CIGARETTE SMOKING: A SURVEY OF THE KNOWLEDGE, ATTITUDES
AND PERSONAL BACKGROUNDS OF 4,504
SENIOR HIGH SCHOOL STUDENTS

A thesis submitted in partial satisfaction
of the requirements for the degree of
Master of Science in Health Science

by

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ABSTRACT

CIGARETTE SMOKING: A SURVEY OF THE KNOWLEDGE, ATTITUDES, AND PERSONAL BACKGROUNDS OF 4,504 SENIOR HIGH SCHOOL STUDENTS

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The purpose of this study was to investigate the smoking behavior, health knowledge, and attitudes toward smoking of students in the tenth, eleventh, and twelfth grades of the San Diego Unified School District. The study was also focused on the relationship between the students' smoking behavior and variables such as health knowledge, attitudes, socioeconomic status, mental level, and educational aspirations.

The questionnaire survey method was used to measure the students' smoking practices, knowledge, and attitudes. The random sample consisted of twenty percent of the total senior high school population and totaled 4,504.
The data were transferred from the questionnaire to computer cards, and a program that performed frequency counts was used. Chi square tests were calculated to investigate the relationship between smoking behavior and other variables.

The survey data revealed that the majority of students were nonsmokers, although most had previous experience with cigarettes. Overall, thirty-three percent of the males and twenty-seven percent of the females were classified as current smokers. The number of smokers increased with each successive grade level and at each grade level a larger percentage of males smoked than did females. The majority of the smokers had begun smoking by age fourteen. Over two-thirds of the smokers predicted future smoking status, while only three percent of the nonsmokers felt that they would be smoking in the future.

The students showed a high level of knowledge regarding the deleterious effects of cigarette smoking, especially the relationship between smoking and lung cancer. A significant relationship was found to exist between the students' smoking behavior and their level of knowledge, with the nonsmokers having the higher level of health knowledge.

The attitudinal questions demonstrated the students' attitudes toward smoking corresponded with their smoking status, with the nonsmokers expressing negative attitudes
and the smokers indicating positive opinions. The mental level of the students and the level of educational aspiration were also related to the students' smoking status, with the students who had the highest mental level and who expressed college as their educational goal having the lowest incidence of smoking. The socioeconomic class of the students was not found to be a determinant of smoking behavior.
CHAPTER I

THE PROBLEM AND DEFINITIONS OF TERMS USED

Faced with the increasing rate of mortality and morbidity attributable to cigarette smoking, the nation's health leaders have urged that immediate measures be taken to reduce the toll of death and disability. Major emphasis was focused on the younger generation, with the hope of preventing them from beginning the smoking habit.

Many educational programs aimed at reducing the incidence of cigarette smoking among adolescents have been initiated. Basic determination of the students' current smoking practices, their health knowledge, their attitudes toward smoking, and other variables that may affect the students' smoking behavior.

THE PROBLEM

Statement of the problem. The study was concerned with the smoking status, health knowledge, and smoking attitudes of students in the tenth, eleventh, and twelfth grades in the San Diego Unified School District. It was the purpose of this study (1) to determine the incidence of cigarette smoking among students; (2) to identify students' level of knowledge regarding the effects of smoking; (3) to present students' attitudes toward smoking; (4) to investigate the relationship between students' smoking behavior and variables such as health knowledge, attitudes toward
smoking, socioeconomic level, educational aspirations, and mental level.

**Significance of the study.** In 1967, Dr. William Stewart, Surgeon General of the United States Public Health Service, charged the Task Force for Smoking and Health with recommending steps that could be taken to dissuade young people from adopting smoking practices (51:2).

A review of the literature concerning the patterns of smoking behavior, showed that high school students are in a critical period in the development of the smoking practice. This study attempted to assess the factors of health knowledge, attitudes, and personal background as they relate to the formation and continuance of the smoking habit. Research with this age group may provide insights for future efforts that may prove successful in lowering the incidence of smoking among youth.

**Possible implications of the study.** The study may illustrate the importance of prevention-oriented programs to begin prior to the senior high school level, before the student becomes experienced with cigarettes. The difference that was found between the smokers and the nonsmokers with regard to factual knowledge about smoking would seem to support the concept that knowledge contributes to the formation of behavior. However, the significant attitudinal differences between the smoking and nonsmoking students may indicate that attitudes are stronger precursors of be-
Limitations of the study. The study was limited to the investigation of smoking behavior, knowledge, attitudes and personal background of 4,504 senior high school students. The responses were obtained by means of an anonymous questionnaire.

DEFINITIONS OF TERMS USED

Smoker. The definition of a "smoker" was established to include those students who smoked daily, as well as those who smoked cigarettes occasionally.

Nonsmoker. The term "nonsmoker" included all those who at the time of the study were not smoking cigarettes. This also included students who had smoked but had discontinued the practice.

Never smoked. The term "never smoked" was applied to a sub-group of the nonsmokers, those students who had never even tried smoking cigarettes.

Mental level. The term "mental level" referred to the classification of the students by their curriculum content as either advanced, average, or slow. The term is not synonymous with I.Q., although it can be assumed that the students with high I.Q. and/or high achievement are those found in the advanced classes with the opposite being the case for the students in the slow classes.
ORGANIZATION OF THE REMAINDER OF THE THESIS

Chapter II presents a review of the literature concerned with the cigarette smoking practices of students. Additional sources that were included commented upon the relationship between smoking behavior and the variables of health knowledge, attitudes toward smoking, and personal background.

Chapter III discusses the methods used in the gathering and compilation of the data, including the characteristics of the sample population and the procedures used in tabulating the data.

Chapter IV contains the compilation and interpretation of the survey data. The data is organized to present (1) the current and predicted smoking status of the respondents; (2) the level of the students' knowledge concerning smoking and health; (3) the attitudes toward smoking as expressed by the students; and (4) the relationship between the students' smoking behavior and factors such as health knowledge, attitudes, and personal background.

Chapter V includes (1) a summation of the thesis, (2) a presentation of the conclusions evident in the study, and (3) recommendations for future educational efforts that would assist in eliminating cigarette smoking among adolescents.
CHAPTER II
REVIEW OF THE LITERATURE

Mounting scientific evidence indicating cigarette smoking as a serious public health problem has increased over the past years, culminating with the Advisory Committee to the Surgeon General of the Public Health Service's statement that, "Cigarette smoking is a health hazard of sufficient importance in the United States to warrant appropriate remedial action" (1:33).

In an attempt to inform the public of the deleterious effects of cigarette smoking, various informational campaigns were initiated. A prominent portion of the activities were directed toward the prevention of smoking among the youth of the nation.

A review of the pertinent literature was conducted to obtain an understanding of the previous work done in the area concerning adolescent's smoking practices, knowledge and attitudes. The review includes the following topics:

1. The scientific evaluation of cigarette smoking
2. The surveys pertaining to the smoking behavior, knowledge, and attitudes of students.
3. The educational programs proposed to bring about a reduction in smoking among adolescents.
SCIENTIFIC EVALUATION OF THE SMOKING HABIT

At the World Conference on Smoking and Health, held in New York City in September, 1967, Dr. Luther Terry, former Surgeon General of the United States Public Health Service, stated that:

While science will continue to probe the reason why, there is no longer any doubt that cigarette smoking is a direct threat to the user's health. We know for certain that lung cancer, which is climbing to almost epidemic proportions throughout the world, is directly associated with cigarette smoking. We know that the rising number of deaths from heart disease among men and women in the prime of life is related to cigarette smoking. We know that the toll from bronchitis and emphysema can be traced to cigarette smoking. And we know that a considerable amount of chronic disability is resulting annually from cigarette smoking. (35:1)

The most comprehensive and authoritative work in the area of medical research on smoking is the 1964 report, Smoking and Health, which was prepared by the Advisory Committee to the Surgeon General of the Public Health Service. This document was based on the findings of a scientific committee that was established in 1962 by the Surgeon General at the request of President John F. Kennedy. The President had been urged by the presidents of the American Cancer Society, the American Heart Association, the American Public Health Association, and the National Tuberculosis Association, to form a committee to "study the widespread implications of the tobacco problem" (1:17). After reviewing three types of evidence: (1) animal experiments,
(2) clinical and autopsy studies, and (3) population studies, it was the conclusion of the Advisory Committee that cigarette smoking contributes substantially to mortality from certain specific diseases and to the overall death rate (1:33). The specific diseases related to smoking, mentioned by the Committee, included cancer of the mouth, larynx and lung, chronic bronchitis, emphysema, and cardiovascular disease.

Consistent with the medical findings of the United States Public Health Service were those reported by Great Britain's Royal College of Physicians, in 1962. Beginning their appraisal of data in 1959, the Committee of the Royal College of Physicians concluded that cigarette smoking is a cause of lung cancer and bronchitis, and probably contributes to the development of cardiovascular disease (36:32).

Recent scientific findings have indicated that not only the smoker is affected by his use of cigarettes. Cameron and associates (10) have found in a survey of 727 families that the children of smoking parents had a greater frequency of primary respiratory diseases, and suggested that the amount of cigarette smoke in a home may be related to the chance of respiratory illness in the children.

Studies investigating the relationship between smoking and unsuccessful pregnancies have established that women who smoke have a higher percentage of spontaneous abortions, premature births, stillbirths, and neonatal
deaths than do women who do not smoke during their pregnancy (34,37).

