and increases the risk of dying from chronic

bronchitis and emphysema. A relationship exists between cigarette smoking and emphysema but it has not been established that the relationship is causal. Studies demonstrate that fatalities from this disease are infrequent among non-smokers (1:31).

V. THE RELATIONSHIP BETWEEN CORONARY HEART DISEASE AND SMOKING

Limited Scope Studies

In reviewing the problem of the relationship of tobacco smoking to coronary heart disease, Dr. L. H. Sigler stated:

> It has been well established that tobacco smoke induces immediate effects on the cardiovascular system. These may consist of an acceleration of the heart rate, a rise in blood pressure, a decrease in the temperature of the fingers and toes, a diminution of the blood flow to the extremities, and minor electro-cardiovascular changes, such as diminished amplitude of the T waves (70:3107).

After considering the physiological effects of tobacco on the circulatory system, Sigler concluded: "It is conceivable that accumulative effects of tobacco intoxication over years may result also in structural changes" (70:3107).

To prove or disprove this assumption, Sigler conducted a clinical study to examine the records of 1,500 patients with degenerative coronary heart disease and found that in this group: (1) the clinical manifestations appeared earlier in smokers than in nonsmokers; (2) the greater amount of tobacco consumed, the earlier was the

occurrence of clinical manifestations of this disease; (3) the first coronary occlusion attack also appeared earlier in the smoker than in the nonsmoker in both male and female; and (4) the higher the degree of smoking, the earlier the death for both male and female.

Several limited prospective studies involving small population groups have obtained morbidity and mortality data concerning the relationship of coronary heart disease and smoking. Two of these studies were quite similar in structure and purpose and have been combined into one review by Dr. Joseph T. Doyle and associates (23). Specifically these were the Albany and the Framingham studies.

The review was based on observation of 4,120 men who were free of coronary heart disease at the first examination. The Albany group consisted of 1,838 men aged thirty-nine to fifty-five years at the start of the study in 1952; these men were observed for six years. The Framingham group was comprised of 2,282 men who were thirty to sixty-two years in 1950; these men were observed for eight years.

Doyle (23:800) reported in 1962 that both studies found that the mortality rate from all causes among smokers was significantly higher than that among non-smokers. The excess mortality rate was due in large

measure to coronary heart disease. These findings were significantly similar to those observed by Hammond and Horn (38) in their study of 187,783 men. Dr. Hammond stated that the results of these studies were "in essential agreement with the findings reported by all other investigations" (36:20).

It was observed by Doyle (23:799-801) that cigarette smokers had a twofold mortality rate in relation to nonsmokers, and that the mortality rate increased gradually with increasing consumption of cigarettes, reaching a threefold increase for those who smoke twenty cigarettes or more a day. Dr. Doyle (23:799) concluded that morbidity and mortality from coronary heart disease were directly associated with smoking habits, especially regular cigarette smoking.

A similar study with similar results was conducted by Dr. Robert w. Buechley and associates (10). After reviewing several studies and conducting their own on 3,994 California longshoremen, they concluded that:

> The differences in death rate between nonsmokers and heavy smokers show a strong and consistent relationship between smoking and coronary heart disease mortality, at least in men forty to seventy years of age (10:1089).

Prospective Studies

Each of the four larger prospective studies by Doll and Hill, Dorn, Hammond and Horn, and the 1959 Hammond

investigation found a close correlation between the deaths attributed to coronary heart disease and the smoker's daily cigarette consumption.

For example, Hammond and Horn (38:1308) found that the death rate attributed to coronary heart disease increased progressively with the amount of daily cigarette consumption, averaging nearly two and one-half times greater for those who smoked two or more packages of cigarettes a day. They also observed that the ex-cigarette smoker had a substantially reduced death rate from coronary heart disease as compared with those who continued to smoke.

Since the leading cause of death for men in the United States is coronary heart disease, it is not unusual to find this disease as the leading cause of death for both smokers and nonsmokers (34:43). However, Hammond and Horn (38:1308) observed that the death rate was 70 per cent higher in cigarette smokers than in a comparable group of men who never smoked. Dorn's (22:592) report was in close agreement with these findings, for he found that the death rate from coronary heart disease was 63 per cent higher for cigarette smokers than for nonsmokers.

Conclusion

Based on the preceding data, the Royal College of Physicians concluded:

> Although coronary heart disease is the main contributor to the excess mortality of cigarette smokers observed in all the prospective studies, it is not possible to assert, as in the case of lung cancer, that the association between coronary disease and smoking is causal. Lung cancer is rare in non-smokers, the disease is associated with cigarette smoking at all ages and no personal characteristic other than smoking has been shown to increase liability to it. In contrast, coronary heart disease frequently affects non-smokers (65:32).

Since it is not clear that the association between cigarette smoking and coronary heart disease is causal, more investigation is required. However, with the evidence that has been presented, it seems sensible to agree with the 1960 statement of the Committee on Smoking and Cardiovascular Disease of the American Heart Association that "the data strongly suggest that heavy cigarette smoking may contribute to or accelerate the development of coronary heart disease or its complications" (2).

VI. THE EFFECT OF SMOKING ON HUMAN TISSUES

Because of the abundant evidence that cigarette smoking is a major detriment to human health, scientists have conducted clinical studies to help explain how tobacco smoke affects the lungs, heart, and other body tissues.

Drs. Grace M. Roth and Richard M. Schick (64), in 1958, clinically observed that inhaled nicotine causes constriction of the superficial vessels in the limbs,

raises the blood pressure, and increases the pulse rate and output of the heart by both direct and indirect effects. In addition to these effects, the Surgeon General (1:74-75) listed: suppression of appetite, and when nicotine is absorbed in larger quantities, nausea and vomiting.

The Surgeon General (1:69-75) concluded that nicotine has been observed to exert an unfavorable effect on the heart, blood vessels, digestive tract, kidneys, and nervous system.

These effects, biologically examined, are comparable to Dr. Hammond's (34:43) preliminary data from his current prospective study. Hammond found a significant relationship between cigarette smoking and a number of physical complaints, particularly shortness of breath, coughing, loss of appetite, and loss of weight.

Ruth Brecher and associates (8:49) and the Royal College of Physicians (65:10) reported that the irritant effect of tobacco smoke upon the human mucous membranes in the respiratory tract stimulates the secretion of mucous and delays its removal by slowing the action of the ciliated lining of the bronchial tubes. Both Brecher and the Royal College of Physicians (65:26) suggested that because of this slowing down process of the cilia, tobacco smoke might produce chronic irritation which could

increase the inhaler's susceptibility to lung cancer. Further investigation is needed to substantiate or disprove this contention.

In 1955 Dr. E. Cuyler Hammond, with Dr. Oscar Auerbach and their associates (54:10-11), conducted microscopic examinations of lung tissues taken from more than one thousand smokers and nonsmokers who had died from various causes. These physicians found the cilia of the bronchial tubes destroyed in every smoker examined.

However, not one nonsmoker had this destruction of cilia. It was observed that where the cilia had been destroyed, cancer cells, "found rarely in the tissues of nonsmokers, occurred with great frequency in regular smokers" (54:10). Hammond (54:10) also found that the lung tissues of more than one thousand deceased smokers showed a widespread damage of the alveoli and narrowing of the small arterial blood vessels in the lungs.

In 1957 and 1961 Dr. Oscar Auerbach and associates (4,5) conducted two other studies. They found an abnormal increase in the cells, destruction of cilia, and a great increase of atypical cells, all proportionate to increased amount of cigarette smoking.

It is Auerbach's (5:267) belief that the histologic evidence from these two studies greatly strengthens the already overwhelming body of epidemiologic evidence that

the components of cigarette smoke are a major factor in the causation of bronchogenic carcinoma.

VII. THE CHEMISTRY OF TOBACCO SMOKE

Scientific research has enabled man to identify many components of tobacco smoke, most of which are present in minute amounts. The Royal College of Physicians (65:8) stated that nearly three hundred compounds have been identified in the smoke of tobacco. Contained in the smoke are: (1) numerous poisons, such as nicotine, (2) various agents that are highly irritating to human mammalian tissues, (3) carcinogens, and (4) cocarcinogens.

The amount of nicotine absorbed into the body during the course of smoking is dependent on several variables, such as the nicotine content of the tobacco smoked, the length of the butt, and the depth of inhalation. Because of these and other variables, researchers have presented similar but not identical data concerning the amount of nicotine per cigarette absorbed into the body. This variance is also indicative of the fact that, up to this time, biological experiments in this field have been limited.

One of the first comprehensive clinical investigations was conducted in 1958 by Drs. Grace M. Roth and Richard M. Shick (64:444), who observed that three to four

milligrams of nicotine per cigarette entered the human respiratory passage, and two and one-half to three milligrams per cigarette were absorbed into the human lungs.

Cigarette smokers who inhale, stated the Royal College of Physicians (65:10), may absorb as much as 90 per cent of the available nicotine as compared to 10 per cent for those who do not inhale. The nicotine content of a cigarette is approximately twenty-five milligrams.

The most recent data regarding the absorption of nicotine were provided by the Surgeon General (1:74), who stated that the amount of nicotine absorbed per inhaled cigarette varies from one to two milligrams.

The irritants in tobacco smoke that are believed to be extremely irritating to human mammalian tissue are acids, aldehydes, ammonia, ketones, phenols, and volatile acids (65:10).

By laboratory research, sixteen carcinogenic substances have been found in tobacco smoke that are capable of developing skin cancer in experimental animals (65:26). Brecher (8:44) stated that carcinogens have also been shown to cause skin cancer in humans. Arsenic is a carcinogenic agent, which at first was thought to be harmless. However, it was reported by the Royal College of Physicians (65:12) that there is clinical evidence that arsenic may have a cocarcinogenic action, which would make

this tobacco ingredient more significant.

Tobacco smoke contains large amounts of cocarcinogens, which by themselves cannot produce cancer. In conjunction with carcinogens, however, they appear to activate the growth of cancerous tumors (54:9).

In addition to the detected presence of several tobacco components known to be capable of producing cancer, others, as yet unobserved, may be present. Further pharmacological investigations and clinical experiments are necessary to obtain a more complete understanding of the chemistry of tobacco smoke and its effects on human tissues.

VIII. THE SMOKING HABITS OF STUDENTS

A review of the literature on the prevalence of teenage smoking discloses that this serious problem has not received adequate investigation. There have been a number of studies concerning tobacco smoking among youth in Great Britain and other European countries. In the United States, however, the only substantial studies of this problem are those administered in Portland, Oregon and Newton, Massachusetts. Consequently, due to the limited research on this problem, little is known about the smoking habits of youth of the United States.

The remainder of the chapter will review three

studies of tobacco smoking among students.

The Antioch Study

J. Rosslyn Earp's (25) study was composed of a relatively small group of male students enrolled at Antioch College during the 1924-1925 school year.

After studying the scholastic grades of the nonsmokers and the regular smokers, Earp (25:18-24) observed that nonsmokers on the whole had received higher grades at Antioch College than the regular smokers, although there was no noticeable difference in the intelligence of the two groups. Earp (25:25-39) reported that light smokers had higher grades than heavy smokers, and the same results were observed for noninhaling smokers as compared to inhalers. Earp (25:27) also found that more smokers than nonsmokers failed to graduate from Antioch College.

The data found by Earp seem to imply that a distinguishing characteristic of regular smokers and nonsmokers is academic achievement rather than intelligence.

It was observed by Earp that the father's smoking behavior had a significant influence upon the student. Earp concluded: "By smoking himself a father increases by about twenty per cent the probability that his son will be smoking when he is a college student" (25:53).

The Portland Study

The most comprehensive study concerning smoking habits of high school students was the Portland survey, conducted by Dr. Daniel Horn and associates (42) under the auspices of the American Cancer Society.

The study in Portland, Oregon was administered during the 1958-1959 school year, and involved 21,980 high school students in eleven public schools, five Catholic parochial schools, and five suburban public schools in Multomah and Clarkamas Counties. The study group included 11,060 boys and 10,920 girls.

Dr. Horn (42:1501) reported that one-fourth of the boys and one-half of the girls indicated that they had never even experimented with cigarette smoking. However, the number of students who had never smoked declined steadily during the four successive years in high school. The data showed the decline among the boys, ranging from 30.8 per cent of the freshmen, to 19.0 per cent of the seniors; and for the girls from 58.9 per cent of the freshmen to 31.7 per cent of the seniors.