Conclusion

The most recent Public Health Service review of the medical aspects of cigarette smoking were presented in the 1969 supplement to the Health Consequences of Smoking. This report affirmed the contention that cigarette smoking is associated with an increase in overall mortality and morbidity, and leads to a substantial amount of excess deaths among those persons who smoke (50:3).

In response to the alarming health threat which faced the American public, the Surgeon General appointed a Task Force on Smoking and Health, to recommend actions that could be taken:

1. To encourage young people to not start smoking.
2. To reduce the number of people now smoking.
3. To encourage the development of less hazardous cigarettes and methods of smoking (52:2).

SURVEYS OF STUDENTS' SMOKING BEHAVIOR, KNOWLEDGE, AND ATTITUDES

A review of the literature regarding the smoking practices of adolescents, and their knowledge and attitudes pertaining to cigarette smoking was made to obtain a general understanding of the current research in the area. The landmark school studies of Horn (21) and Salber (38), conducted in Portland, Oregon and Newton, Massachusetts,
respectively, will be discussed in this chapter. Later studies, and also those which were much smaller in scope, will be recounted to provide comparisons for the findings of this study. Emphasis was also placed on those studies which sought to identify the key determinants in the development of smoking behavior.

**Portland Study**

During the school year 1958-59, a comprehensive survey of the smoking practices and personal backgrounds of high school students was conducted by Horn and associates (21). Horn hoped to determine:

1. The amount and patterning of student smoking.
2. The factors distinguishing the smokers from the nonsmokers.
3. The motivations common to taking up smoking.
4. Effective approaches in influencing smoking behavior (21:1497).

The total study group consisted of 11,160 boys and 10,920 girls in grades nine through twelve, in twenty-one public and parochial schools in the Portland, Oregon area.

Horn's findings revealed that, based on the definition of a smoker as one who smokes at least one cigarette per week, 25.8 percent of the boys and 19.7 percent of the girls were smokers (21:1501). Horn also found that the percentage of smokers increased with each successive grade.
level. While 14.5 percent of the ninth grade boys smoked, 35.4 percent of the twelfth grade boys were classified as regular smokers. A similar trend existed among the girls, with 4.6 percent of the ninth grade girls being smokers and 26.6 percent of the twelfth grade girls reporting regular smoking.

When comparing the personal backgrounds of those students who smoked against those who did not smoke, Horn (21:1503) found that the smokers tended to come from families where one or both parents smoked and the parents had a lower educational level than did the parents of the nonsmokers. In addition to their family backgrounds, when compared to the nonsmoking students, the smoking students tended to have lower educational goals, were less active in extracurricular activities, and were older than their respective classmates (21:1506).

Newton Study

In 1959 an epidemiological survey of junior and senior high school students was undertaken in Newton, Massachusetts, by Salber and associates (38). The objectives of this study were to determine the prevalence of smoking and to relate patterns of smoking to factors such as age, sex, intelligence quotient and attitudes toward smoking.

Useable returns from 3,449 boys and 3,361 girls represented over 90 percent of the total student population.
Based on the researchers' definition of a smoker as one who has smoked ten cigarettes and considered himself a smoker at the time of the survey, 35 percent of the boys and 28 percent of the girls were categorized as smokers (38:970).

Consistent with Horn's (21) findings, was the upward trend of smoking behavior as the grade level increased. While only 6.8 percent of the boys and 1.1 percent of the girls at the seventh grade level smoked, 20.4 percent of the boys and 10.6 percent of the girls in the ninth grade smoked, and 45.5 percent of the boys and 54.7 percent of the girls in the twelfth grade considered themselves smokers (38:970).

Salber (38:973) also reported a shift to a younger age at the time of first experimentation with cigarettes, with the younger students in the survey reporting their first experience at an earlier age than that of the older respondents.

A strong association between the students' smoking patterns and their socioeconomic level was reported by Salber (39) with significantly fewer smokers in the upper than in the lower socioeconomic classes. Also reported as influencing the students' smoking behavior was the variable of intelligence quotient, with the nonsmokers having higher mean I.Q.'s than the discontinued smokers, who in turn have higher mean I.Q.'s than the current
The researchers concluded, however, that the high level of academic achievement, obtained by many of the nonsmokers, was the most significant difference between the smokers and the nonsmokers.

A five and one-half year follow-up study was conducted by Salber and associates in 1965 (40). Using a random sample that was stratified by the students' 1959 smoking status, the researchers polled 560 males and females who had been tenth grade students at the time of the original study. The prevalence of smoking almost doubled in the five and one-half year time period. In 1959, when the average age of the students was 15.5 years, 35 percent of the males and 26 percent of the females were smokers. In 1965, at a mean age of 21.0 years, 63 percent of the males and 55 percent of the females were smoking (40:131).

The researchers concluded that in most cases, if a child was smoking at age fifteen, he would be smoking at twenty-one, and if he was a smoker before age fifteen, but had discontinued, there was a high probability that he would be smoking again at age twenty-one (40:132).

Consistent with their earlier findings was the relationship between the students' smoking behavior and their academic achievement, with the honor students being those who were least likely to become smokers in either 1959 or 1965 (40:133).
**Erie County Study**

Erie County, New York, served as the site of a survey of 35,502 junior and senior high school students. The investigator, Sallak (41), conducted the study during 1960, using a 6 percent sample of the total school population to determine the students' smoking status.

Sallak (41:309) found that 37.5 percent of the boys and 16.9 percent of the girls were regular smokers. There was a substantial amount of experimentation with cigarettes, but by the ninth grade most of the students using cigarettes were regular smokers rather than experimenters. By the twelfth grade most students had tried smoking, with only 21.6 percent of the students responding that they had never tried cigarettes (41:310).

Sallak concluded that the grades seven through twelve involve a period of time during which an increasingly large proportion of students, of both sexes, experiment and reach a high level of regular smoking.

**Lincoln Public Schools Study**

To determine the most favorable time to introduce anti-smoking education to school children, a survey of senior high school students of Lincoln, Nebraska, was done in 1965. The researchers, Jensen and Thompson (28), were also interested in identifying the factors which students felt to be influential in motivating them toward smoking.
The study was much smaller in scope than the previously mentioned studies, with the sample including 798 students. While an average of one-fifth of the students reported smoking status, the majority of the smokers indicated that they had begun their habit before entering high school, and many indicated that they had begun before the seventh grade (28:367).

The researchers (28:373) reported that the most significant factor which motivates students to smoke is peer group pressure, rather than their parents' smoking habits or the students' level of extracurricular activities.

Also of interest was the finding that, with regard to the laws prohibiting the sale of cigarettes to minors, the students recommended stronger enforcement of these statutes (28:371).

**Stark County Study**

During 1966, a survey was undertaken by the Tri-Agency of Stark County, Ohio, to determine the extent of the smoking problem among the area's youth. Findings from the survey, which included 20,000 students in the junior and senior high schools, revealed smokers at each grade level (11:517). The greatest increase in the percentage of smokers occurred between the eighth and ninth grade, which led the researchers to recommend that smoking education must begin by the fifth grade (11:518).

The researchers also concluded that, since smoking
is social in nature, the anti-smoking programs must be socially and culturally oriented.

Washington State Study

An extensive survey of sixth, ninth, and twelfth grade students in the Washington State Public Schools was conducted in 1967 by the Washington State Office of the Superintendent of Public Instruction and the Washington State Health Department (48). The survey population included 18,914 students, who had specified their smoking behavior and sex on the anonymous questionnaire. The data from the survey were to establish a baseline from which to measure future changes in the students' smoking practices, knowledge, and attitudes.

Smokers were defined as those who smoked currently, regardless of the amount. Based on this definition, 20 percent of the total group classified themselves as smokers (48:2). Corresponding with the earlier work of Horn (21) and Salber (38) was the finding that smoking increased with grade level, going from 5.7 percent in the sixth grade to 20.4 percent in the ninth grade, to 30.3 percent in the twelfth grade (48:4).

The majority of the students' attitudes corresponded with their smoking behavior, with the smokers expressing more favorable opinions toward smoking than the non-smokers (48:10). The students' intent for future smoking also corresponded with their current smoking status, the
smokers forecasting a greater percentage of future smoking
than the nonsmokers.

Questions dealing with the harmful effects of cigarette smoking were presented to the students. Nonsmokers, in general, tended to answer these questions more correctly than the smokers, but statistical tests were not performed to determine the significance of the relationship between the students' health knowledge and their smoking behavior. The authors (48:34) felt that smoking behavior is associated with a matrix of variables which produces a situation of less factual knowledge regarding smoking.

Conclusion

Research findings from school surveys indicated a substantial amount of smoking at an increasingly early age. Students who smoke tended to have more favorable attitudes toward smoking, as well as having less knowledge regarding the hazardous effects of smoking cigarettes. Factors such as socioeconomic status, lower intelligence and achievement levels, and having parents who smoke, tended to characterize the smokers in many studies.

EDUCATIONAL PROPOSALS DESIGNED TO REDUCE THE INCIDENCE OF SMOKING AMONG ADOLESCENTS

Recognizing the need for immediate action to prevent students from adopting smoking practices, governmental agencies, voluntary health organizations, schools and par-
ent-teacher groups began educational campaigns to inform students of the deleterious effects of cigarette smoking. An overview of several educational proposals, their objectives, methods, and results, will be presented to determine their feasibility for future educational programs.

**Scientific Approach**

Many of the early educational programs were based on the concept of health education which assumes that health knowledge will influence health practices, in this case nonsmoking behavior. An example of this approach was the program, conducted by volunteer physicians in King City, California, who lectured to ninth grade students during assemblies, on the health hazards of smoking (3). Beginning their program in 1959 and concluding in 1964, the physicians found that the incidence of smoking increased from 27 percent in 1959 to 40 percent in 1963. In retrospect, the researchers felt that they should have worked with a younger age group, students who had not yet begun to smoke (3:246). Other factors, such as the largeness of the group in the assembly situation, the authoritarian manner in which the material was presented, and the lack of follow-up discussion, may have contributed to the failure of this program.

Horn (22) also used a cognitively oriented approach with high school students and reported some success, although not dramatic. Comparing five different types of messages, contemporary, remote, both-sided, authoritative,
and adult role-taking, all relating the information of smoking and its effect on health, Horn (22:64) found that stressing the remote aspects of smoking, i.e., lung cancer, had the most effect in reducing the amount of smoking.

Merki and his associates (33), attempted to use Horn's message themes while testing the effectiveness of student-centered programs against a mass-communication type approach. The student-centered programs consisted of symposiums and the mass-media method used posters and pamphlets. The researchers reported some success at the eighth grade level using the student-centered approach, but no success at the eleventh grade level (33:435). The recommendations from the study included the development of a non-smoking image for students, the development of appropriate curriculum materials, more consideration in the use of students, and more extensive educational exposure, if behavioral change in the desired direction is to take place.

In a study of the relationship between smoking practices and the health knowledge of high school seniors, Briney (9) found that a significant relationship did exist for the female students but not for the males. While the girls who had the highest level of knowledge concerning the harmful effects of smoking, were the least likely to be smokers, a level of significance between the boys' smoking practices and their level of knowledge was not obtained.

Briney (9:33) suggested that future educational
programs take the sex difference into account, perhaps developing some approaches to be used with girls and other focused toward the boys.

In a study of 400 male college students, Fodor, Glass and Weiner (16) found that the smokers were more informed of the hazardous effects of smoking than were the nonsmokers. The smoking students also felt that smoking was no cause for concern until there is more conclusive evidence of its hazardous effects, that normal, healthy persons could enjoy cigarettes without worry, and that at times cigarette smoking can be beneficial. These informed students also indicated that they would not advise young people to refrain from smoking (16:96).

The authors suggested that the mere possession of the knowledge that smoking is harmful is not sufficient to alter smoking behavior and that programs aimed at students must be based on health education rather than smoking education (16:97). The authors also called attention to the need to utilize educational programs that focused attention upon immediate effects of cigarette smoking rather than long-term effects.

Allen (2), after presenting an informational program based on the scientific evidence linking cigarette smoking to lung cancer, respiratory disease and cardiovascular disorders, concluded that anti-smoking programs defeat their purpose and actually increase the percentage
of students who smoke.

Commenting on this problem, Wehrle and his associates stated that the concept of death and disease is so far removed from the mind of the adolescent that an anti-smoking campaign stressing the harmful effects of smoking serve as a dare to the average teenager (55:758). They suggested appealing to nonsmokers regarding their right to comfort and freedom from smoke, using advertisements that depict nonsmokers being annoyed by smokers in cars, planes, theatres, and other public places.

Multi-faceted Approaches

Because the success of the single-pronged knowledge based programs had not been overwhelming, several other proposals have been offered. Typical of these recommendations are those listed by the Task Force for Smoking and Health to the Surgeon General (52:6-7). The Task Force urged that the channels outside the schools, such as sport and scouting organizations, and church and recreation groups, be used to reach students with the smoking message. The Task Force also cited the role of exemplars that parents, teachers, and activity leaders have, and urged them to set a nonsmoking example for children. The strengthening of school-oriented programs was mentioned, so as to make the smoking issue more relevant to the students.

A total community approach is underway in San Diego County, reflecting the Task Force's opinion that the
child's total environment, in addition to the school, must provide a climate that is supportive of nonsmoking behavior. Therefore, programs are designed for adults, health professionals, and the mass-media, as well as for the youth-serving organizations (45).

While factual knowledge is the basis for the school of youth-serving agency programs, the behavioral aspects of smoking are explored to provide relevancy for the subject. Emphasis is placed on student involvement, from the elementary grade through the senior high school. Student-to-student programs, such as high school students discussing the aspects of smoking with fifth and sixth grade students, are hoped to provide a way to present a favorable nonsmoking image that the younger students can emulate, while taking the glamour and masculinity out of smoking.

Improvement of current health education methods and materials, that are used in smoking programs, is of the greatest necessity. A project that has been conducted by the Smoking and Health Project, San Fernando Valley State College, in the sixth, eighth, tenth, and twelfth grade of the Alhambra, California School District, has attempted to develop a curriculum that will be more successful in assisting teachers who are engaged in health instruction. Information relative to both immediate and long term effects of smoking were incorporated into the curriculum.
Teachers are specially trained to use new or different techniques, such as influencing the students to identify the cigarette advertisements as the establishment, so that the students' anti-establishment attitudes can be used against cigarette smoking (47:7).

Another educational program which is being implemented in a school setting is the San Ramon-Berkeley Project (47:16). This program involves the use of the body systems approach in teaching health and the various health problems, such as smoking. Each grade level, beginning with grade five, studies a separate body system, which includes its anatomy, physiology, disorders and diseases, and proper care. The students are divided into small learning groups of four or five children who proceed at their own pace. The children have the use of anatomical charts and models, filmstrips, overhead projection materials, books, magazines and pamphlets, files and demonstration items. Rather than teaching smoking as a separate subject, it is discussed in relation to the respiratory, circulatory, and nervous systems.

SUMMARY

As the medical evidence indicating cigarette smoking as a major cause of lung cancer, emphysema, and heart disease was accumulated, governmental and private agencies acted to reduce the toll of illness and death caused by cigarettes.
A focal group of this action was designated to be the nation's youth, who it was hoped could be prevented from beginning the smoking habit. Surveys of school populations were taken to determine the incidence and patterns of student smoking. The studies reported a large percentage of students were smokers and that they had begun their smoking at an early age, often before entering high school. These studies also characterized the smoking students as less successful academically, less active in extracurricular activities, and having parents who smoked.

The original education programs, designed to halt the spread of the smoking problem among youth, focused on presenting the scientific facts regarding the hazardous effects of smoking on one's health to the students. These knowledge-based programs were not always successful in changing or influencing the students' smoking behavior, and in some instances, led to an increase in the smoking involvement of the students. Different proposals were then offered, many based on presenting the behavioral, as well as the physical aspects of smoking, with the belief that students must perceive smoking as a social and cultural problem, rather than strictly a medical issue. Several of the programs endeavor to change students' attitudes toward smoking as a socially acceptable behavior to a practice that is socially out.

Chapter III presents the methods that were used to evaluate the data from the study.
grade students in the school district, was selected as the test population. Within each grade level the sample reflected a representative percentage by ability groups and by sex within these ability groups. The total sample involved 4,535 students whose ages ranged from fourteen to nineteen years old at the time of the study.

SURVEY INSTRUMENT

Description of the Questionnaire

The questionnaire was developed by Daniel Horn, Director of the National Clearing House for Smoking and Health, United States Department of Health, Education, and Welfare. The questionnaire is designed to (1) evaluate the students' smoking status, (2) discern the students' knowledge regarding the harmful effects of smoking, (3) measure the degree of favorable or unfavorable attitudes expressed by the students with regard to smoking.

The questionnaire had previously been used by the Public Health Service for smoking surveys, including the Portland study (21).

Administration of the Questionnaire

A pretest of the questionnaire was administered in a San Diego County high school. Results obtained from the pretest indicated that the students' comprehension of the instrument was acceptable.
CHAPTER III
METHOD OF PROCEDURES

The questionnaire survey was conducted by the San Diego County Council on Smoking and Health in cooperation with the San Diego Unified School District. The raw data obtained from the survey were furnished to the author for analysis.

The questionnaire survey method was used in the attempt to measure the smoking behavior, knowledge, and attitudes of senior high school students. This chapter presents the sample population, the survey instrument, and the procedures used to analyze the data.

POPULATION AND SAMPLE

Description of the Population

The survey population was drawn from the ten senior high schools in the San Diego Unified School District. The San Diego Unified School District operates the schools within the City of San Diego and is composed of students from all socioeconomic levels. Also present in the population are schools with a large percentage of Mexican-American and Black students.

Selection of the Sample

A random sampling, consisting of twenty percent of the total population of tenth, eleventh, and twelfth
grade students in the school district, was selected as the test population. Within each grade level the sample reflected a representative percentage by ability groups and by sex within these ability groups. The total sample involved 4,535 students whose ages ranged from fourteen to nineteen years old at the time of the study.

SURVEY INSTRUMENT

Description of the Questionnaire

The questionnaire was developed by Daniel Horn, Director of the National Clearinghouse for Smoking and Health, United States Department of Health, Education, and Welfare. The questionnaire is designed to (1) evaluate the students' smoking status, (2) discern the students' knowledge regarding the harmful effects of smoking, (3) measure the degree of favorable or unfavorable attitudes expressed by the students with regard to smoking.

The questionnaire had previously been used by the Public Health Service for smoking surveys, including the Portland study. (21).

Administration of the Questionnaire

A pretest of the questionnaire was administered in a San Diego County high school. Results obtained from the pre-test indicated that the students' comprehension of the instrument was acceptable.