Dr. Horn (42:1501) observed that 25.8 per cent and 19.7 per cent of the boys and girls, respectively, were regular smokers (defined as one smoking at least one cigarette or more a week). It was also observed that their use of tobacco was almost entirely restricted to

cigarette smoking, including the boys. The number of regular smokers was consistently higher for each successive year in school. The percentage of regular smokers among the boys was 14.5 per cent for freshmen, 25.2 per cent for sophomores, 31.1 per cent for juniors, and 35.4 per cent for seniors. The corresponding percentages among girls were 4.6 per cent, 10.6 per cent, 16.2 per cent, and 26.2 per cent during their senior year. It was found that one-third of the senior students were regular smokers.

Not only did each successive school grade have a higher percentage of cigarette smokers than the preceding grade, but Horn (42:1501) found that the amount consumed also increased perceptibly during the four years of high school for both male and female smokers.

It was reported by Horn (42:1507) that of the regular smokers more than one-half of the boys and nearly three-quarters of the girls used filter cigarettes exclusively. However, the proportion of exclusive filter users varied inversely with the amount smoked.

To determine why teenagers smoke, Horn (42:1507) sought for differences between the youths who smoked and those who abstained. The most significant factor that distinguished smokers from nonsmokers was the smoking habits of parents. Horn disclosed that the percentage of regular smokers was highest among boys and girls of

families in which both parents smoked cigarettes, lowest in families in which neither parent smoked in any form, and intermediate in families in which only one parent smoked. In this study it was observed that the smoking behavior of boys conformed closely to that of the father, while smoking behavior of the girls conformed closely to that of the mother.

Other noticeable factors that were found to distinguish regular smokers from nonsmokers were:

1. The percentages of male and female regular cigarette smokers were highest among students in the Catholic parochial high schools, intermediate for the students attending the Portland city public high schools, and lowest among students in the suburban public high schools (42:1505).

2. The percentage of male smokers who did not participate in organized athletics was significantly higher than for the boys who did participate (42:1505).

3. The percentage of regular smokers was higher for both boys and girls who did not participate in other extracurricular activities than for those who did participate in at least one such activity (42:1507).

4. Students who were older than their classmates had a substantially higher percentage of regular smokers as compared to the boys and girls of typical age. The

students who were younger than their classmates had a lower percentage of regular smokers (42:1505).

5. The percentage of smokers was higher for students who took general mathematics rather than algebra (42:1505).

In conclusion, Horn stated:

> Two relatively independent factors were found that describe the groups with a high proportion of smoking: (1) a correspondence with family practices as indicated by parental smoking, and (2) a syndrome of personal factors characterizing inactive students (nonparticipating in extracurricular activities) who tend to be scholastically unsuccessful (older than their classmates) and with lower academic goals (not taking algebra or a college preparatory course).
>
> These two independent factors are almost completely additive. Jointly they account for over one-half the boys who smoke and for three-fifths of the girls who smoke. The significantly higher proportion of smokers found in the Catholic parochial schools is not accounted for by these factors (42:1511).

The Newton Study

In 1961 Dr. Eva J. Salber and associates (67,68,69) conducted a study concerning the smoking habits of all the students enrolled in the public junior and senior high schools in Newton, Massachusetts. Since it was an extensive study Salber divided it into three reports. One report investigated the prevalence and distribution of smoking among students in the seventh through the twelfth grades (67). For the second report, Salber (68) excluded the junior high school students, and examined the smoking

habits of the students in grades ten through twelve as related to the smoking behavior of their parents and the family's socioeconomic status as measured by the father's occupation. Salber's third study (69) was to determine if the smoking patterns of students in grades seven through twelve were related to intelligence (IQ) and academic achievement.

Salber (67:969) described the inhabitants of Newton to be representative of all socioeconomic classes, although she believed that there were more families in the middle income and upper income than generally found in the metropolitan area as a whole.

The questionnaires were issued by the homeroom teachers during the first week of November 1959, and unlike the Portland study, the students were instructed to sign their questionnaire. There were 6,810 usable questionnaires, 3,449 completed by boys and 3,361 by girls, representing about 92 per cent of the total enrollment of the seventh through twelfth grades.

Salber and associates defined nonsmoker as a student who had never smoked ten cigarettes in his lifetime; and a smoker was loosely defined as a student who had smoked at least ten cigarettes in his lifetime "and at the time of the questionnaire considered himself to be a smoker regardless of the amount smoked" (67:969).

Combining both sexes, Salber (67:970) found that the percentage of students who were smoking at the time of the questionnaire increased consistently from 4.0 per cent in the seventh grade to 50.0 per cent in the twelfth grade. The percentage of male smokers increased from 6.8 per cent in the seventh grade to 45.5 per cent in the twelfth grade. Among girls, the percentage rose from 1.1 per cent in the seventh grade to 54.7 per cent.

Salber (67:970) observed that the percentage of smokers was lower among girls than boys, but the difference was reduced with each increasing grade, and in the twelfth grade the percentage of female smokers exceeded that of males. Salber stated, however, that this trend was primarily due to the large percentage of light smokers among twelfth grade girls. In grade twelve, 17.7 per cent of the boys and 10.4 per cent of the girls consumed five packs of cigarettes or more a week.

This trend did not agree with the data of the Portland study on three accounts: (1) the percentage of smokers was higher among boys than girls in each successive grade in Portland's high schools; (2) the prevalency of moderately heavy smoking among girls was much higher in Newton than in the suburban areas in Portland; and (3) the percentage of regular smokers was found higher among students enrolled in grade nine through twelve in Newton

than in Portland (67:973).

Because of these differences, Salber stated:

> The high rates of smoking in Newton school children are particularly noteworthy when it is considered that suburban areas in Portland had rates considerably lower than those of this city and that smoking prevalence among children appears to be inversely related to socioeconomic status (67:973).

The latter part of Salber's statement was based on the results she found in the study concerning the smoking habits of 2,823 senior high school students as related to the current smoking behavior of their parents and the family's socioeconomic class.

Salber (68:1781-1782) found that for both sexes the percentage of students who were smoking at the time of the questionnaire, especially those who smoked twenty cigarettes a week or more, increased with decreasing socioeconomic class. The percentage of the heaviest smokers, those who smoked five packs of cigarettes or more a week, was approximately twice as numerous in the lowest social class as compared to the highest social class; and there were twice as many nonsmokers in the highest social class as in the lowest social class.

As reported in the Portland study (42:1501), Salber (68:1783) found that the parental smoking behavior was significantly related to the smoking behavior of the students. Salber said that when neither parent smoked, one-fourth of the students were current cigarette smokers.

When both parents were described as current smokers, one-half of the students were smokers. The percentage of smokers among students in the families in which only one parent smoked, was intermediate between those in which both parents smoked and those in which neither parent smoked. It was also found by Salber (67:1785) that the association between the smoking habits of the parents and those of their children was even more significant among those students who smoked five packs of cigarettes or more per week.

However, unlike the Portland study, Salber (67: 1783) did not find any significant sex relationship between the smoking pattern of one parent and the student.

Salber's third report (69), which included the original 6,810 students, found that smoking habits were inversely related to mean intelligence (IQ) and academic achievements. Among boys and girls in all grades, seven through twelve, the mean intelligence level and academic achievements were substantially higher for those who did not smoke than for those who were regular smokers, and the heavier the smoking, the lower the IQ and academic achievements. Earp's (25:18-19) findings did not agree with Salber's findings concerning IQ, although Earp did find that the nonsmokers received better grades than the smokers at Antioch College.

The data on the academic achievements seem to be in agreement with the Portland study (42:1507) which found the percentage of smokers greater for students who had taken general mathematics rather than algebra.

IX. SUMMARY

The impressive evidence that links smoking, particularly of cigarettes, and health is provided by the following: (1) retrospective and prospective studies that have observed a much higher death rate for smokers than for nonsmokers; (2) biological investigations that have found microscopic changes of the respiratory tract which could precede the development of cancer; (3) laboratory experiments that have produced skin cancers in animals and humans; and (4) clinical investigations that have detected several components of tobacco smoke that are known to be capable of producing cancer.

The vast accumulation of scientific evidence indicating cigarette smoking as a serious health hazard, particularly as a major cause of lung cancer, has initiated an increased sense of responsibility among individuals and agencies concerned with public education and public health.

As extensive as the research has been in the area of smoking and health, the reverse is true in the area of

smoking habits of youth. It appears that at the present time there is a steady increase in the number of young people smoking. Consequently, more research is needed if educators are to become better equipped to guide youth in desirable directions. Chapter III describes the methods used in gathering such data.

CHAPTER III

METHODS OF PROCEDURE

I. SELECTION OF THE STUDENTS

Since 97.1 per cent of the twelfth grade students were enrolled in social studies classes at Will C. Crawford High School, these students were selected for the study. The total enrollment of the study population was 337 boys and 315 girls, comprising a total of 652 students. The entire senior class was represented in this group by 99.4 per cent of the boys and 94.8 per cent of the girls. The classes included American Government, World Affairs, Honors, and San Diego City College History 4B, in which seven students were enrolled. There was a total of nineteen classes.

The subjects were predominately Caucasian and were from middle-income families. The extremes of the socio-economic range were not represented in the study.

II. DEVELOPMENT OF THE QUESTIONNAIRE

The questionnaire upon which this study was based was developed from that used in the Portland study (42) of the smoking habits of 21,980 high school students. Changes

were made in order to meet the needs of the present study.

The questionnaire was constructed to obtain information in the following three major areas: (1) students' smoking history and habits, (2) characteristics that distinguish smokers from nonsmokers, and (3) students' attitudes regarding smoking.

In the area of (1)--students' smoking history and habits--students were instructed to select one of the six defined classifications that best described their smoking behavior. The classifications were: Never Smoked, Experimental Smoker, Occasional Smoker, Ex-occasional Smoker, Regular Smoker, and Ex-regular Smoker. Students were then questioned regarding: (a) smoking habits of the total study group, (b) the use of cigarette, pipe, or cigar, (c) the amount currently smoked, (d) their age at first smoking experience, and (e) age they became a regular smoker.

In relation to (2)--characteristics that distinguish smokers from nonsmokers--data were obtained regarding: (a) parental smoking habits, (b) age, (c) academic achievement as indicated by enrollment in upper academic classes or basic requirement classes, (d) participation in varsity athletics, (e) participation in extracurricular activities, and (f) instruction about smoking and health.

In relation to (3)--students' attitudes regarding

smoking--data were obtained concerning: (a) smokers' reasons for smoking, (b) nonsmokers' reasons for not smoking, (c) attitudes toward teenage smokers by nonsmokers and regular smokers, (d) nonsmokers and smokers who believed cigarette smoking to be related to lung cancer, (e) regular smokers who wished they had never started smoking, and (f) regular smokers who believed instruction about smoking and health would have helped them avoid smoking.

The questionnaire was designed so that, when suitable, most of the items could be answered by making a check in an appropriate space provided. The structure of the questionnaire relied heavily on Yes-and-No responses and Items-to-Check. Only a few Fill-in items were used to remove the chances of faulty and incomplete responses.

III. ADMINISTRATION OF THE QUESTIONNAIRE

To insure the preparation of a reliable instrument, a pilot questionnaire was given to thirty-six students in an eleventh grade class by the investigator. The purpose of the pilot study was: (1) to determine the length of time needed to administer the questionnaire, (2) to determine if the oral and written instructions were adequate and clearly stated, (3) to determine if the structure facilitated students' responses, (4) to determine if the

structure facilitated convenient and accurate tabulation, and (5) to determine if the questions were clear and readily understood.

After the instructions were read the students were informed they could ask questions if they were uncertain of the meaning of the oral or written instructions, or if they found an item in the questionnaire they did not understand. Throughout the administration of the questionnaire students indicating a need for assistance were approached on an individual basis. This procedure was used to check for the possibility of ambiguous instructions or items, so that corrections could be made if necessary.

When the students had completed their responses they were asked if they had any comments or questions pertaining to the questionnaire. They were also asked if they felt that the items facilitated honest responses or that a particular response was asked for or desired.

It was noted that it took approximately twenty-five minutes for all the students to complete the questionnaire and write any pertinent comments.

As a result of the responses and comments of the pilot study group several changes were deemed necessary and/or desirable and appropriate revisions were made in the questionnaire. (A copy of the pilot questionnaire may

be found in Appendix A.)

The revised questionnaire was administered to the nineteen social studies classes on Tuesday, June 4, 1963. Due to the overlapping of classes at Will C. Crawford High School, it was impossible for the investigator of this study to administer the questionnaire to all the classes. However, the investigator personally prepared the teachers of these classes by informing them of the purpose of the study. In an attempt to standardize the administration of the questionnaire, teachers were given specific instructions on methods of presentation. The instructions for the students were written on the questionnaire for each student to read. To establish complete clarity and understanding the teachers were instructed to read the instructions to the class after every student had received a copy of the questionnaire but before the signal to begin was given.