The final questionnaire was administered to the
study population on January 16, 1967. Teachers in the selected classes were instructed to administer the questionnaire and to assure the students of the test's anonymity in order to obtain free responses from the students.

A copy of the questionnaire may be found in the Appendix.

Treatment of the Data

After the collection of the questionnaires, respondents who had failed to denote their grade, sex, or current smoking status were deleted from the study. The number of such deletions totaled thirty-one, leaving the remaining 2,435 males and 2,069 females as the sample population, a total of 4,504 subjects.

The completed questionnaires were grouped according to school and were then further subdivided by grade level and sex. The information from the questionnaires was transferred to key punch worksheets and finally to individual computer cards.

The responses for each item in the questionnaire were calculated by computer to obtain frequency counts for each response. The computer was also programmed to obtain the percent of the total subgroup that responded to each response of each item in the questionnaire. Chi square contingency tables were computed to study the relationship between the students' smoking behavior and other variables, such as health knowledge, attitudes toward smoking, and mental level.
CHAPTER IV
PRESENTATION OF THE FINDINGS

The study was based on a questionnaire survey of 4,535 senior high school students. Thirty-one questionnaires were deleted from the survey because of incomplete answers, which left the remaining 2,435 boys and 2,069 girls as the sample population.

The objectives of the study included the determination of (1) the incidence of smoking among the students, (2) the level of knowledge regarding the hazardous effects of smoking, (3) the students' attitudes toward smoking, (4) the relationship between the students' smoking practices and their health knowledge and attitudes toward smoking, (5) the relationship between the students' smoking practices and such factors as their mental level and socioeconomic status, and (6) research findings that would be useful in formulating more successful educational approaches to the adolescent smoking problem.

The research findings were organized into four major sections: (1) the incidence of current and predicted smoking behavior, (2) the students' level of knowledge regarding the harmful effects of smoking and the relationship between this knowledge and their smoking practices, (3) the students' attitudes toward smoking and the relationship between their attitudes and their smoking
behavior, and (4) the relationship between the students' smoking practices and factors involving mental level, socioeconomic standing, and students' educational aspirations.

SMOKING BEHAVIOR

A focal point of the study dealt with the determination of the students' current smoking practices. The age at which the current smokers began their habit and their weekly consumption of cigarettes is also important information. In addition, the students' prediction of their future smoking status is of interest. Findings concerning these items are presented here.

Current Smoking Status

According to their response to the questionnaire, the students were classified as smokers or nonsmokers. The students were assured of the anonymous nature of the questionnaire so as to facilitate honest responses.

By definition, the majority of the students were nonsmokers. Of the total population surveyed, 33.1 percent of the males and 27.0 percent of the female students were cigarette smokers. As found in previous studies by Horn (21) and Salber (38), the percentage of smokers increased with each successive increase in grade level, going from an average of 26.2 percent in the tenth grade to an average of 32.0 percent among the twelfth grade students.
Also consistent with previous research findings was the higher incidence of male smoking at each grade level. While 31.8 percent of the tenth grade males were smoking, only 20.6 percent of the females in the tenth grade classified themselves as smokers. Likewise, 34.7 percent of the male twelfth grade students indicated smoking behavior, while the percentage of female smokers at that grade level was 29.3 percent.

Figure 1 presents the data concerning the current smoking behavior by grade level and sex. The graph also indicates the slight increase of smoking practices among the males as the grade level increases, whereas the females' smoking behavior rises sharply between grade ten and eleven and then declines slightly in grade twelve.

Age at onset of smoking behavior. To learn more about the students' smoking patterns, a question regarding the length of their smoking habit was presented to the smokers. This figure was then subtracted from their present age to obtain the age at which they began to smoke. As is shown in Figure 2, a substantial percentage of the smokers, 32.4 of the males and 18.8 of the females, indicated that they began smoking by the age of twelve. Before or at the age of fourteen, 66.9 percent of the males and 57.5 percent of the females responded that were using cigarettes. Only 4.0 percent of the smokers began to smoke after they reached the age of sixteen.
Figure 1

Percentage of Current Smokers by Grade Level
Figure 2

Age Current Smokers Began Their Habit
Weekly cigarette consumption. The smoking students were asked how many cigarettes, on the average, they smoked in a week. As is illustrated in Figure 3, the overall trend among the boys is toward greater cigarette consumption as the grade level increases. 20.8 percent of the tenth grade males smoke over three packages of cigarettes a week, while 34.2 percent of the twelfth grade males use this amount.

Among the girls, this trend is reversed, with 12.9 percent of the tenth grade females smoking more than three packs of cigarettes per week, and 10.9 percent of the females in the twelfth grade smoking this quantity. It is also evident from the data that a large percentage of the females are light smokers, since one-third of the girls smoke less than ten cigarettes a week.

Students who have never smoked. An interesting facet of smoking behavior is concerned with those students who indicate that they have never smoked cigarettes. The nonsmokers were grouped into those who had experimented with cigarettes and those who had not. Of the total male population, 10.4 percent were considered to have never smoked. Only 9.5 percent of the total female population indicated that they had never tried smoking.

Figure 4 presents the percentages of students who have not experimented with cigarettes according to their grade level and sex. As can be noted from reference to the
Figure 3
Weekly Cigarette Consumption
Figure 4

Percentage That Have Never Smoked Cigarettes
graph, the percentage of students who have never smoked decreases as the grade level increases. Whereas 11.6 percent of the tenth grade boys report never having smoked, only 8.8 percent of the twelfth grade boys responded accordingly. A similar pattern occurs among the girls, with 9.4 percent of the tenth graders having never smoked but only 8.7 percent of the senior girls indicating that they "have never smoked cigarettes at all". By completion of the twelfth grade over ninety percent of the males and females will have some experience with regard to cigarette smoking, and a relatively high percentage of these students will have progressed far beyond the stage of experimentation with cigarettes.

Predicted Future Smoking Behavior

In addition to their current smoking behavior, the students were questioned concerning their intentions for future smoking involvement. The students' responses were considered important because, not only did they give an indication of the students' future smoking practices, but they also provided an index of the students' current attitudes toward smoking.

Based on the students' answers to the questionnaire, they were categorized as those who intend to smoke in the future, and those who are undecided.

Table I illustrates the intent of future smoking by grade level, sex, and current smoking status. Reference
TABLE I
PREDICTED FUTURE SMOKING BEHAVIOR
"DO YOU THINK YOU WILL BE A SMOKER 5 YEARS FROM NOW?"

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>10th</td>
<td>11th</td>
</tr>
<tr>
<td><strong>Current Smokers</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intend to Smoke</td>
<td>66.6</td>
<td>75.2</td>
</tr>
<tr>
<td>% Undecided or No Answer</td>
<td>2.7</td>
<td>2.1</td>
</tr>
<tr>
<td>Do Not Intend to Smoke</td>
<td>30.7</td>
<td>22.7</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>100.0</td>
<td>100.0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>10th</td>
<td>11th</td>
</tr>
<tr>
<td><strong>Current Nonsmokers</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intend to Smoke</td>
<td>2.7</td>
<td>1.9</td>
</tr>
<tr>
<td>% Undecided or No Answer</td>
<td>1.9</td>
<td>2.2</td>
</tr>
<tr>
<td>Do Not Intend to Smoke</td>
<td>95.4</td>
<td>95.9</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>100.0</td>
<td>100.0</td>
</tr>
</tbody>
</table>
to the Table shows that current smokers are more likely to project future smoking behavior than are the current non-smokers. A high percentage of both male and female smokers, 71.5 and 65.1 respectively, indicate the intent for future cigarette smoking. In contrast, only 2.2 percent of the current non-smoking boys and 3.3 percent of the current non-smoking girls responded that they intend to become cigarette smokers in the future. It is noteworthy that almost one-third of the current smokers stated that they do not intend to continue their smoking practices in the future.

When a comparison of the "undecided" responses was made, it was apparent that an equally small percentage, less than 3.0 percent, of the smokers and nonsmokers are uncertain of their future smoking practices.

KNOWLEDGE REGARDING SMOKING AND HEALTH

Determining the level of health knowledge concerning the deleterious effects of cigarette smoking and the relationship between this knowledge and the smoking practices of the students is an important aspect of this study, since many educational programs are based on the premise that the possession of factual health information will provide the motivation for students to develop rational behavior with regard to cigarette smoking. The data presented here explores this educational theory as it relates to smoking knowledge and behavior.
Level of Health Knowledge

The students were asked questions to determine their level of knowledge regarding the effects of smoking on health. The questions dealt with the relationship of smoking to lung cancer, emphysema, and heart disease. The students were asked if, with regard to each disease, smokers were more likely to be afflicted than were non-smokers. The correct answer was considered to be affirmative in each case.

The findings indicated that the majority of the students recognize the harmful effects of cigarette smoking, with 85 percent or more of the students at each grade level identifying the link between cigarettes and lung cancer and over 75 percent of the respondents recognizing the relationship between smoking and emphysema. The relationship between smoking and heart disease was also correctly identified by over 40 percent of the students.