No attempt was made to secure data on the students absent or excused from school on the day the questionnaire was administered. This was to avoid added inconvenience to the teachers and students involved.

A copy of the revised questionnaire may be found in Appendix B, together with the instructions to the teacher.

IV. TABULATION OF THE QUESTIONNAIRE

The data were recorded, evaluated, analyzed, and compared by the investigator. The facilities at the San Diego State College Computer Center were used to transform the material into a coding system in order that it might be analyzed with the help of machine tabulation.

The following chapter presents an analysis and interpretation of the data derived from administration and analysis of the questionnaire.

CHAPTER IV

PRESENTATION OF THE FINDINGS

The study population consisted of 652 twelfth grade students at Will C. Crawford High School, 337 boys and 315 girls. On the day the questionnaire was administered there were forty-four students absent. Three questionnaires completed by boys were discarded because of incomplete or erroneous responses. There were 605 usable questionnaires completed by 312 boys and 293 girls, representing 92.5 per cent and 93.0 per cent, respectively, of the students taking social studies.

The data were analyzed under the three major areas previously indicated: (1) students' smoking history and habits, (2) characteristics that distinguish smokers from nonsmokers, and (3) students' attitudes regarding smoking. This chapter presents the findings of the questionnaire study according to these classifications.

Since the primary problem is the teenager who smokes as a regular pattern, the emphasis throughout this analysis was placed on the regular smoker. Data on the boys and girls were treated separately throughout.

As the questionnaire was extensive in scope, only the findings pertinent to this study were tabulated.

Extraneous data were not analyzed or tabulated.

I. STUDENTS' SMOKING HISTORY AND HABITS

The first major area of the questionnaire was devised to determine the students' smoking history and habits. The following specific data were derived:

Smoking habits of the total study group. Each student was asked to select one of the following classifications that best described his smoking behavior: Never Smoked, Experimental Smoker, Occasional Smoker, Ex-occasional Smoker, Regular Smoker, or Ex-regular Smoker.

The data in Table I reveal that by far the largest single classification of students in this study group are those who indicated that they had not even experimented with smoking. The students who had never smoked represented nearly one-third of the total population. Of the female population, 37.5 per cent fit this classification, as compared to 25.0 per cent of the male population.

The composite percentage of students who were not using tobacco at the time of the study represented more than three-fifths of the total group. There was a much higher percentage of nonsmokers among the girls (67.9 per cent) than among the boys (57.3 per cent).

The findings show that a considerably greater

TABLE I

DISTRIBUTION OF SMOKING HABITS OF THE TOTAL STUDY GROUP

	Boys		Girls		Both	
	No.	%	No.	%	No.	%
Never smoked	78	25.0	110	37.5	188	31.0
Experimental smokers	74	23.7	74	25.2	148	24.4
Occasional smokers	49	15.7	31	10.5	80	13.2
Ex-occasional smokers	13	4.1	7	2.3	20	3.3
Regular smokers	84	26.9	63	21.5	147	24.2
Ex-regular smokers	14	4.4	8	2.7	22	3.6
Total	312	99.8	293	99.7	605	99.7

percentage of boys (75.0 per cent) than girls (62.4 per cent) had had some personal experience with tobacco. Of this group 68.3 per cent of the boys and 59.0 per cent of the girls continued to smoke either occasionally or regularly, and at the time of the study 56.8 per cent and 51.3 per cent of these boys and girls, respectively, were smoking.

The tabulation of the smoking habits of the total population revealed that nearly one out of four students was a regular smoker. As expected, the proportion of students classified as regular smokers was larger for boys (26.9 per cent) than for girls (21.5 per cent), corroborating Haenszel's nationwide survey (32:11) and Horn's Portland study (42:1501).

It is interesting to note that the three most prevalent classifications of smoking behavior were the same for both sexes, but were not in the same order. The highest percentage of boys was classified as regular smokers (26.9 per cent), followed closely by those who had never smoked (25.0 per cent), and experimental smokers (23.7 per cent). In contrast to the boys' classifications, the highest percentage of girls was classified as those who had never smoked (37.5 per cent), followed by experimental smokers (25.2 per cent) and regular smokers (21.5 per cent).

The occasional smokers constituted 15.7 per cent of the boys and 10.5 per cent of the girls.

The percentages of ex-occasional smokers and ex-regular smokers were small for both sexes, although there were more male ex-smokers (8.6 per cent) than female (5.1 per cent).

Since a higher percentage of girls was classified as experimental smokers, it appeared that more girls than boys had experimented with smoking. However, the data indicate that after experimenting with smoking, a higher percentage of girls discontinued completely, whereas more boys became occasional smokers or regular smokers. This assumption is supported by the data revealing that the total number of boys who were regular smokers, occasional smokers, or ex-smokers comprised 51.2 per cent of the boys as compared to 37.2 per cent of the girls.

The use of cigarette, pipe, or cigar. Of the regular smokers, as shown in Table II, it is quite evident that the use of cigarettes was preponderant among both boys (91.6 per cent) and girls (87.3 per cent). There is an apparent discrepancy between the sexes in that 7.1 per cent of the boys, as compared to 12.6 per cent of the girls, did not give a response to this question. This may reflect the fact that these smokers had no particular

TABLE II

DISTRIBUTION OF THE USE OF CIGARETTE, PIPE, OR CIGAR, BY REGULAR SMOKERS

Form tobacco is usually smoked	Boys No.	Boys %	Girls No.	Girls %	Both No.	Both %
Plain cigarettes king & regular	12	14.2	3	4.7	15	10.2
Filter cigarettes king & regular	51	60.7	35	55.5	86	58.5
Menthol cigarettes	8	9.5	16	25.3	24	16.3
Pipes or cigars	1	1.1	-	-	1	0.6
Three or more of the above	6	7.1	1	1.5	7	4.7
No response	6	7.1	8	12.6	14	9.5
Total	84	99.7	63	99.6	147	99.8

preference. Of the fifty-five girls who responded all indicated they smoked cigarettes exclusively.

Only one male (1.1 per cent) reported that he usually smoked a pipe. Six boys (7.1 per cent) and one girl (1.5 per cent) preferred three or more forms of smoking.

The data are in strong agreement with the Portland study (42:1501) and the Newton study (67:970) which also found that teenage smoking was almost entirely restricted to cigarettes. Therefore, the term "smoking," unless otherwise specified, refers to cigarette smoking only.

The most revealing observation, however, is that among regular smokers slightly more than three-fifths of the boys and more than one-half of the girls usually smoked filter cigarettes. In the Portland study Horn (42:1507) also found a high percentage of regular smokers used filter cigarettes, but a greater proportion of girls than boys used them. These findings may reflect a high level of concern with the health hazards of smoking, or it may merely be a sign of the success of tobacco advertising in influencing teenagers with the notion that filter cigarettes are superior.

Amount currently smoked. Table III shows that of those students who were regular smokers the percentage who smoked four or fewer cigarettes per day was

TABLE III

DISTRIBUTION OF THE AMOUNT CURRENTLY SMOKED BY REGULAR SMOKERS

Number of cigarettes	Boys		Girls		Both	
	No.	%	No.	%	No.	%
1 to 6 a week	3	3.5	7	11.1	10	6.8
1 to 4 a day	11	13.0	17	26.9	28	19.0
5 to 9 a day	20	23.8	10	15.8	30	20.4
10 to 19 a day	34	40.4	22	34.9	56	38.0
20 to 29 a day	12	14.2	5	7.9	17	11.5
30 to 39 a day	1	1.1	1	1.5	2	1.3
40 to 60 a day	1	1.1	-	-	1	0.6
No response	2	2.3	1	1.5	3	2.0
Total	84	99.4	63	99.6	147	99.6

substantially higher among girls (38.0 per cent) than among boys (16.6 per cent). As expected, the percentage of students who smoked half-a-pack or more of cigarettes per day was noticeably higher among boys (57.1 per cent) than among girls (44.4 per cent). These findings were in agreement with the Newton study (67:970) which also found that boys were heavier smokers than girls.

It is revealed by the data that the most prevalent daily consumption (10 to 19 cigarettes per day) was the same for both sexes, but the percentage of regular smokers was higher among the boys (40.4 per cent) than among girls (34.9 per cent).

Of the regular smokers, 14.2 per cent and 7.9 per cent of the boys and girls, respectively, said they smoked from 20 to 29 cigarettes per day. One boy and one girl reported they consumed 30 to 39 cigarettes per day, and one boy stated that he consumed 40 to 60 cigarettes per day. Therefore, one boy out of six and approximately one girl out of ten smoked a pack of cigarettes or more per day.

Age at first smoking experience. Table IV shows the ages at which regular smokers first experimented with smoking. Between the ages of six and eight years, twelve boys (14.2 per cent) and not one girl had experimented with smoking. Through the age of twelve, one-half of the

TABLE IV

AGE AT FIRST SMOKING EXPERIENCE OF REGULAR SMOKERS

Age in years	Boys No.	Boys %	Girls No.	Girls %	Both No.	Both %
6	1	1.1	-	-	1	0.6
7	8	9.5	-	-	8	5.4
8	3	3.5	-	-	3	2.0
9	3	3.5	2	3.1	5	3.4
10	8	9.5	1	1.5	9	6.1
11	5	5.9	1	1.5	6	4.0
12	14	16.6	14	22.2	28	19.0
13	8	9.5	8	12.6	16	10.8
14	8	9.5	9	14.2	17	11.5
15	15	17.8	14	22.2	29	19.7
16	5	5.9	11	17.4	16	10.8
17	2	2.3	1	1.5	3	2.0
18	1	1.1	-	-	1	0.6
No response	3	3.5	2	3.1	5	3.4
Total	84	99.2	63	99.3	147	99.3

boys and more than one-fourth of the girls had tried smoking. Of the regular smokers 86.9 per cent of the boys and 77.7 per cent of the girls had experimented with smoking before they reached sixteen years of age.

Although the data show that the boys began to experiment with smoking approximately three years before the girls, both sexes had their most pronounced increases at twelve years (16.6 per cent for the boys and 22.2 per cent for the girls) and fifteen years (17.8 per cent for the boys and 22.2 per cent for the girls). This finding may be merely coincidental.

Among the boys after age fifteen there was a considerable drop in experimentation with smoking and a steady decrease through age eighteen. This pattern was also true for the girls, but with one important modification: at sixteen years of age 17.4 per cent experimented with cigarettes for the first time as compared to 5.9 per cent of the boys.

The data indicate that the male pattern of experimentation with smoking is crowded into a span of six years from age ten through fifteen, representing 69.0 per cent of the male regular smokers. The female pattern of experimentation with smoking is crowded into five years from age twelve through sixteen, representing a striking 88.8 per cent.

Age student became a regular smoker. The distribution of the regular smokers, as indicated by Table V, reveals that before twelve years of age seven boys (8.0 per cent) and no girls had started smoking once or more than once per week. From age twelve, however, there was a fluctuating increase in the prevalence of regular smokers for both sexes, although not in the same proportion.

The percentage of regular smokers among boys through age fourteen is 35.7 per cent as compared to only 14.2 per cent among the girls, indicating that in this population a substantially higher percentage of boys become regular smokers at earlier ages than girls.

Although these girls did not experiment or begin smoking as early as the boys, the age at which the largest percentage began smoking as a regular pattern was identical with both sexes. It was found that of the regular smokers one-fourth of the boys and nearly one-third of the girls began to smoke on a regular basis at age sixteen.

The data also show that among regular smokers nine of ten boys were smoking on a regular basis before they reached the age of eighteen years, as compared to four out of five girls. The percentage would certainly be higher except for the fact that a relatively large percentage of students (8.3 per cent of the boys and 15.8 per cent of

TABLE V

AGE STUDENT BECAME A REGULAR SMOKER

Age in years	Boys No.	Boys %	Girls No.	Girls %	Both No.	Both %
7	1	1.1	-	-	1	0.6
8	1	1.1	-	-	1	0.6
9	1	1.1	-	-	1	0.6
10	4	4.7	-	-	4	2.7
11	-	-	-	-	-	-
12	7	8.3	2	3.1	9	6.1
13	11	13.0	4	6.3	15	10.2
14	5	5.9	3	4.7	8	5.4
15	17	20.2	13	20.6	30	20.4
16	21	25.0	20	31.7	41	27.8
17	8	9.5	9	14.2	17	11.5
18	-	-	1	1.5	1	0.6
19	1	1.1	1	1.5	2	1.3
No response	7	8.3	10	15.8	17	11.5
Total	84	99.3	63	99.4	147	99.3

the girls) gave no response to this item of the questionnaire. Seventeen students, including ten girls, could not recall when they began smoking as a regular practice, as compared to five students who could not recall when they had their first smoking experience (see Table IV, page 62). It would appear that for a majority of these students their first smoking experience was meaningful. In contrast, the age at which their smoking became a regular pattern occurred without their full realization. The large percentage of girls who did not respond to this question is noteworthy.

II. CHARACTERISTICS THAT DISTINGUISH SMOKERS FROM NONSMOKERS

The second major area of the questionnaire was developed to find characteristics distinguishing smokers from nonsmokers. The following specific data were secured:

Parental smoking habits. From this study, as shown in Table VI, it appears that one of the most important characteristics distinguishing the teenage smoker from the nonsmoker was whether or not the parents smoked.

As shown by the data, the percentage of regular smokers was highest among teenagers of families in which both parents smoked (44.0 per cent of the boys and 44.4

TABLE VI

DISTRIBUTION OF PARENTAL SMOKING HABITS
BY REGULAR SMOKERS

	Boys		Girls		Both	
	No.	%	No.	%	No.	%
Both parents smoke	37	44.0	28	44.4	65	44.2
Only father smokes	14	16.6	14	22.2	28	19.0
Only mother smokes	6	7.1	8	12.6	14	9.5
One an ex-smoker and one a current smoker	7	8.3	3	4.7	10	6.8
One or both an ex-smoker and neither a smoker currently	10	11.9	5	7.9	15	10.2
Neither parent smokes	9	10.7	5	7.9	14	9.5
Not living with parents	1	1.1	-	-	1	0.6
Total	84	99.7	63	99.7	147	99.8

per cent of the girls), intermediate in families in which one parent smoked (32.1 per cent of the boys and 39.6 per cent of the girls) and lowest in families in which neither had ever smoked (10.7 per cent of the boys and 7.9 per cent of the girls).

Therefore, this study found that when both parents smoked nearly four times as many boys smoked and five times as many girls smoked as compared to boys and girls in families in which neither parent had ever smoked. This direct association was observed also in the Portland study (42:1507) and the Newton study (68:1783), indicating that the parental smoking habits have a consistent influence on children's smoking habits.

Also in agreement with the Newton study, but contrary to the findings of the Portland study, data in Table VI do not show any sex relationship between the smoking pattern of parents and teenagers. In fact, the data strongly suggest that the smoking habits of the father were more influential than those of the mother on both sexes. For example, when only the father smoked, 16.6 per cent of the boys smoked as compared to 22.2 per cent of the girls. When only the mother smoked, the percentage was reduced to 7.1 per cent of the boys and 12.6 per cent of the girls.

Age. Table VII reveals another important characteristic of the regular smoker. The findings are based on the percentage distribution by age as compared to the total study group. Students whose birthdates occurred between December 1944 and November 1945 are referred to as the typical age. Students of this age did not skip or repeat any grade levels.

The sixty-two students who were older than their classmates had a substantially higher percentage of regular smokers represented by fourteen boys (38.8 per cent) and eight girls (30.7 per cent). Of the 129 students who were younger than their classmates, the boys and girls showed a perceptible difference in their percentage of smokers. Among the boys a noticeably high 35.5 per cent were smokers as compared to 20.0 per cent for the girls.

Of the 414 students who were of typical age, 22.5 per cent of the boys and 20.8 per cent of the girls were regular smokers.

Therefore, in this study population, both the male and female students who were older than their classmates and male students who were younger than their classmates had a very high percentage of smokers.

Although the percentage of regular smokers was larger for the boys than for the girls of the total study

TABLE VII

DISTRIBUTION OF AGES OF ALL STUDENTS
BY REGULAR SMOKERS

	Total Number		Regular Smokers			
			Boys		Girls	
	Boys	Girls	No.	%	No.	%
Younger than classmates	59	70	21	35.5	14	20.0
Typical age*	217	197	49	22.5	41	20.8
Older than classmates	36	26	14	38.8	8	30.7

*Students whose birthdates occurred between December 1944 and November 1945. Also includes some eighteen-year-old students giving no birthdate.

population (see Table I, page 55), the girls who were older than their classmates had a higher percentage of regular smokers than the boys of typical age.

Dr. Horn (42:1507) surmised that the apparent reason why older students smoke substantially more than their classmates is because they are unsuccessful in school work and have fallen behind their age-equals. This theory seems to imply that smoking is related to scholastic failure. This could help to explain why there was a considerably higher proportion of smokers among students who were older than their classmates. This hypothesis, however, does not explain the higher percentage of smokers among the boys who were younger than their classmates. Since these students might be described as academically successful, one would not expect them to have this substantially higher percentage of smokers.

Another reason why this result is peculiar is that in both the Portland study (42:1501) and the Newton study (67:970), it was found that each successive school grade had a higher percentage of smokers than the preceding grade. In fact, Horn (42:1507) observed that the younger students of a particular grade had a rate of smoking lower than that of their classmates of typical age. At Crawford High School, however, the younger males had a rate of smoking greater than their classmates of typical age.

Since age has been shown to be a factor associated with smoking, it is apparent that in this situation other factors were at work.

Academic achievement as indicated by enrollment in upper academic classes or basic requirement classes. The data show that students enrolled in the upper academic classes had a perceptibly larger percentage of nonsmokers (84.5 per cent) than those who were enrolled in basic requirement classes (57.2 per cent), as indicated in Table VIII.

In striking contrast the percentage of regular smokers enrolled in upper academic classes was only 9.4 per cent as compared to 27.8 per cent in basic requirement classes.

In other words, the students who did not smoke outnumbered the regular smokers by nearly nine to one (98 to 11) in the upper academic classes and by only two to one (280 to 136) in the basic requirement classes.

The data clearly show that with this study population smoking is inversely related to scholastic ability.

Participation in varsity athletics. Of the study population there were 192 boys (61.5 per cent) who did not participate in varsity sports, while 120 boys (38.4 per cent) were varsity or junior varsity athletes.

TABLE VIII

DISTRIBUTION OF NONSMOKERS AND SMOKERS ENROLLED IN UPPER ACADEMIC CLASSES AND BASIC REQUIREMENT CLASSES

	UPPER ACADEMIC CLASSES						BASIC REQUIREMENT CLASSES					
	Boys		Girls		Both		Boys		Girls		Both	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Nonsmokers	45	78.9	53	89.8	98	84.5	134	52.5	146	62.3	280	57.2
Occasional smokers	6	10.5	1	1.6	7	6.0	43	16.8	30	12.8	73	14.9
Regular smokers	6	10.5	5	8.4	11	9.4	78	30.5	58	24.7	136	27.8
Total	57	99.9	59	99.8	116	99.9	255	99.8	234	99.8	489	99.9

As indicated by Table IX, boys who did not participate in varsity athletics had a much larger percentage of regular smokers (33.3 per cent) than those who did participate (16.6 per cent).

Conversely, there was a higher percentage of occasional smokers among the boys (18.3 per cent) who participated in varsity sports than for those who did not participate (14.0 per cent).

The data, therefore, disclose that varsity participants were more inclined not to smoke on a regular basis than nonvarsity students. If the varsity participants did indulge they were inclined to be occasional smokers as compared to both the nonvarsity group and to the total population (see Table I, page 55).

It is generally assumed that varsity participants are concerned with maintaining a good physical condition; therefore, one would expect to find a smaller proportion of occasional and regular smokers engaged in varsity sports. However, since studies concerning youth and smoking habits are limited, the "expected" proportion of smokers among varsity participants is obscure.

Participation in extracurricular activities. As shown in Table X, the percentages of regular smokers were perceptibly higher among students who did not participate in school activities (49.2 per cent of the boys and 46.2

TABLE IX

PARTICIPATION IN VARSITY ATHLETICS BY MALE NONSMOKERS, OCCASIONAL AND REGULAR SMOKERS

	Total Number Boys	Non-smokers		Occasional Smoker		Regular Smoker	
		No.	%	No.	%	No.	%
Varsity	120	78	65.0	22	18.3	20	16.6
Nonvarsity	192	101	52.6	27	14.0	64	33.3

TABLE X

PARTICIPATION IN EXTRACURRICULAR ACTIVITIES BY REGULAR SMOKERS

	Total Number		Regular Smokers			
			Boys		Girls	
	Boys	Girls	No.	%	No.	%
One or more activities	196	236	51	26.0	51	21.6
No activities	67	26	33	49.2	12	46.2

NOTE: The total number of boys and girls includes non-smokers and regular smokers; the occasional smokers have been omitted from this table.

per cent of the girls) than among those who did participate (26.0 per cent of the boys and 21.6 per cent of the girls).

An unusual result disclosed that the girls who did not participate in school activities had a noticeably higher percentage of regular smokers than the boys who did participate, although it was observed that of the total population a higher percentage of boys smoked than girls (see Table I, page 55). As there was a total of only twenty-six girls who did not participate in at least one school activity, this difference may not be meaningful.

Instruction about smoking and health. Table XI shows the distribution of nonsmokers, occasional smokers, and regular smokers who received classroom instruction on smoking and health.

More than two-thirds of the total population reported that they had received information on smoking and health in one or more classes. The results, however, were disappointing and perplexing for they showed a greater percentage of regular smokers (71.4 per cent) than nonsmokers (66.4 per cent) among those who had received classroom instruction on smoking and health. For further consideration of this point see pages 91 and 93.

TABLE XI

DISTRIBUTION OF NONSMOKERS AND SMOKERS WHO RECEIVED INSTRUCTION ABOUT SMOKING AND HEALTH

	ONE OR MORE CLASSES						NO CLASSES					
	Boys		Girls		Both		Boys		Girls		Both	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Nonsmokers	114	63.6	137	68.8	251	66.4	65	36.3	62	31.1	127	33.5
Occasional smokers	36	73.4	18	58.0	54	67.5	13	26.5	13	41.9	26	32.5
Regular smokers	58	69.0	47	74.6	105	71.4	26	30.9	16	25.3	42	28.5

III. STUDENTS' ATTITUDES REGARDING SMOKING

As the regular smoker has been identified and some of his distinguishing characteristics observed and analyzed, it seems pertinent to develop a broader understanding of the teenagers' attitudes toward smoking.

The third major area of the questionnaire was constructed to determine the students' attitudes regarding smoking. The following specific data were obtained:

Smokers' reasons for smoking. The questionnaire included an item which asked smokers to check from a provided list all the reasons for smoking that applied to them. Many students selected two or three reasons, while a few selected from five to seven items.

There was surprising agreement between the boys and girls in the choice of the four most frequently selected reasons for smoking, as shown in Table XII.

The most frequent response given by 45.2 per cent of the boys and 57.1 per cent of the girls was that smoking provided relief of fatigue and tension. More than two-fifths of the regular smokers claimed that they smoked for the esthetic enjoyment afforded by smoking.

The next two most frequent choices were unexpected, yet revealing. Smoking simply for something to do was

TABLE XII

DISTRIBUTION OF REGULAR SMOKERS' REASONS FOR SMOKING

	Boys		Girls	
	No.	%	No.	%
To comply with custom	7	8.3	3	4.7
For a sense of well-being	10	11.9	2	3.1
For added confidence	11	13.0	5	7.9
To help study	10	11.9	8	12.6
Most of my friends smoke	23	27.3	9	14.2
Something to do	40	47.6	23	36.5
No apparent reason	28	33.3	20	31.7
To relieve fatigue or tension	38	45.2	36	57.1
Enjoyment of taste and/or smell	38	45.2	29	46.0
To put at ease when with a group	16	19.0	16	25.3
To defy parents and/or legal authority	3	3.5	2	3.1
Other	8	9.5	9	14.2

NOTE: Students were directed to indicate all the reasons that applied to them; hence the percentages add to more than 100 per cent.

indicated by almost one-half of the boys and more than one-third of the girls. One-third of the boys and fewer than one-third of the girls reported they had no apparent reason to smoke.

Some of the reasons selected show a noticeable difference between the male and female smokers. For example, 27.3 per cent of the boys, as compared to only 14.2 per cent of the girls, claimed they smoked because most of their friends smoked. Almost 12.0 per cent of the boys and only 3.1 per cent of the girls indicated they smoked for a sense of well-being. More boys (13.0 per cent) than girls (7.9 per cent) reported that they smoked for added confidence. On the other hand, one-fourth of the girls and nearly one-fifth of the boys smoked to put themselves at ease in a group situation.

It is interesting to note that 3.5 per cent of the boys and 3.1 per cent of the girls said they smoked to defy parents and/or legal authority.

Nonsmokers' reasons for not smoking. Nonsmokers were asked to select from the provided check list all the reasons which applied to their decision not to smoke. Although a few students selected only one reason and a few selected as many as seven, most of the students selected two or three reasons.