The girls answered correctly more often than the boys in each grade. The nonsmoking students also tended to have a higher level of health knowledge than the smoking students. Figures 5, 6, and 7 present the percentages of students who correctly identified the relationship between cigarette smoking and lung cancer, emphysema, and heart disease. In each graph the students are presented by grade level and sex in order to compare the differences in responses between the girls and the boys, and to illustrate the
Figure 5

Cigarette Smokers Are More Likely to Get Lung Cancer Than Nonsmokers
(Percentage That Answered Definitely or Probably Yes)
Figure 6

Cigarette Smokers Are More Likely to Get Emphysema Than Nonsmokers
(Percentage That Answered Definitely or Probably Yes)
Figure 7

Cigarette Smokers Are More Likely to Get Heart Disease Than Nonsmokers
(Percentage That Answered Definitely or Probably Yes)
trend toward an increase in the knowledge of the health aspects of smoking as the grade level of the students' increased.

**Relationship Between Health Knowledge and Smoking Behavior**

To establish the role that health knowledge plays in formulating students' smoking practices, chi square tests were performed on the data, comparing the health knowledge of the smokers to that of the nonsmokers. Since the previously noted level of knowledge varied between the male and female respondents, the statistical tests were performed individually.

Table II presents the procedures used in testing to determine if a significant difference occurred between the smoking and nonsmoking students with respect to health knowledge. For both male and female students the chi square values obtained are significant at the .01 level. These findings conclude that a relationship existed between the students' knowledge that cigarette smoking is causally related to lung cancer, emphysema, and heart disease and the students' smoking behavior, and that chance alone would account for this relationship in fewer than one out of one hundred cases. The finding that the students' behavior was influenced by their health knowledge was reported by Briney (9), but in his study only the females' relationship between smoking knowledge and smoking practices was at a level of significance.
TABLE II
RELATIONSHIP BETWEEN HEALTH KNOWLEDGE AND SMOKING BEHAVIOR

Males

<table>
<thead>
<tr>
<th></th>
<th>Smokers</th>
<th>Nonsmokers</th>
<th>TOTALS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(E)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Correct</td>
<td>(557.9)</td>
<td>(1157.5)</td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>466.2</td>
<td>1249.2</td>
<td>1715.4</td>
</tr>
</tbody>
</table>

Incorrect  

|       | (234.1)  | (485.5)    |        |
| 325.8 | 393.8    | 719.6      |        |

TOTALS  

|       | 792      | 1643       | 2435   |

Results were significant($x^2=77.58$, $p<.01$, 1 df)

Females

<table>
<thead>
<tr>
<th></th>
<th>Smokers</th>
<th>Nonsmokers</th>
<th>TOTALS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(E)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Correct</td>
<td>(410.8)</td>
<td>(1107.1)</td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>368.6</td>
<td>1149.4</td>
<td>1517.9</td>
</tr>
</tbody>
</table>

Incorrect  

|       | (149.2)  | (410.9)    |        |
| 191.4 | 359.7    | 551.1      |        |

TOTALS  

|       | 560      | 1509       | 2069   |

Results were significant($x^2=22.32$, $p<.01$, 1 df)
This indication that the students' smoking practices were related to the students' health knowledge should lend encouragement to those who are conducting informational campaigns in the hope of deterring students from smoking. However, the knowledge of the hazardous effects of cigarette smoking is not the only determinant of smoking behavior, and the remainder of this chapter will discuss the various other factors that may motivate a students' smoking behavior.

STUDENTS' ATTITUDES TOWARD SMOKING

Because students' attitudes toward smoking are often determinants of their smoking behavior, the measurement of these attitudes was a major concern of this study. An attitude scale was administered to the students to determine their feelings concerning the various aspects of smoking. Several statements were presented, to which the students were to choose one of five possible replies: "Strongly agree", "mildly agree", "neither agree nor disagree", "mildly disagree", and "strongly disagree". To facilitate reporting the students' responses were then divided into three categories, those who agreed, those who were indifferent, and those who disagreed, with the particular statement. Responses to the attitudinal questions are presented individually.
Cigarettes are pleasurable. To explore the students' feelings towards cigarettes, and especially the feeling of the smokers, the students were asked to respond to the statement: "Cigarettes are pleasurable". As seen in Figure 8, the smokers were more favorable toward this statement than the nonsmokers, with over one-half of the smokers expressing agreement, while only one-tenth of the nonsmokers responded accordingly.

Among the smokers, the favorable sentiment seemed to increase with each successive grade level, reaching almost 70 percent in the twelfth grade. The younger smokers may assign other meanings to their habit than the older smokers, which may account for the disparity in the percentage of favorable responses.

The female smokers tended to assign a more favorable sentiment toward cigarette smoking as a pleasurable activity, which suggests that the connotation given smoking is subject to a sex difference.

Relationship of smoking behavior and attitudes toward smoking. To determine if a significant difference existed between the smoking and nonsmoking students with respect to their attitude toward cigarettes as a pleasurable activity, chi square tests were performed. As is illustrated in Table III, the test results indicated that a difference which is significant at the .01 level existed
Figure 8
Cigarettes Are Pleasurable
(Percentage Who Strongly or Mildly Agreed)
### TABLE III
RELATIONSHIP BETWEEN SMOKING BEHAVIOR AND ATTITUDES TOWARD SMOKING
"CIGARETTES ARE PLEASURABLE"

**Males**

<table>
<thead>
<tr>
<th></th>
<th>Smokers</th>
<th>Nonsmokers</th>
<th>TOTALS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly or mildly agree</td>
<td>(E) 218.0</td>
<td>(450.8)</td>
<td>665</td>
</tr>
<tr>
<td>Neither agree nor disagree</td>
<td>223</td>
<td>448</td>
<td>671</td>
</tr>
<tr>
<td>Strongly or mildly disagree</td>
<td>346.7</td>
<td>(717.3)</td>
<td>1042</td>
</tr>
<tr>
<td>TOTALS</td>
<td>788</td>
<td>1630</td>
<td>2368</td>
</tr>
</tbody>
</table>

Results were significant ($\chi^2=933.0$, $p<.01$, 2df)

**Females**

<table>
<thead>
<tr>
<th></th>
<th>Smokers</th>
<th>Nonsmokers</th>
<th>TOTALS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly or mildly agree</td>
<td>(E) 144.0</td>
<td>(385.0)</td>
<td>529</td>
</tr>
<tr>
<td>Neither agree nor disagree</td>
<td>138</td>
<td>452</td>
<td>590</td>
</tr>
<tr>
<td>Strongly or mildly disagree</td>
<td>257.4</td>
<td>(687.6)</td>
<td>945</td>
</tr>
<tr>
<td>TOTALS</td>
<td>562</td>
<td>1502</td>
<td>2064</td>
</tr>
</tbody>
</table>

Results were significant ($\chi^2=713.0$, $p<.01$, 2df)
between the students' smoking behavior and their attitudes toward smoking, with smoking behavior and favorable attitudes being related, and nonsmoking behavior and unfavorable attitudes toward smoking were linked.

Generalized attitude toward smoking. The students' responses to the statement: "There is nothing wrong with smoking", were graphed to compare the differences in attitudes between the smokers and nonsmokers.

As can be seen in Figure 9, the students' attitudes with regard to smoking was related to their smoking status. Whereas 40.8 percent of the smokers felt that there was nothing wrong with smoking, only 11.8 percent of the nonsmokers agreed with the statement.

As the grade level of the smokers increased, their favorable attitudes toward smoking tended to decrease. The nonsmokers' unfavorable attitudes also increased with each successive grade level. When comparing the difference in responses between the sexes, the male smokers expressed the most favorable attitudes, while the male nonsmokers expressed the most disagreement with the statement that "There is nothing wrong with smoking".

Smoking is something nice to do when you're having fun or enjoying yourself. In responding to this statement, the students' attitudes conformed to their smoking behavior, with the smokers expressing agreement and the
Figure 9

There Is Nothing Wrong With Smoking
(Percentage Who Answered Strongly or Mildly Agree)
nonsmokers disagreement.

Over one-half of the smokers, but only ten percent of the nonsmokers answered that they felt smoking something enjoyable to do when having a good time.

The male students had a slightly higher level of agreement with the statement than the respective females at each grade level, suggesting that the boys may see smoking as a means of enhancing a pleasant mood or situation while the girls may interpret smoking behavior in another manner.

The data from this question are graphed in Figure 10.

**Smoking as a relaxant.** The students were asked to respond to the statement: "Cigarette smoking helps people to relax". The responses were consistent with the students' smoking status as is illustrated in Figure 11.

Of the smokers, 60 percent felt that smoking helped people to relax, whereas 30 percent of the nonsmoking students agreed with the statement. Overall, the females seemed to agree with the opinion more so than the male students. While the male students may think of cigarettes being used for their positive affect, the females may be seeing the cigarette used to reduce or relieve negative or unpleasant feelings. However, this explanation for the female responses would be a generalization since the highest
Figure 10

Smoking Is Something Nice To Do When You're Having Fun Or Enjoying Yourself
(Percentage That Strongly or Mildly Agreed)
Figure 11

Smoking Helps People To Relax
percentage, 63.9, of agreement with the statement that cigarettes are relaxing, was recorded by the twelfth grade boys.

**Smoking helps people when they feel nervous or embarrassed.** As with the previous questions dealing with the students' feelings toward the psychological uses of cigarettes, the students' attitudes are reflected by their smoking behavior. Figure 12 shows that approximately two-thirds of the smokers and one-third of the nonsmokers agreed with the statement, "Smoking helps people when they feel nervous or embarrassed about something".

A probable reason for the high percentage of non-smokers who are in agreement with the smokers is that nervousness is often cited as a rationale for smoking by many smokers, and the nonsmoking students may perceive of cigarettes as actual tranquillizing agents.