A strikingly popular response to this question, made by approximately two-thirds of the nonsmoking students (67.5 per cent of the boys and 64.8 per cent of the girls), as shown in Table XIII, is the indication that they did not smoke because they believed it to be harmful to the body.

A higher percentage of girls (60.3 per cent) than boys (43.5 per cent) considered the taste and/or smell of tobacco offensive.

It may be noted that the teenagers' attitude toward the esthetic qualities of smoking ranks second in popularity as a reason both for abstaining and for smoking (see Table XII, page 80).

As expected, more boys (36.8 per cent) than girls (3.0 per cent), at a ratio greater than twelve to one, claimed athletics as one of their reasons for not smoking. However, of the seventy-eight nonsmoking varsity participants, a minimum of 15.3 per cent did not give athletics as a reason for abstaining from smoking (see Table IX, page 75).

More than one-third of the girls and more than one-fourth of the boys emphasized the parental or family influence as one of their reasons for abstaining. This information appears to agree closely with the findings that show a direct association between regular smokers and

TABLE XIII

DISTRIBUTION OF NONSMOKERS' REASONS FOR NOT SMOKING

	Boys		Girls	
	No.	%	No.	%
Promise or pledge	14	7.8	18	9.0
Esthetic (taste/smell offensive)	78	43.5	120	60.3
Parents or home influence	49	27.3	71	35.6
Harmful to body	121	67.5	129	64.8
Financial	41	22.9	35	17.5
Evil	8	4.4	12	6.0
Religion	19	10.6	32	16.0
Athletic	66	36.8	6	3.0
Immoral	7	3.9	15	7.5
Other	52	29.0	82	41.2

NOTE: Students were directed to indicate all the reasons that applied to them; hence the percentages add to more than 100 per cent.

their parents' smoking habits (see Table VI, page 67). In both instances the girls appeared to be more influenced than the boys by their parents' smoking habits.

Financial reasons for not smoking were mentioned by 22.9 per cent of the boys and 17.5 per cent of the girls. This should not be interpreted as indicating that a proportion of these students would smoke if they could afford it. Some students commented that "smoking is a waste of money." The students who selected finances as a reason also selected other reasons for abstaining.

Other reasons provided on the questionnaire for not smoking received few responses. Abstaining because of a promise or pledge, regarding smoking as evil or immoral, or refraining for religious reasons received less than 11.0 per cent each for the boys and a maximum of 16.0 per cent each for the girls.

One unusual result is the fact that 29.0 per cent of the boys and 41.2 per cent of the girls wrote in other reasons for not smoking. Although many of these overlapped with the provided responses, a few of the added reasons were: "does not appeal to me," "no desire," and "it looks bad."

Attitudes toward teenage smokers by nonsmokers and regular smokers. The students were provided with a check list of five attitudes from which to select the one that

most closely described their attitude toward teenage smokers, as shown on Table XIV.

As might be expected, the students' responses were directly related to their smoking habits. Excluding the students giving no response, there was marked disagreement between the nonsmokers and the regular smokers. The response "totally approve" had the largest percentage variance (only 1.8 per cent of the nonsmokers and 21.7 per cent of the regular smokers). Therefore, slightly more than one student out of five gave full approval to the teenage smoker. Nearly three-fifths of the nonsmokers objected to teenage smokers, the nonsmoking girls objecting more than the nonsmoking boys. One striking result of this response was that 25.3 per cent of the nonsmokers were indifferent to teenage smokers. Less than 8.0 per cent of the nonsmokers partially or totally approved of the teenage smoker, with 3.3 per cent of the boys indicating total approval as compared to only 0.5 per cent of the girls.

Among the regular smokers, the boys and girls were remarkably similar in their acceptance or rejection of the teenage smoker. Even though they smoked, only one-third of these students approved of their peer group smoking.

The data brought out two surprising results. One observation was that 11.5 per cent of the regular smokers

TABLE XIV

DISTRIBUTION OF ATTITUDES TOWARD TEENAGE SMOKERS BY NONSMOKERS AND REGULAR SMOKERS

	NONSMOKERS						REGULAR SMOKERS					
	Boys		Girls		Both		Boys		Girls		Both	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Indifferent	50	27.9	46	23.1	96	25.3	39	46.4	33	52.3	72	48.9
Object mildly	55	30.7	72	36.1	127	33.5	5	5.9	5	7.9	10	6.8
Object strongly	40	22.3	57	28.6	97	25.6	4	4.7	3	4.7	7	4.7
Partially approve	8	4.4	14	7.0	22	5.8	10	11.9	7	11.1	17	11.5
Totally approve	6	3.3	1	0.5	7	1.8	19	22.6	13	20.6	32	21.7
No response	20	11.1	9	4.5	29	7.6	7	8.3	2	3.1	9	6.1
Total	179	99.7	199	99.8	378	99.6	84	99.8	63	99.7	147	99.7

objected to the teenage smoker. The second observation was that 48.9 per cent of the regular smokers were indifferent.

Nonsmokers and smokers who believed cigarette smoking to be related to lung cancer. Regarding the relationship of smoking and lung cancer, as might be expected, the responses to this question were based strongly and consistently on the students' smoking habits. This relationship is noticeable in Table XIII, page 83, where more than two-thirds of the nonsmokers indicated that they abstained from smoking because they believed its effects to be harmful to the body.

It is shown in Table XV that a considerably higher percentage of nonsmokers (91.6 per cent of the boys and 86.9 per cent of the girls) as compared to the regular smokers (65.4 per cent of the boys and 65.0 per cent of the girls) accepted the relationship between smoking and lung cancer. It is disturbing to find a large percentage of teenage smokers who accept, or at least say they accept, the smoking-lung cancer relationship, yet continue to smoke.

An unusual result revealed that 41.9 per cent of the female occasional smokers were undecided.

Of the total population, only fifteen students (2.4 per cent) did not accept the smoking-lung cancer

TABLE XV

DISTRIBUTION OF NONSMOKERS AND SMOKERS WHO BELIEVED CIGARETTE SMOKING TO BE RELATED TO LUNG CANCER

	YES				NO				UNDECIDED			
	Boys		Girls		Boys		Girls		Boys		Girls	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Nonsmokers	164	91.6	173	86.9	1	0.5	3	1.5	11	6.1	23	11.5
Occasional smokers	36	73.4	14	45.1	2	4.0	1	3.2	9	18.3	13	41.9
Regular smokers	55	65.4	41	65.0	3	3.5	5	7.9	24	28.5	17	26.9

NOTE: Ten students did not respond.

relationship. Of the fifteen students, eight were regular smokers, and of the eight students five were girls. Why the female regular smokers (7.9 per cent) were more inclined to reject the smoking-lung cancer relationship than the male regular smokers (3.5 per cent) is not evident in the questionnaire results.

Regular smokers who wished they had never started smoking. Table XVI shows an unexpectedly high ratio of one out of four regular smokers who wished they had never started smoking. It was also surprising to find such close agreement among the boys (27.3 per cent) and girls (25.3 per cent) regarding this question.

This would strongly suggest that these students wished they had not been smoking at the time of the study. It might also imply that they had tried unsuccessfully to break the smoking habit.

Of the students who were undecided there was a wide margin between the sexes (1.1 per cent of the boys and 12.6 per cent of the girls).

Among the regular smokers, 71.4 per cent of the boys and 61.9 per cent of the girls responded that they were not sorry they started smoking, although nearly two-thirds of this group disclosed that they believed smoking to be related to lung cancer (see Table XV, page 88).

These startling results may imply that the students

TABLE XVI

DISTRIBUTION OF REGULAR SMOKERS WHO WISHED THEY HAD NEVER STARTED SMOKING

	Boys		Girls	
	No.	%	No.	%
Yes	23	27.3	16	25.3
No	60	71.4	39	61.9
Undecided	1	1.1	8	12.6
Total	84	99.8	63	99.8

did not really understand and appreciate the physical hazards of smoking, even though 71.4 per cent of the regular smokers said they had received classroom instruction regarding smoking and health (see Table XI, page 78). Apparently this instruction did not fulfill their needs or the instruction was provided after the youth had acquired the smoking habit. Or it may be that, as indicated in Table VI, page 67, it is difficult for classroom instructors to overcome the influence of home and family.

The results may imply that these students were more concerned about the enjoyment they received through smoking than they were about its harmful effects, although approximately one-third of the regular smokers responded that they smoked for no apparent reason and two-fifths indicated they smoked simply for something to do (see Table XII, page 80).

These disheartening and discouraging results are even more meaningful when it is realized that teenage smoking is almost entirely restricted to cigarettes (see Table II, page 58) and that cigarette smoking is considered to be the most detrimental to human health.

Regular smokers who believed instruction about smoking and health would have helped them avoid smoking. Table XVII shows a relatively small proportion of regular smokers (an identical 14.2 per cent for both sexes) who

TABLE XVII

DISTRIBUTION OF REGULAR SMOKERS WHO BELIEVED INSTRUCTION ABOUT SMOKING AND HEALTH WOULD HAVE HELPED THEM AVOID SMOKING

	Boys		Girls	
	No.	%	No.	%
Yes	12	14.2	9	14.2
No	56	66.6	46	73.0
Undecided	16	19.0	8	12.6
Total	84	99.8	63	99.8

believed that instruction on smoking and health would have helped them avoid smoking. This implies that these students did not receive school instruction, or that if they did, they did not recall such instruction.

Of the students who were undecided, the boys had a slightly higher percentage than the girls, 19.0 per cent and 12.6 per cent, respectively. The "undecided" responses suggested that these students had not received classroom instruction, or were still weighing the information they had received against the pleasures they apparently obtained from smoking.

Almost two-thirds of the male smokers and three-fourths of the female smokers indicated they did not believe such a course would have been beneficial. Since 71.4 per cent of the regular smokers said they received classroom instruction on smoking and health, it appears that most of these students were exposed to education on the hazards of smoking in a classroom situation (see Table XI, page 78). This might imply that the instruction came after the smoking habit had been established, or that the instruction did not meet the needs of these particular students.

Due to these findings, which may be a direct reflection of the caliber of the content and/or teacher, it seems pertinent and necessary to study and evaluate

classroom instruction in this subject.

IV. SUMMARY

Specific data about the students' smoking history and habits presented in the chapter reveal that a large percentage of the study population had personal contacts with smoking, and that of these a substantial number was smoking on an occasional or regular basis at the time of the study. It was observed that boys were more inclined to smoke than girls.

Characteristics were found that distinguished smokers from nonsmokers, disclosing that factors do exist that describe groups with a high proportion of smokers.

Students' attitudes regarding smoking were generally observed to be a reflection of their smoking behavior, although there were some unusual exceptions.

To present a more concise picture of the findings, Chapter V provides a summary of the thesis, conclusions drawn from the data, and recommendations formulated by the investigator on the basis of the findings.

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

This chapter is divided into three parts. The first part is a summary of the thesis and its findings. The second part presents the conclusions reached from the study. The third part presents the recommendations of the investigator derived from the study.

I. SUMMARY

The purpose of this investigation was to determine the smoking habits and attitudes of a group of twelfth grade students. The study group consisted of senior students at Will C. Crawford High School of the San Diego Unified School District. Data were secured during the spring semester of the 1962-1963 school year.

It is now generally accepted by most authorities that there is a close relationship between cigarette smoking and health. It is a matter of common knowledge that many of our young people are smoking and that the practice is beginning at an early age.

It is current educational philosophy that the schools must be concerned with educating youth to meet the health problems of today and must guide them in developing

wholesome and worthwhile habits. In view of the rising evidence reinforcing the association of cigarette smoking and ill-health, it is urgent that educators give instruction and guidance that will effectively discourage the cigarette smoking habit among youth.

As a basis for the development of an instructional program on smoking, it is desirable to study the smoking habits and attitudes of high school students.

A survey of literature was made to obtain a comprehensive overview of current research on various aspects of tobacco use. This included pertinent research on the relationship between smoking and health and on the smoking habits of students.

The students selected for the study were enrolled in senior social studies classes. The study population consisted of 337 boys and 315 girls, comprising a total of 652 students.

The questionnaire upon which this study was based was developed from that used in a previous study in Portland (42). Changes were made to meet the needs of the present study.

To insure the preparation of a reliable instrument, a pilot study was given to thirty-six students. As a result of this study appropriate changes were made in the questionnaire.

The revised questionnaire was administered on Tuesday, June 4, 1963. Since it was impossible for the investigator to be present at the nineteen classes used in the study he personally prepared the teachers of these classes for the uniform administration of the questionnaire.

The findings were processed at San Diego State College Computer Center and were then recorded, analyzed, evaluated, and compared by the investigator.

There were 605 usable questionnaires completed by 312 boys and 293 girls, representing respectively 92.5 per cent and 93.0 per cent of the original planned study group.

The findings of the questionnaire study were analyzed according to the following three major headings: (1) students' smoking history and habits, (2) characteristics that distinguish smokers from nonsmokers, and (3) students' attitudes regarding smoking.

Specific findings under the first category--students' smoking history and habits--were as follows:

Smoking habits of the total study group. The largest single classification of students (31.0 per cent) was the group who had never smoked. Among the boys, 25.0 per cent had never smoked as compared to 37.5 per cent

among the girls. At the time of the study, 57.3 per cent of the boys and 67.9 per cent of the girls were not smoking. Three-fourths of the boys and more than three-fifths of the girls had had some personal experience with smoking. Nearly one-fourth of the students were regular smokers, the males (26.9 per cent) showing a larger proportion of smokers than the females (21.5 per cent).

The use of cigarette, pipe, or cigar. Among the regular smokers, 91.6 per cent of the boys and 87.3 per cent of the girls indicated they smoked only cigarettes. There is an apparent discrepancy between the boys and girls in that 7.1 per cent and 12.6 per cent, respectively, did not respond to this question. Of the fifty-five girls who responded, all indicated they smoked cigarettes. Of the regular smokers, slightly more than three-fifths of the boys and more than one-half of the girls usually smoked filter cigarettes.

Amount currently smoked. A considerably higher percentage of boys (57.1 per cent) than girls (44.4 per cent) smoked half-a-pack or more of cigarettes per day. The most prevalent daily consumption (10 to 19 per day) for both sexes was higher for boys (40.4 per cent) than girls (34.9 per cent). Among the regular smokers, one boy out of six and fewer than one out of ten girls smoked a

pack or more of cigarettes per day.

Age at first smoking experience. Of the regular smokers, one-half the boys and more than one-fourth the girls had experimented with smoking prior to age thirteen. This percentage increased to nearly seven-eights of the boys and more than three-fourths of the girls before they reached sixteen years of age.

Age student became a regular smoker. Among the regular smokers, seven boys (8.0 per cent) and no girls had started smoking on a regular basis prior to age twelve. The percentage of male regular smokers through age fourteen was 35.7 per cent as compared to only 14.2 per cent among the females. The age at which the greatest percentage began smoking as a regular pattern was sixteen years for both sexes.

Specific findings under the second category--characteristics that distinguish smokers from nonsmokers--were as follows:

Parental smoking habits. The percentage of regular smokers was highest among teenagers of families in which both parents smoked, intermediate in families in which one parent smoked, and lowest in families in which neither parent had ever smoked. The data strongly suggested that

the smoking habits of the father were more influential on both sexes than those of the mother.

Age. Students who were older than their classmates had a substantially higher percentage of regular smokers than the students of typical age. The boys who were younger than their classmates and the girls who were older than their classmates had a noticeably higher percentage of regular smokers than the boys of typical age.

Academic achievement as indicated by enrollment in upper academic classes or basic requirement classes. Non-smokers outnumbered the regular smokers by more than nine to one in the upper academic classes as compared to the ratio of only two to one in the basic requirement classes.

Participation in varsity athletics. The ratio of male regular smokers who did not participate in varsity sports and those who did was two to one. On the other hand, the varsity participants had a higher proportion of occasional smokers than the total male population.

Participation in extracurricular activities. Almost one-half of the boys and girls who did not participate in extracurricular activities were regular smokers as compared to more than one-fifth of the boys and girls who did participate in at least one such activity.

Instruction about smoking and health. More than two-thirds of the total population indicated they had received instruction about smoking and health in one or more classes. The results were disturbing for they showed that a higher percentage of regular smokers (71.4 per cent) than nonsmokers (66.4 per cent) received this instruction. Among those with no instruction the reverse was true, indicating 28.5 per cent for the regular smokers as compared to 33.5 per cent for the nonsmokers.

Specific findings under the third category--students' attitudes regarding smoking--were as follows:

Smokers' reasons for smoking. There was close agreement between the male and female regular smokers concerning reasons for smoking. The most popular response given by more than 50 per cent of the smokers was that it relieved fatigue and tension. Approximately 45 per cent of the smokers indicated that they smoked for the enjoyment of taste and/or smell. The next two most frequent selections disclosed that 43 per cent and 33 per cent respectively were smoking merely for something to do and for no apparent reason.

Nonsmokers' reasons for not smoking. Nearly two-thirds of the nonsmokers stated that they did not smoke because they believed it to be harmful to the body.

Contrary to the regular smokers, more than one-half the nonsmokers indicated that they found the taste and/or smell offensive. More than one-third of the girls and more than one-fourth of the boys did not smoke due to parental or home influence. Abstaining because of a promise or pledge, regarding smoking as evil or immoral, or refraining for religious reasons represented a small percentage of nonsmoking students.

Attitudes toward teenage smokers by nonsmokers and regular smokers. The students' responses concerning their attitude toward teenage smokers were perceptibly related to their smoking habits. Approximately three-fifths of the nonsmokers objected, whereas one-third of the regular smokers indicated approval of the teenage smoker. One surprising result revealed that 11.5 per cent of the regular smokers objected to teenage smokers. A large percentage of students was indifferent: 25.3 per cent of the nonsmokers and 48.9 per cent of the regular smokers.

Nonsmokers and smokers who believed cigarette smoking to be related to lung cancer. The students' responses regarding the relationship of smoking and lung cancer were based strongly and consistently on the students' smoking habits. Almost nine out of ten nonsmokers as compared to more than six out of ten regular smokers

indicated that they had accepted the smoking-lung cancer association. One unusual result disclosed that more than two-fifths of the female occasional smokers were undecided.

Of the total population only 2.4 per cent did not accept the relationship between smoking and lung cancer and a majority of these students were female regular smokers.

Regular smokers who wished they had never started smoking. One out of four regular smokers wished they had never started smoking. On the other hand, of the male and female regular smokers, 71.4 per cent and 61.9 per cent, respectively, responded they did not regret having started smoking.

Regular smokers who believed instruction about smoking and health would have helped them avoid smoking. A relatively small proportion of regular smokers (14.2 per cent) indicated they believed instruction on smoking and health would have helped them avoid smoking.

One out of four boys and one out of eight girls were undecided. Two-thirds of the male regular smokers and nearly three-fourths of the female regular smokers indicated they did not believe such instruction would have been beneficial.

II. CONCLUSIONS

The analysis of this questionnaire study led to the following conclusions:

1. A two-thirds majority of the respondents had had some personal experience with the use of tobacco by the time of high school graduation. More than one-half of this group had continued to use tobacco either occasionally or regularly at the time of the study.

2. Fewer than one-third of the respondents had never even experimented with smoking.

3. Approximately one-fourth of the respondents had been able to satisfy their curiosity by experimenting with smoking and then abstaining.

4. More than three-fifths of the respondents were nonsmokers at the time of the study.

5. Both males and females strongly preferred cigarettes as their regular or exclusive choice.

6. Of the regular smokers, nearly three-fifths of the respondents usually smoked filter cigarettes.

7. More than four-fifths of the regular smokers smoked less than one pack of cigarettes per day.

8. Males were more prone to smoke than females.

9. Males were heavier smokers than females.

10. Males experimented with smoking at an earlier

age than females.

11. Males became regular smokers at an earlier age than females.

12. The number of regular smokers increased with the passage of time. The greatest increase for both males and females occurred at age sixteen.

13. Smoking habits of respondents were strongly influenced by the smoking habits of the parents.

14. The less advanced students were more inclined to smoke than the more advanced students.

15. Male varsity athletes were inclined not to smoke on a regular basis, but if they did indulge they had the tendency to smoke on an occasional basis.

16. Students not active in extracurricular activities had a greater inclination to smoke than those who were active.

17. A larger proportion of regular smokers than nonsmokers had received classroom instruction on smoking and health. This inverse relationship might indicate that the instruction was inadequate.

18. A large percentage of regular smokers claimed they smoked because it relieved fatigue or tension, provided esthetic enjoyment, and gave them something to do. Nearly one-third claimed they smoked for no apparent reason.

19. A large percentage of nonsmokers claimed they did not smoke because they considered smoking harmful to the body and they objected to its taste and/or smell.

20. A majority of students, particularly the regular smoker, was indifferent about the teenage smoker.

21. A large majority of regular smokers did not accept the smoking-lung cancer relationship.

22. Somewhat more than one-fourth of the regular smokers claimed they wished they had never started smoking. This implies that they regretted their smoking at the time of the study.

23. A large majority of the regular smokers indicated they did not believe instruction on smoking and health would have helped them avoid smoking.

III. RECOMMENDATIONS

The data confirm the assumption that a large proportion of young people indulge in smoking, and the evidence that cigarette smoking causes lung cancer and other human ailments is now so convincing it becomes more urgent that educators and interested agencies initiate and conduct appropriate instruction that will be effective in discouraging the smoking habit.

Based on the findings and conclusions of this investigation the following recommendations are made:

1. It is recommended that a more comprehensive study be made regarding smoking habits and attitudes. The study population should be extended to include children in the elementary grades, teenagers and adults.

2. It is urgently desirable to investigate the kind of instruction about smoking and health currently being used in the schools. This is evident from the data showing that a larger proportion of occasional and regular smokers received classroom instruction on smoking and health than did the nonsmokers. The data disclose that the instructional program provided did not fulfill the needs of these particular students. Such an investigation might discover the causes of this situation and lay the groundwork for a more effective educational program.

Alexander Galarneaux (31:144) contends that most health textbooks that deal with smoking are out of date. If the materials and methods used in the instructional program in the schools have not kept pace with the increasing scientific knowledge, modification should be made as soon as possible.

3. Regardless of the attitude of today's smokers in weighing their enjoyment and dependence on the smoking habit against the risks involved, there is no doubt of the responsibility of educators to guide our youth and coming generation from developing the same dependence. The

problem of prevention is thus primarily one of education directed to children and teenagers. The instruction should be designed to meet the needs of all the students regardless of whether they have succumbed to the smoking habit or not. Far more effort needs to be expended on educating children about the hazards of smoking, and the various methods used should receive careful evaluation. Only in this way will it be possible to discover the most effective methods. The Portland study conducted by Dr. Horn (42:1499) discovered that appropriate education can dissuade a large proportion of children from starting to smoke.

4. Since the most pronounced influence on the smoking of youth appears to be the smoking practices of parents, an effort to develop adult education on smoking and health seems both desirable and essential. Any change that might be brought about in the smoking behavior of adults would almost certainly be reflected in a consequent change in the smoking behavior of youth.

It should be brought to the parents' attention that their smoking behavior and attitudes set the standards and patterns that influence their children. This awareness might be the most important consequence in a reduction in smoking by adults. The parents should repeatedly be reminded of their responsibility for dissuading their

children from smoking.

5. Since there is a definite relationship between the smoking habits of parents and their children, community agencies should make literature on smoking and health available to families requesting assistance. Packets of literature could be provided with a twofold function: (1) pamphlets written on an adult level giving a modern approach to the education of children and youth on smoking and health, and (2) literature prepared specifically for children and youth of various age levels.

6. The federal, state, and local governments could provide much more effort, money, and imagination to bring the health hazards of smoking to the public's attention. Through legislation they could encourage effective and up-to-date education of school children. To aid in this education they could employ modern methods of advertising, including press notices, billboards, and announcements via radio and television. They could also provide information on safer smoking habits for those who are unable to terminate the habit. Surveys of smoking habits could be organized periodically to evaluate the effectiveness of public educational programs.

7. The government agencies could provide more effective restrictions and enforcement on the sale of tobacco to minors. The regulations making it unlawful to

sell tobacco to youth are widely flouted.

It is hoped that the data found and analyzed in this study can continually be correlated with more recent findings and as the problem of smoking among youth becomes better understood, parents, educators, and interested agencies of the community can become better equipped to prepare youth to meet intelligently the smoking problem of today.

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APPENDIXES

APPENDIX A

PILOT QUESTIONNAIRE

DIRECTIONS: Please place your responses on the provided SOLID LINES, and not on the dotted lines. The SOLID LINES are located to the Right or to the immediate Left of each item.

ANSWER EVERY QUESTION THAT APPLIES TO YOU.

SECTION I

Check ( ) your sex. Male_____ Female_____

How old are you now? _____

Give month, day, and year of birth._____
Month Day Year

Check ( ) all the activities below that you have participated in during your enrollment at Crawford or any other high school.