When comparing the responses of the sexes, it appeared that the females are more favorable to the statement than are the male respondents, especially the female smokers versus the male smokers.

**Smoking and aesthetics.** To determine the role of aesthetics in influencing the students' smoking habits, they were asked if they felt smoking was a dirty habit. As expected their responses corresponded with their current smoking status. Approximately one-half of the nonsmokers
Figure 12
Smoking Helps People When They Feel Nervous Or Embarrassed About Something
regarded smoking as a dirty habit, while less than one-third of the smokers agreed with the statement. Figure 13 illustrates the percentages by grade level, smoking status and sex.

Those smokers who admitted to the unpleasantness of their habit may appear inconsistent, but perhaps they were expressing their honest feelings with regard to this aspect of smoking, and smoking's ugliness is not enough to dissuade them from continuing the habit.

As for sex differences, the girls expressed a slightly stronger degree of dissatisfaction with the un-aesthetic aspects of smoking than did the boys.

Attitude toward legal prohibition of smoking by minors. An area of the questionnaire focused upon the attitudes of the students regarding the laws enacted to deter smoking by minors. The statement: "The law against the sale of cigarettes to people under age 18 should be strongly enforced", was presented to the students. The replies were classified into three categories: "agree", "indifferent", and "disagree". As was previously illustrated, the students' reactions to the statement corresponded to their smoking status.

Reference to Figure 14 indicated that the smokers express disagreement with the statement, whereas the non-smokers are in favor of the statement's proposal. While over one-half of the nonsmokers favored stronger enforce-
Figure 13

Smoking Is A Dirty Habit
(Percentage That Strongly Or Mildly Agree)
The Law Against The Sale of Cigarettes To People Under The Age Of 18 Should Be Strongly Enforced
ment of the law, less than one-fourth of the smokers agreed with the proposal. However, it is of interest that one-quarter of the current smokers, who themselves would be affected by the enforcement of the laws, favored stronger observance of the statute. One could appraise that these smokers are the victims of peer pressure to smoke, or their own uncontrollable motivations that cause them to use cigarettes, and if the law prohibiting the sale of cigarettes to minors was strictly enforced, they would be able to discontinue their habit. Another explanation for the smokers' seemingly contradictory stand may lie in their objections towards others, their own age or younger, beginning to smoke, and they feel that if cigarettes were difficult to obtain, some children would be prevented from starting to smoke.

Overall, as the grade level of the nonsmoking students increases, the amount of favorable opinion toward the legal prohibition of smoking decreases. The younger nonsmokers may have seen the law as a way to deter smoking among their peers, whereas the older respondents perhaps viewed the situation differently.

This trend is reversed among the smokers, with the largest percentage of smokers favoring stricter law enforcement being the seniors, with 31.1 percent of the boys and 25.7 percent of the girls agreeing with the statement.
Attitude toward their children smoking. The respondents were asked to reply to the statement: "I hope my children never smoke". Figure 15 presents the percentages of students who agreed with the statement.

Unlike the previous attitudinal questions, there is far less disparity between the responses of the smoking and nonsmoking students. Over three-fourths of the non-smokers and over one-half of the smokers responded that they hoped their children would never smoke. The percentage of smokers who hoped their children wouldn't use cigarettes increased from the tenth to the twelfth grade, while the smokers who agreed with the statement decreased slightly from 53 percent in the tenth grade to 50 percent in the twelfth grade.

Among the smokers, more males indicated that they did not want their children to take up smoking, while among the nonsmokers the females were more against the idea of their children smoking, than the respective males.

Attitudes and actions taken regarding others smoking behavior. The students were questioned whether they had ever tried to persuade someone else not to start smoking. As is indicated in Figure 16, a surprisingly large number of both smokers and nonsmokers indicated that they had tried to dissuade others from starting to smoke.

Approximately one-half of the smokers responded
Figure 15
I Hope My Children Never Smoke
(Percentage That Strongly or Mildly Agreed)
Figure 16

Did You Ever Try To Persuade Someone Else Not To Start Smoking
(Percentage Answering Yes)
affirmatively to the question. The answers of the non-smokers were similar, with 51 percent of the males and 60 percent of the females stating that they have tried to persuade someone else to not start smoking smoking.

Closely related to the preceding, was the question whether they had tried to persuade someone else to cut down or quit smoking cigarettes. Figure 17 presents the percentages of students who answered yes to the question by grade, smoking status and sex.

As would be expected, a larger percentage of non-smokers had affirmative answers, with an average of 72 percent of the males and 80 percent of the females responding "yes".

The percentage of smokers replying "yes" is also high with 60 percent of the males and 74 percent of the females indicating that they had tried to encourage others to cut down or quit smoking cigarettes. It would appear that, from a simple observation of these findings, that a large percentage of the smoking students are showing dissatisfaction with their habit if they would go so far as to persuade others to not start or to discontinue smoking.

Students' impressions of their peers' attitudes toward smoking. The students were questioned to determine their perceptions regarding their peers' attitudes toward smoking. The findings from this item would ascertain if,
Did You Ever Try To Persuade Someone Else To Cut Down Or Quit Smoking Cigarettes (Percentage Answering Yes)
and to what extent, the students' smoking behavior was influenced by their perceived attitudes of others.

In response to the question: "In general, what do most people your own age think about the connection between smoking and health?", an average of 46 percent of the students stated that "most people my own age think smoking is probably or definitely harmful". Reference to Table IV also illustrates that approximately one fourth of the students felt that their peers "probably have no opinion".

The male students were more convinced that their friends and agemates felt smoking was hazardous to one's health than the females. The percentage of students who answered that their peers felt smoking to be harmful increased with the increase in grade level, rising from 40 percent in the tenth grade to 53 percent in the twelfth grade. The percentage of students responding that their peers had no feelings one way or another with regard to smoking and health decreased with the increase in grade level, dropping from 28 percent among the tenth graders to 21 percent among the seniors.

Relationship between smoking behavior and impressions of peers' attitudes toward smoking. To determine if a significant difference existed between the smokers and nonsmokers with regard to their impressions of their peers' attitudes toward smoking, chi square tests were performed. Table V presents the chi square values that
TABLE IV

STUDENTS' IMPRESSIONS OF PEERS ATTITUDES TOWARD SMOKING

(MOST PEOPLE MY OWN AGE THINK SMOKING IS:)

<table>
<thead>
<tr>
<th>GRADE</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>10</td>
<td>11</td>
</tr>
<tr>
<td>% Definitely or Probably Harmful</td>
<td>40.0</td>
<td>50.5</td>
</tr>
<tr>
<td>% Most Have No Opinion</td>
<td>28.4</td>
<td>24.6</td>
</tr>
<tr>
<td>% Definitely or Probably Not Harmful</td>
<td>28.0</td>
<td>23.7</td>
</tr>
<tr>
<td>% No response</td>
<td>3.6</td>
<td>1.2</td>
</tr>
<tr>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
</tr>
</tbody>
</table>
### TABLE V

**RELATIONSHIP BETWEEN SMOKING BEHAVIOR AND IMPRESSIONS OF PEERS' ATTITUDES**

"MOST PEOPLE MY AGE THINK SMOKING IS..."

#### Males

<table>
<thead>
<tr>
<th></th>
<th>Smokers</th>
<th>Nonsmokers</th>
<th>TOTALS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Probably or Definitely</td>
<td>(370.5)</td>
<td>(707.5)</td>
<td>1078</td>
</tr>
<tr>
<td>Harmful</td>
<td>0</td>
<td>358</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>720</td>
<td></td>
</tr>
<tr>
<td>TOTALS</td>
<td></td>
<td>615</td>
<td></td>
</tr>
<tr>
<td>Most have</td>
<td>(211.4)</td>
<td>(403.6)</td>
<td></td>
</tr>
<tr>
<td>No Opinion</td>
<td>275</td>
<td>340</td>
<td>615</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Probably or Definitely</td>
<td>(192.1)</td>
<td>(366.9)</td>
<td>559</td>
</tr>
<tr>
<td>Harmful</td>
<td>141</td>
<td>418</td>
<td></td>
</tr>
<tr>
<td>TOTALS</td>
<td>774</td>
<td>1478</td>
<td>2252</td>
</tr>
</tbody>
</table>

Results were significant \( (x^2=50.68, \ p<.01, \ 2df) \)

#### Females

<table>
<thead>
<tr>
<th></th>
<th>Smokers</th>
<th>Nonsmokers</th>
<th>TOTALS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Probably or Definitely</td>
<td>(250.0)</td>
<td>(678.0)</td>
<td>928</td>
</tr>
<tr>
<td>Harmful</td>
<td>0</td>
<td>229</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>699</td>
<td></td>
</tr>
<tr>
<td>TOTALS</td>
<td></td>
<td>537</td>
<td></td>
</tr>
<tr>
<td>Most have</td>
<td>(144.7)</td>
<td>(392.3)</td>
<td></td>
</tr>
<tr>
<td>No Opinion</td>
<td>209</td>
<td>328</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Probably or Definitely</td>
<td>(157.3)</td>
<td>(426.7)</td>
<td>584</td>
</tr>
<tr>
<td>Harmful</td>
<td>114</td>
<td>470</td>
<td></td>
</tr>
<tr>
<td>TOTALS</td>
<td>552</td>
<td>1497</td>
<td>2049</td>
</tr>
</tbody>
</table>

Results were significant \( (x^2=57.83, \ p<.01, \ 2df) \)
were obtained, according to sex. Values for both the males and the females are significant at the .01 level. These findings suggested that the students' smoking behavior is influenced by their perceived attitudes of their friends' feelings toward smoking. If the students felt that their peers were negative toward cigarettes, the students were less likely to be smokers, and on the other hand, if the students felt that their peers were indifferent or favorable towards smoking, these students tended to be smokers. From these findings it appears that peer influence is an important factor in the development of the smoking habit, and in order for an educational program to be successful, it must take this factor into consideration.