Student Body or Class Officer. (Any elected school position: A.S.B., Song Leader, Council, etc.). _____

Honorary or Scholastic Membership of the following:

Key Club . . . . _____
G.A.A. . . . . _____
H.S.S. . . . . _____
C.S.F. . . . . _____
Other (specify) _____

Varsity Letterman. (If you have received or will receive a Letter for Varsity participation in any sport: Football, Tennis, Track, Wrestling, etc.) . . . . . _____

Junior Varsity or Athletic Sports. (If you have received or will receive a Letter. Not including Varsity . . . . . _____

Girls' Corps Teams. (Drill Team, Pom Pom, etc.). . . . . _____

School Sponsored Clubs. (A.F.S., Bowling, Drama, Lettermen, Senior Y-Teens, etc. Not including Honorary or Scholastic Clubs or Organizations). . . . . _____

School Sponsored Organizations. (Activities that usually require a class period: Annual Staff, Chorus, Orchestra, Pep Band, Stage Crew, etc. Not including Athletics or Girls' Corps). . . . . _____

Have you ever run for an elective office during your enrollment in high school? Yes____No_____

At what occupation or profession do you plan to earn a living? (Please print) _____

What is your favorite school subject? (Be specific. For example: Third Year Latin, General Math, Algebra, Chorus, Auto Shop, Physical Education, etc.)
_____
(print subject)

What subject do you enjoy least? (Be specific) . . . . . .
_____
(print subject)

Do you have a part-time job after school and/or week ends?. . . . . Yes____ No____

Do you plan to go to college? . . . . Yes____ No____

SECTION II

Check ( ) the adults with whom you live:

____Mother ____Father ____Aunt
____Step-mother ____Step-father ____Uncle
____Grandmother ____Grandfather
____Other (specify)_____

Check (all that apply) the smoking habits of the adult members of your family. (This includes cigarettes, pipe, and cigars.)

____Neither parents smoke ____Both parents smoke
____Father smokes ____Father ex-smoker
____Mother smokes ____Mother ex-smoker
____Other (specify)_____

Do you have any brothers or sisters? Yes____ No____
IF YES, do the following item.

Indicate below the number of brothers and sisters you have in the provided columns according to their smoking habits.

	Smoking Habits		
	Never	Ex-smoker	Smoker
Younger brother(s)	____	____	____
Younger sister(s)	____	____	____
Older brother(s)	____	____	____
Older sister(s)	____	____	____

Check the ones your father smokes or used to smoke.

____Cigarettes
____Pipe
____Cigars
____He does not smoke

SECTION III

Check ( ) only one of the following that describes your smoking habits, including cigarettes, pipe, or cigars.

____NEVER SMOKED. Skip to SECTION VIII and then to SECTION IX.

____EXPERIMENTAL. (Tried smoking just to see what it was like.) You are to complete the items for SECTIONS IV, VIII, and IX.

____OCCASIONAL. (Smoking with a frequency between once a week and once a month.) You are to complete the items for SECTIONS IV, V, VI, and IX.

____EX-OCCASIONAL. (Smoked at a frequency between once a week and once a month but have stopped completely.) You are to complete SECTIONS IV, V, VIII, and IX.

____REGULAR. (Are now smoking once a week or more.) You are to complete SECTIONS IV, V, VI, VII, and IX.

___EX-REGULAR. (Smoked once or more a week but have stopped completely.) You are to complete SECTIONS IV, V, VII, VIII, and IX.

SECTION IV

To be completed by the following:

EXPERIMENTAL OCCASIONAL EX-OCCASIONAL
REGULAR EX-REGULAR

Check (all that apply) the ones you have tried smoking:

____Plain cigarettes
____Filter cigarettes
____Menthol cigarettes
____Pipe
____Cigars

How old were you at your first smoking experience?
Age (in years) _____

Check all the following items that apply to your first smoking experience:

____Alone
____Mixed group
____Friends of same sex
____Friends of opposite sex
____With parents
____At home
____Friend's house
____School
____Party
____Street or sidewalk
____Automobile
____Other (specify)
_____

Have you ever tried to quit smoking? Yes____ No____
IF YES, what was the longest period of time that you went without a smoke? Please specify (approximately).

Place number on proper SOLID LINE.

Number of days ____
Number of weeks ____
Number of years ____

Have you ever been able to quit smoking?
Yes____ No____

IF YES, at what age did you have your last smoke? Age in years . . . . . _____

Do you feel that an educational course pertaining to smoking and human health would have helped you to avoid experimenting with smoking? Check one.

____Yes ____Undecided ____No

Check all the ill-effects of smoking that you have noticed.

____Heart burn
____Upset stomach
____Loss of appetite
____Loss of weight
____Cough
____Nicotine stains on teeth
____Increased appetite
____Headache
____Shortness of breath
____Dizziness
____Nicotine stains on hands/fingers
____Other (specify)_____

SECTION V

To be completed by the following:

OCCASIONAL EX-OCCASIONAL REGULAR EX-REGULAR

Check what your pattern of smoking is now. If you no longer smoke, what was your pattern of smoking? Indicate by a check in the proper column for each item.

ALWAYS	USUALLY	SOMETIMES	NEVER	
____	____	____	____	Alone
____	____	____	____	Friends of same sex
____	____	____	____	Friends of opposite sex
____	____	____	____	Mixed group
____	____	____	____	With parents
____	____	____	____	At home
____	____	____	____	Friend's house
____	____	____	____	School
____	____	____	____	Party
____	____	____	____	Street or sidewalk
____	____	____	____	Automobile
____	____	____	____	Other (specify)_____

Check the number of times you have tried to quit smoking. Check one.

____None
____Once
____Two to five times
____Six or more times

Why do you continue to smoke? If you no longer smoke, why did you smoke? Check all that apply to you.

____To comply with custom
____For sense of well-being
____For added confidence
____Most of friends smoke
____Family custom
____Something to do
____No apparent reason
____Other (specify)_____

____To relieve fatigue and tension
____Enjoyment of taste and/or aroma
____To put at ease when with a group
____To help study

How often do you smoke cigarettes? If you no longer smoke cigarettes, how often did you smoke? Check one.

____1 to 3 a month
____1 to 6 a week
____1 to 4 a day
____5 to 9 a day
____10 to 19 a day
____20 to 30 (a pack to 1½ packs) a day
____1½ packs to 2 packs a day
____2 packs to 3 packs a day
____3 packs to 4 packs a day
____4 packs or more a day

SECTION VI

To be completed by the following:

OCCASIONAL REGULAR

Check the ones you <u>now</u> smoke. Check all that apply.

____Regular, plain cigarettes
____Filter Cigarettes (Reg.)
____Menthol cigarettes
____Pipe
____Cigars
____Other (specify)_____

____King size, plain
____King size, filter

Have you ever smoked on the premises of Crawford during school hours? Yes____ No____

Have you ever smoked on the premises of any school during school hours? Yes____ No____

Do you believe that smoking at your present rate could be physically harmful to you? Yes___ No___

Do you plan to quit smoking at some later time? . . . . . Yes___ No___
IF YES, at what age do you plan to quit?
Age in years . . . . . _____

When you smoke, what do you usually smoke?
Check one.

____Regular, plain cigarettes
____Filter cigarettes (Reg.)
____Menthol cigarettes
____Pipe
____Cigars
____Other (specify)_____
___King size, plain
___King size, filter

SECTION VII

To be completed by the following:

REGULAR EX-REGULAR

At what age did you become a REGULAR smoker (at least one cigarette a week as a regular pattern)? Age in years . . . . . _____

What was the largest number of cigarettes that you smoked as a regular pattern? Check one.

____1 a week
____1 to 4 a day
____5 to 9 a day
____10 to 19 a day
____20 to 30 (a pack to 1½ packs) a day
____1½ packs to 2 packs a day
____2 packs to 3 packs a day
____3 packs to 4 packs a day
____4 packs or more a day

What was your age when you smoked your largest amount of cigarettes as a regular pattern?
Age in years . . . . . _____

SECTION VIII

To be completed by the following:

NEVER EXPERIMENTAL EX-OCCASIONAL EX-REGULAR

Check all the reasons why you do not smoke.

____Evil
____Promise or pledge
____Parents or home influence
____Harmful to body
____Immoral
____Other (specify)_____
____Athletic
____Financial
____Esthetic (taste/smell offensive)
____Religion
____No apparent reason

Do you plan to start smoking at a later time? . . . . . Yes___ No___
IF YES, at what age do you plan to start?
Age in years . . . . . _____

SECTION IX

To be completed by everyone.

Do you believe that cigarette smoking is harmful to the human body? Check one.

____Yes ____Undecided ____No

Has your high school experience influenced you to smoke, whether you smoke or not? Yes___ No___

Do most of your friends smoke? Yes___ No___

Should a high school student encourage someone to smoke? Yes___ No___

Should a high school student encourage someone to stop smoking? Yes___ No___

Have any of your classes included facts pertaining to smoking and its effect on health? Yes___ No___
IF YES, at what grade level(s) did you receive these facts? _____
Was this education beneficial? Yes___ No___

Do you believe that there is or might be a relationship between cigarette smoking and lung cancer? Check one.

____Yes ____Undecided ____No

Do you feel that an educational course pertaining to smoking and human health would be beneficial to students? Check one.

____Yes ____Undecided ____No

When you have children, do you want them to smoke? Check one.

____Yes ____Do not care ____Undecided ____No

What <u>percentage</u> of twelfth graders at Crawford do you think smoke?

Boys_____% Girls_____%

How do you feel about teenage smokers and teenage nonsmokers? Check both columns.

Teen smoker		Teen nonsmoker
_____	Indifferent	_____
_____	Object mildly	_____
_____	Strongly object	_____
_____	Partially approve	_____
_____	Totally approve	_____

APPENDIX B

REVISED QUESTIONNAIRE

Your truthful, anonymous answers to every question THAT APPLIES TO YOU will be appreciated.

SECTION I

Check ( ) your sex. Male_____ Female_____

How old are you now?_____

Give month, day, and year of birth._____
Month Day Year

Have you participated in any of the following activities during your enrollment at Crawford or any other high school? Check ( ) Yes or No for each group.

Elected School Position (A.S.B., Song Leader, Class Council, etc.). Yes___ No___

Honorary or Scholastic Membership. IF YES, check the ones that apply to you.

Key Club. . . .___
G.A.A. . . . .___
H.S.S. . . . .___
C.S.F. . . . .___
Other (specify)_____

Boys' Varsity or Junior Varsity Letterman. (If you have received or will receive a Letter for participation in any high school sport.) Yes___ No___

Girls' Corps Teams (Drill, Pom Pom) Yes___ No___

School Sponsored Clubs (A.F.S., Bowling, Drama, Lettermen, Senior Y-Teens, etc. Not including Honorary or Scholastic Clubs.) Yes___ No___

School Sponsored Organizations or activities (usually require a class period: Annual Staff, Chorus, Monitor, Stage Crew, etc. Not including Athletics or Girls' Corps). Yes___ No___

What is your favorite school subject? (Be specific. For example: Third year Latin, General Math, Algebra, Chorus, Auto Shop, Physical Education, etc.)

_____
(print name)

What subject do you like least? (Be specific.)

_____
(print name)

Do you plan to go to college? Yes___ No___

At what occupation or profession do you plan to earn a living? (Please print.) _____

Do you have a part-time job after school and/or week ends? Yes___ No___

Do you believe that cigarette smoking is harmful to the human body? Check one. Undecided___ Yes___ No___

What percentage of twelfth grade students at Crawford do you think smoke? Boys____% Girls____%

Check ( ) the ADULTS with whom you live.

___Mother ___Father ___Aunt
___Step-mother ___Step-father ___Uncle
___Grandmother ___Grandfather
___Other (specify)_____

Check (all that apply) the smoking habits of the ADULT members of your family. (This includes cigarettes, pipes, and cigars.)

___Mother never smoked ___Father never smoked
___Mother ex-smoker ___Father ex-smoker
___Mother smokes ___Father smokes
___Other (specify)_____

Do you have any brothers or sisters? Yes___ No___

IF YES, indicate below the NUMBER (1, 2, etc.) of brothers and sisters according to their smoking habits in the provided columns.

	SMOKING HABITS		
	Never	Ex-smoker	Smoker
Number of older sister(s)	_____	_____	_____
Number of older brother(s)	_____	_____	_____
Number of younger sister(s)	_____	_____	_____
Number of younger brother(s)	_____	_____	_____

Check the ones your father smokes or smoked.

____Cigarettes
____Pipe
____Cigars
____He does not smoke

SECTION II

Check ( ) one of the following that describes your smoking habits, including cigarettes, pipe, or cigars.

___NEVER SMOKED. You have never used tobacco. Skip to SECTIONS VII and VIII.

___EXPERIMENTAL. Tried smoking just to see what it was like, but did not continue. Please complete SECTIONS III, VII, and VIII.

___OCCASIONAL. Smoking with a frequency between once a week and once a month. Please complete SECTIONS III, IV, V, and VIII.

___EX-OCCASIONAL. Smoked at a frequency between once a week and once a month but have stopped completely. Please complete SECTIONS III, IV, VII, and VIII.

___REGULAR. Smoking once or more than once a week at the present time. Please complete SECTIONS III, IV, V, VI, and VIII.

___EX-REGULAR. Smoked once or more a week but have stopped completely. Please complete SECTIONS III, IV, VI, VII, and VIII.

SECTION III

This SECTION is to be completed by the following:

EXPERIMENTAL OCCASIONAL EX-OCCASIONAL
REGULAR EX-REGULAR

Check (all that apply) the ones you have tried smoking.

___Regular, plain cigarettes
___Regular, filter cigarettes
___Menthol cigarettes
___Other (specify)_____
___King size, plain
___King size, filter
___Pipe
___Cigars

Do you feel that an educational course pertaining to smoking and human health would have helped you to avoid experimenting with smoking? Check one. Undecided___Yes___No___

Do you wish you had never started smoking? Yes___ No___

How old were you at your first smoking experience? Age in years:_____

Check all the following items that apply to your first smoking experience.

___Alone
___Mixed group
___Friends of same sex
___Friends of opposite sex
___With parents
___Other (specify)_____
___At home
___Friend's house
___School
___Party
___Street or sidewalk
___Automobile

Have you ever smoked on the premises of Crawford during school hours? Yes___ No___

Have you ever left the premises of Crawford without permission and smoked during school hours? Yes___ No___

Check all the ill-effects of smoking that you have noticed.

___Shortness of breath
___Increased appetite
___Nicotine stains on teeth
___Nicotine stains on hands/fingers
___Loss of appetite
___Other (specify)_____
___Loss of weight
___Upset stomach
___Headache
___Heart burn
___Dizziness
___Cough

SECTION IV

This SECTION is to be completed by the following:

OCCASIONAL EX-OCCASIONAL REGULAR EX-REGULAR

Check what your pattern of smoking is now. If you no longer smoke, what was your pattern of smoking? Indicate by a check in the proper column for each item.

ALWAYS	USUALLY	SOMETIMES	NEVER	
____	____	____	____	Alone
____	____	____	____	Friends of same sex
____	____	____	____	Friends of opposite sex
____	____	____	____	Mixed group
____	____	____	____	With parents
____	____	____	____	At home
____	____	____	____	Friend's house
____	____	____	____	School
____	____	____	____	Party
____	____	____	____	Street or sidewalk
____	____	____	____	Automobile
____	____	____	____	Other (specify)_____

Check the number of times you have tried to quit smoking.

___None
___Once
___Two to five times
___Six or more times

Why do you continue to smoke? If you no longer smoke, why did you smoke? Check all that apply to you.

___To comply with custom
___For a sense of well-being
___For added confidence
___To help study
___Most of my friends smoke
___Something to do
___No apparent reason
___To relieve fatigue or tension
___Enjoyment of taste and/or smell
___To put at ease when with group
___To defy parents and/or legal authority
___Other (specify)_____

How often do you smoke cigarettes? If you no longer smoke cigarettes, how often did you smoke? Check one.

___1 to 3 a month
___1 to 6 a week
___1 to 4 a day
___5 to 9 a day
___10 to 19 a day
___20 to 29 a day
___30 to 39 a day
___2 packs to 3 packs a day
___3 packs to 4 packs a day
___4 packs or more a day

How do your parents feel about your smoking? If you no longer smoke, how did your parents feel about your smoking? Check all that apply.

___Give consent but mildly disapprove
___Give consent but strongly disapprove
___Do not know that I smoke
___Fully approve
___Indifferent
___Forbid it
___Other (specify)_____

SECTION V

This SECTION is to be completed by the following:

OCCASIONAL REGULAR

When you smoke, what do you <u>usually</u> smoke? Check one.

___Regular, plain cigarettes
___Regular, filter cigarettes
___Menthol cigarettes
___Other (specify)_____
___King size, plain
___King size, filter
___Pipe
___Cigars

Have you ever tried to quit smoking? Yes___ No___

IF YES, what was the longest period of time that you went without a smoke? (Approximately)

Number of days_____
Number of weeks_____
Number of years_____

Do you believe that smoking at your present rate could be physically harmful to you? Yes___ No___

Do you plan to quit smoking at some later time? Yes___ No___

IF YES, at what age do you plan to quit? Age in years . . . . . _____

SECTION VI

This SECTION is to be completed by the following:

REGULAR EX-REGULAR

At what age did you become a REGULAR smoker (at least one cigarette a week as a regular pattern)? Age in years . . . . _____

What was the largest number of cigarettes that you smoked as a regular pattern? Check one.

___1 a week
___1 to 4 a day
___5 to 9 a day
___10 to 19 a day
___20 (1 pack) to 2 packs a day
___2 packs to 3 packs a day
___3 packs to 4 packs a day
___4 packs or more a day

What was your age when you smoked the amount checked above as a regular pattern?

Age in years _____

SECTION VII

This SECTION is to be completed by the following:

NEVER EXPERIMENTAL EX-OCCASIONAL EX-REGULAR

Check all the reasons you do not smoke.

___Promise or pledge
___Esthetic (taste/smell offensive)
___Parents or home influence
___Harmful to body
___Other (specify)_____
___Financial
___Evil
___Religion
___Athletic
___Immoral

Do you plan to start smoking at a later time? Yes___ No___

IF YES, at what age do you plan to start? Age in years . . . . . _____

SECTION VIII

This SECTION is to be completed by EVERYONE.

Has your high school experience influenced you to smoke, whether you smoke or not? Yes___ No___

Do most of your friends smoke? Yes___ No___

Should a high school student encourage someone to smoke? Yes___ No___

Should a high school student encourage someone to stop smoking? Yes___ No___

Have any of your classes included facts pertaining to smoking and its effect on health? Yes___ No___

IF YES, at what grade level(s) did you receive these facts? _____

Was this education beneficial? Yes___ No___

Do you believe that there is or might be a relationship between cigarette smoking and lung cancer? Undecided___Yes___ No___

Do you feel that an educational course pertaining to smoking and human health would be beneficial to students? Undecided___ Yes___ No___

When you have children do you want them to smoke? Do not care___ Undecided___ Yes___ No___

How do you feel about teenage smokers and teenage nonsmokers? Check for each column.

Teen smoker		Teen nonsmoker
_____	Indifferent	_____
_____	Object mildly	_____
_____	Strongly object	_____
_____	Partially approve	_____
_____	Totally approve	_____

What is your opinion of this questionnaire and the value it might have? Check all that apply.

___Important
___Interesting
___Worthwhile
___No opinion
___Unimportant
___Waste of time
___Prying
___Other (specify)_____

Thank you for your honest answers and cooperation. If you do not wish to remain anonymous, you may sign here.

_____

If you have any comments to make regarding this questionnaire or the topic of smoking, please feel free to use the remainder of this page and/or the back of the questionnaire.

INSTRUCTIONS TO TEACHERS

Instructions to the teachers will be given in lower-case type. All directions to be READ ALOUD to the students will be given in capital letters. It is felt that if the same directions are read to all the classes the investigation will be more reliable.

You will receive a packet of questionnaires for each of your classes in Senior Social Studies. Each packet will be labeled giving your name, class period, and numbers of the questionnaires. The questionnaires will be given at the beginning of the periods designated on the packet on Tuesday, June 4, 1963.

Before distributing the questionnaire please read the following to your class:

> TODAY WE ARE ASKED TO COOPERATE WITH AN IMPORTANT STUDY. THIS STUDY PERTAINS TO THE SMOKING HABITS AND ATTITUDES OF GRADUATING SENIORS. THIS IS AN ANONYMOUS QUESTIONNAIRE: YOU DO NOT HAVE TO SIGN YOUR NAME.
>
> THE INFORMATION GATHERED WILL BE CONFIDENTIAL, AND YOU ARE ASSURED THAT NEITHER TEACHERS NOR PARENTS WILL SEE YOUR ANSWERS. THE QUESTIONNAIRE WILL BE SENT DIRECTLY TO SAN DIEGO STATE COLLEGE WHERE THE STUDY IS BEING CONDUCTED.
>
> YOUR HONEST ANSWERS ARE VITAL IN ORDER TO PRESENT A RELIABLE PICTURE OF THE SMOKING HABITS OF TEENAGERS IN SOUTHERN CALIFORNIA.

Distribute questionnaires. It is suggested that you count enough for each row.

Read the following directions for students as soon as all the students have received a copy of the questionnaire:

> INSTRUCTIONS FOR STUDENTS. PLEASE READ THE QUESTIONS AND DIRECTIONS CAREFULLY. MOST OF THE ITEMS REQUIRE ONLY A CHECK FOR YOUR ANSWERS. WHERE A FILL-IN RESPONSE IS NECESSARY, PLEASE PRINT. SOLID LINES HAVE BEEN PROVIDED FOR YOUR RESPONSES.

ANSWER EVERY QUESTION THAT APPLIES TO YOU. IF YOU DO NOT UNDERSTAND AN ITEM, DO THE BEST YOU CAN AND PROCEED TO THE NEXT ITEM. THERE IS NO TIME LIMIT FOR THE QUESTIONNAIRE, BUT IT USUALLY TAKES AN AVERAGE OF TWENTY TO TWENTY-FIVE MINUTES TO COMPLETE.

WHEN YOU HAVE FINISHED ANSWERING THE QUESTIONNAIRE, PLEASE PLACE IT FACE DOWN ON THE TABLE IN THE BACK OF THE ROOM. RETURN TO YOUR DESK AND REMAIN QUIET UNTIL ALL HAVE FINISHED.

THANK YOU FOR YOUR TIME AND COOPERATION. YOU MAY NOW BEGIN THE QUESTIONNAIRE.

Please select a table, desk, or bookcase to the rear of the room for the students to put the finished questionnaires.

When all the questionnaires are turned in, please see that they are in numerical sequence, inclusive of the numbers on the folder cover. Place them in the folder and secure with a rubber band.

Mr. Heubach will come by to collect all the packets before 3:00 on Tuesday, June 4.

Thank you for your cooperation and assistance.

ABSTRACT

ABSTRACT

The purpose of this investigation was to determine the smoking habits and attitudes of a select group of seniors at Will C. Crawford High School of the San Diego Unified School District. Data were secured during the spring semester of the 1962-1963 school year.

A questionnaire was constructed and submitted to 652 seniors enrolled in social studies classes. The findings of 605 usable questionnaires were processed through the Computer Center at San Diego State College and were compiled for analysis and study by the investigator. The questionnaire obtained information in the following three major areas: (1) students' smoking history and habits, (2) characteristics that distinguish smokers from nonsmokers, and (3) students' attitudes regarding smoking. Findings of male and female respondents were treated separately throughout. Since the primary problem was the teenager who smoked as a regular pattern, the emphasis throughout the analysis was on the regular smoker.

Specific data about students' history and habits revealed that more females (37.5 per cent) than males (25.0 per cent) had never experimented with smoking. Nearly one-fourth of the students were regular smokers,

the males (26.9 per cent) showing a larger proportion of regular smokers than the females (21.5 per cent). Nearly three-fourths of the males and more than three-fifths of the females had had some personal experience with smoking. Approximately 90 per cent of the regular smokers indicated that they smoked cigarettes, and close to 60 per cent usually smoked filter cigarettes.

Specific data about characteristics distinguishing smokers from nonsmokers disclosed that a high proportion of smokers came from families in which both parents smoked. Other factors found to distinguish smokers from nonsmokers were: age, academic achievement, and participation in varsity sports (boys only) and extracurricular activities.

An unexpected and disturbing finding showed that a higher percentage of regular smokers (71.4 per cent) than nonsmokers (66.4 per cent) had received instruction on smoking and health.

Specific data about students' attitudes toward smoking showed that the esthetic qualities of tobacco greatly influenced the regular smokers and nonsmokers in their decision whether or not to smoke. The most popular response given by nonsmokers for not smoking was that they believed it to be harmful to the body. Almost two-thirds of the regular smokers indicated that they accepted the

smoking-lung cancer association, but only 25 per cent wished they had never started smoking.

One of the most meaningful conclusions is that more than two-thirds of the respondents had had some personal experience with smoking by the time of high school graduation. More than one-half of this group continued to smoke either occasionally or regularly at the time of the study.

The primary importance of this study lies in the information which it provides regarding the smoking habits of a segment of twelfth grade students and the implications it holds for parents, teachers, and community agencies.