Students' impressions of adults' attitudes toward smoking. To discover the students' perceptions of adults' attitudes toward smoking, and the relationship that these impressions had on the students' smoking practices, the respondents were asked: "In general, what do most grown-ups think about the connection between smoking and health"?

As illustrated in Table VI, over 70 percent of the students replied that "adults think smoking is harmful to health". Overall, more students responded in the affirmative in each successive grade level. In the previous discussion regarding the students' impressions of their peers' attitudes, a relatively high number, over 25 percent of the students, indicated that they felt that their friends had
TABLE VI

STUDENTS' IMPRESSION OF ADULTS' ATTITUDES TOWARD SMOKING

(MOST ADULTS THINK SMOKING IS:)

<table>
<thead>
<tr>
<th>GRADE</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>10</td>
<td>11</td>
</tr>
<tr>
<td>% Definitely or Probably Harmful</td>
<td>67.3</td>
<td>72.1</td>
</tr>
<tr>
<td>% Most Have No Opinion</td>
<td>11.5</td>
<td>11.3</td>
</tr>
<tr>
<td>% Definitely or Probably Not Harmful</td>
<td>17.3</td>
<td>15.0</td>
</tr>
<tr>
<td>% No Response</td>
<td>3.9</td>
<td>1.6</td>
</tr>
<tr>
<td></td>
<td>100.0</td>
<td>100.0</td>
</tr>
</tbody>
</table>
no opinion concerning smoking and health. In contrast to this was the finding that only one-tenth of the students stated that they believed most students have no opinion with regard to smoking and health. It appears that adults have either expressed their opinions quite vociferously to adolescents, or the students felt that most adults have an opinion of smoking and health and have projected the attitudes that they felt most adults would express.

Relationship between smoking behavior and impressions of adults' attitudes toward smoking and health. Since adults are in the role of exemplars, whether they be the students' teachers or parents, it was important to determine what relationship exists between the students' smoking practices and their impressions of adults' attitudes regarding smoking. Chi square values were obtained, and as can be seen in Table VII, a level of significance at the .01 level was obtained for both the boys and the girls.

This finding can be interpreted as evidence that the students' smoking behavior was influenced by their impressions of adults' attitudes regarding smoking. Previous researchers, such as Horn (21) and Salber (39), have found that a relationship existed between the smoking practices of parents and their children, and this would correspond with the finding relating to students' smoking status and their impressions of adults' attitudes toward smoking,
TABLE VII
RELATIONSHIP BETWEEN SMOKING BEHAVIOR
AND IMPRESSIONS OF ADULTS' ATTITUDES
"MOST GROWN-UPS THINK SMOKING IS..."

Males

<table>
<thead>
<tr>
<th></th>
<th>Smokers</th>
<th>Nonsmokers</th>
<th>TOTALS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Probably or (E)</td>
<td>564.5</td>
<td>(1149.5)</td>
<td></td>
</tr>
<tr>
<td>Definitely</td>
<td>0</td>
<td>590</td>
<td>1124</td>
</tr>
<tr>
<td>Harmful</td>
<td></td>
<td></td>
<td>1714</td>
</tr>
<tr>
<td>Most have</td>
<td>(92.9)</td>
<td>(189.1)</td>
<td></td>
</tr>
<tr>
<td>No Opinion</td>
<td>95</td>
<td>187</td>
<td>282</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Probably or</td>
<td>(115.6)</td>
<td>(235.4)</td>
<td></td>
</tr>
<tr>
<td>Definitely not</td>
<td>88</td>
<td>263</td>
<td>351</td>
</tr>
<tr>
<td>Harmful</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOTALS</td>
<td>773</td>
<td>1574</td>
<td>2347</td>
</tr>
</tbody>
</table>

Results were significant ($x^2=11.59$, $p<.01$, 2df)

Females

<table>
<thead>
<tr>
<th></th>
<th>Smokers</th>
<th>Nonsmokers</th>
<th>TOTALS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Probably or (E)</td>
<td>404.4</td>
<td>(1094.6)</td>
<td></td>
</tr>
<tr>
<td>Definitely</td>
<td>0</td>
<td>441</td>
<td>1058</td>
</tr>
<tr>
<td>Harmful</td>
<td></td>
<td></td>
<td>1499</td>
</tr>
<tr>
<td>Most have</td>
<td>(56.4)</td>
<td>(152.6)</td>
<td></td>
</tr>
<tr>
<td>No Opinion</td>
<td>54</td>
<td>155</td>
<td>209</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Probably or</td>
<td>(92.2)</td>
<td>(249.8)</td>
<td></td>
</tr>
<tr>
<td>Definitely not</td>
<td>58</td>
<td>284</td>
<td>342</td>
</tr>
<tr>
<td>Harmful</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOTALS</td>
<td>553</td>
<td>1497</td>
<td>2050</td>
</tr>
</tbody>
</table>

Results were significant ($x^2=22.03$, $p<.01$, 2df)
since nonsmoking adults, be they parents or not, convey negative attitudes toward smoking by their actual behavior.

Students' impressions as to their parents' approval of smoking. The students were asked: "how would your mother/father feel about your smoking?", in order to ascertain if the parents' approval or disapproval was a factor in the determination of the students' smoking patterns. Apparently the parents' approval does exist as a factor, since approximately 80 percent of the nonsmoking students answered that their parents would forbid or disapprove of their smoking. Nevertheless, the parents' disapproval does not seem capable of preventing this group of smokers from continuing their habit.

Parental permissiveness may be a factor in the decision to smoke, since approximately one-fifth of the smokers cited their parents' approval of their smoking behavior, while less than 4 percent of the nonsmokers responded that their parents would approve if they began smoking.

As illustrated in Table VII, a large percentage of the parents of the female smokers apparently are not aware of their daughters' smoking status, while only 10 percent of the male smokers' parents do not know that their sons are smokers. This observation can be interpreted as evidence of the difference in social acceptability of smoking between males and females, with smoking being less socially
### TABLE VIII

**"HOW DOES YOUR MOTHER FEEL ABOUT YOUR SMOKING?"**

(SMOKERS)

<table>
<thead>
<tr>
<th>GRADE</th>
<th>Males</th>
<th></th>
<th></th>
<th>Females</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>10</td>
<td>11</td>
<td>12</td>
<td>10</td>
<td>11</td>
<td>12</td>
</tr>
<tr>
<td>Forbids</td>
<td>6.1</td>
<td>5.5</td>
<td>.7</td>
<td>10.5</td>
<td>6.9</td>
<td>6.4</td>
</tr>
<tr>
<td>Disapproves</td>
<td>21.5</td>
<td>35.7</td>
<td>34.5</td>
<td>18.2</td>
<td>22.8</td>
<td>30.2</td>
</tr>
<tr>
<td>Approves</td>
<td>16.9</td>
<td>18.1</td>
<td>25.4</td>
<td>18.2</td>
<td>22.4</td>
<td>17.3</td>
</tr>
<tr>
<td>Indifferent</td>
<td>8.1</td>
<td>2.9</td>
<td>8.7</td>
<td>.7</td>
<td>1.4</td>
<td>4.5</td>
</tr>
<tr>
<td>I don't know</td>
<td>23.8</td>
<td>26.9</td>
<td>18.1</td>
<td>12.6</td>
<td>13.7</td>
<td>16.3</td>
</tr>
<tr>
<td>Don't know if she knows I smoke</td>
<td>8.8</td>
<td>3.8</td>
<td>2.7</td>
<td>11.2</td>
<td>9.6</td>
<td>6.4</td>
</tr>
<tr>
<td>Doesn't know I smoke</td>
<td>11.1</td>
<td>5.0</td>
<td>7.0</td>
<td>26.6</td>
<td>21.0</td>
<td>17.4</td>
</tr>
<tr>
<td>No response</td>
<td>3.7</td>
<td>2.1</td>
<td>2.9</td>
<td>2.0</td>
<td>2.2</td>
<td>1.5</td>
</tr>
</tbody>
</table>

**"HOW DOES YOUR FATHER FEEL ABOUT YOUR SMOKING?"**

<table>
<thead>
<tr>
<th>GRADE</th>
<th>Males</th>
<th></th>
<th></th>
<th>Females</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>10</td>
<td>11</td>
<td>12</td>
<td>10</td>
<td>11</td>
<td>12</td>
</tr>
<tr>
<td>Forbids</td>
<td>8.1</td>
<td>7.1</td>
<td>3.3</td>
<td>10.5</td>
<td>11.4</td>
<td>10.9</td>
</tr>
<tr>
<td>Disapproves</td>
<td>21.1</td>
<td>26.5</td>
<td>24.4</td>
<td>13.3</td>
<td>17.8</td>
<td>21.3</td>
</tr>
<tr>
<td>Approves</td>
<td>16.9</td>
<td>18.9</td>
<td>24.8</td>
<td>11.2</td>
<td>8.7</td>
<td>11.9</td>
</tr>
<tr>
<td>Indifferent</td>
<td>8.1</td>
<td>9.1</td>
<td>11.7</td>
<td>5.6</td>
<td>4.6</td>
<td>5.9</td>
</tr>
<tr>
<td>I don't know</td>
<td>14.9</td>
<td>19.8</td>
<td>16.1</td>
<td>11.2</td>
<td>10.5</td>
<td>15.4</td>
</tr>
<tr>
<td>Don't know if he knows I smoke</td>
<td>9.9</td>
<td>6.7</td>
<td>4.0</td>
<td>9.8</td>
<td>10.1</td>
<td>7.4</td>
</tr>
<tr>
<td>Doesn't know I smoke</td>
<td>16.9</td>
<td>7.6</td>
<td>8.0</td>
<td>31.5</td>
<td>29.7</td>
<td>22.3</td>
</tr>
<tr>
<td>No response</td>
<td>4.1</td>
<td>4.2</td>
<td>7.7</td>
<td>6.9</td>
<td>7.2</td>
<td>4.9</td>
</tr>
</tbody>
</table>
acceptable for girls than it is for boys.

Tables VIII and IX present the percentages of students who responded to the query by smoking, grade level and sex.

Smokers' feelings regarding their habit. To ascertain the sentiments of the smokers regarding their habit, they were asked to choose one of the four following statements that best describes their current feelings toward smoking: "I am satisfied and have no desire to quit", "I wish I had never started but I don't plan to quit now", "I want to quit now, but am not sure that I can", and "I definitely plan to quit".

As is shown in Table X, with the increase in grade level more of the smokers stated that they have no desire to quit. Whereas 38 percent of the tenth grade students expressed no wish to stop smoking, 46 percent of the twelfth grade smokers felt similarly.

Among the smokers who regretted that they had started smoking, though not enough to quit now, the percentage increases slightly with each successive grade level.

Of the smokers who regretted that they had started smoking, though not enough to quit now, the percentage increases slightly with each successive grade level.

Of the smokers who stated that they would like to quit but aren't sure they can, over 21 percent of the males and 17 percent of the females in the sample answered
TABLE IX
"HOW WOULD YOUR MOTHER FEEL IF YOU STARTED SMOKING?"

<table>
<thead>
<tr>
<th>GRADE</th>
<th>Males</th>
<th></th>
<th></th>
<th>Females</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>10</td>
<td>11</td>
<td>12</td>
<td></td>
<td>10</td>
<td>11</td>
</tr>
<tr>
<td>Forbid</td>
<td>34.6</td>
<td>30.4</td>
<td>16.3</td>
<td>41.3</td>
<td>32.9</td>
<td>21.9</td>
</tr>
<tr>
<td>Disapprove</td>
<td>42.9</td>
<td>44.5</td>
<td>55.4</td>
<td>40.9</td>
<td>47.0</td>
<td>57.8</td>
</tr>
<tr>
<td>Approve</td>
<td>1.9</td>
<td>2.2</td>
<td>3.6</td>
<td>1.5</td>
<td>2.5</td>
<td>3.9</td>
</tr>
<tr>
<td>Indifferent</td>
<td>5.7</td>
<td>8.9</td>
<td>14.0</td>
<td>4.7</td>
<td>6.2</td>
<td>9.6</td>
</tr>
<tr>
<td>I don't know</td>
<td>12.9</td>
<td>11.0</td>
<td>8.9</td>
<td>9.4</td>
<td>9.1</td>
<td>5.9</td>
</tr>
<tr>
<td>No response</td>
<td>2.0</td>
<td>3.0</td>
<td>1.8</td>
<td>2.2</td>
<td>2.3</td>
<td>2.9</td>
</tr>
</tbody>
</table>

"HOW WOULD YOUR FATHER FEEL IF YOU STARTED SMOKING?"

<table>
<thead>
<tr>
<th>GRADE</th>
<th>Males</th>
<th></th>
<th></th>
<th>Females</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>10</td>
<td>11</td>
<td>12</td>
<td></td>
<td>10</td>
<td>11</td>
</tr>
<tr>
<td>Forbid</td>
<td>35.4</td>
<td>28.8</td>
<td>16.7</td>
<td>44.2</td>
<td>36.7</td>
<td>25.8</td>
</tr>
<tr>
<td>Disapprove</td>
<td>35.7</td>
<td>41.2</td>
<td>45.8</td>
<td>33.7</td>
<td>36.3</td>
<td>49.4</td>
</tr>
<tr>
<td>Approve</td>
<td>2.7</td>
<td>3.9</td>
<td>4.8</td>
<td>1.3</td>
<td>2.9</td>
<td>3.1</td>
</tr>
<tr>
<td>Indifferent</td>
<td>8.6</td>
<td>10.2</td>
<td>19.7</td>
<td>4.4</td>
<td>7.2</td>
<td>9.6</td>
</tr>
<tr>
<td>I don't know</td>
<td>14.1</td>
<td>11.6</td>
<td>9.9</td>
<td>12.3</td>
<td>13.6</td>
<td>9.2</td>
</tr>
<tr>
<td>No response</td>
<td>3.5</td>
<td>4.3</td>
<td>3.1</td>
<td>4.1</td>
<td>3.3</td>
<td>2.9</td>
</tr>
</tbody>
</table>
TABLE X

CIGARETTE SMOKERS CURRENT FEELINGS TOWARD THEIR HABIT

<table>
<thead>
<tr>
<th>Grade</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>10</td>
<td>11</td>
</tr>
<tr>
<td>% No Wish to Quit</td>
<td>36.0</td>
<td>41.2</td>
</tr>
<tr>
<td>% Wish They Had Never Started to Smoke, but Have No Desire to Quit</td>
<td>14.2</td>
<td>11.8</td>
</tr>
<tr>
<td>% Would Like to Quit, but Not Sure They Can</td>
<td>20.7</td>
<td>26.5</td>
</tr>
<tr>
<td>% Definitely Plan to Quit</td>
<td>26.1</td>
<td>16.1</td>
</tr>
<tr>
<td>% No Response</td>
<td>3.0</td>
<td>4.4</td>
</tr>
<tr>
<td>% No Response</td>
<td>100.0</td>
<td>100.0</td>
</tr>
</tbody>
</table>
in this manner.

The percentage of those who stated that they definitely planned to quit smoking decreased with the increase in grade level, dropping from 26.1 percent of the tenth grade males and 24.5 percent of the tenth grade females to 17.7 percent of the male and 20.8 percent of the female seniors.

Overall the females showed less desire to stop smoking than the male students, as well as showing less regret about having begun the cigarette habit.

Concern regarding the harmful effects of smoking.
The smokers were also questioned about the possible negative effects of smoking on their health. The respondents were asked whether they were: "not at all concerned", "slightly concerned", "fairly concerned", or "very concerned".

Reference to Figure 18 shows that over one-half of the smokers replied that they were "fairly" or "very concerned" with the possible effects of smoking on their health. Unfortunately their concern is not substantial cause for quitting immediately. This concern also decreases with the increase in grade level, going from 58 percent among the senior smokers. It may be that as the older smokers have been smoking over a longer period of time they repress feelings of concern over their health to avoid dissonance between their feelings and their actual
Figure 18

Are You In Any Way Concerned About The Possible Effects
Of Cigarette Smoking And Your Health
(Percentage of Current Smokers That Are Fairly or Very Concerned)
behavior.

There existed a difference between the sexes, with the females at each grade level expressing more concern over the effects of cigarettes on their health than the respective males.

**Psychosocial climate and smoking behavior.** To further investigate the smokers' behavior, they were asked to respond to questions concerning when they smoked. Tables XI and XII present the data regarding mood and companions that initiate smoking behavior.

Approximately one-fifth of the male smokers and one-fourth of the female smokers answered that they smoked mainly when with persons their own age, as contrasted to the less than 5 percent of the respondents who stated that they smoked mainly when with persons older than themselves.

Over two-thirds of the males and one-half of the females replied that there was no difference as to when they smoked, whether alone, with their peers or with adults, that smoking was just as likely at any of these times.

When questioned regarding the psychological surroundings of their smoking behavior, less than 20 percent of the males and 10 percent of the females answered that they smoked "mainly when things are fine; I feel good, happy, or am having a good time".

In contrast, when asked if they used cigarettes when things were bad, when they felt tense or upset or angry
### TABLE XI

**SOCIAL CLIMATE OF SMOKING**

"*WHEN DO YOU MAINLY SMOKE CIGARETTES?*"

<table>
<thead>
<tr>
<th></th>
<th>Males</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Grade</td>
<td>10</td>
<td>11</td>
</tr>
<tr>
<td>%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mainly by myself</td>
<td>4.9</td>
<td>5.5</td>
<td>4.0</td>
</tr>
<tr>
<td>Mainly with people my own age</td>
<td>23.5</td>
<td>21.4</td>
<td>15.1</td>
</tr>
<tr>
<td>Mainly with older people</td>
<td>1.5</td>
<td>1.3</td>
<td>0.3</td>
</tr>
<tr>
<td>No difference, just as likely at any of these times</td>
<td>68.9</td>
<td>70.6</td>
<td>78.6</td>
</tr>
<tr>
<td>No response</td>
<td>1.3</td>
<td>1.2</td>
<td>2.0</td>
</tr>
</tbody>
</table>

|                  | Females |          |          |
|                  | Grade   | 10       | 11       | 12       |
| %                |         |          |          |          |
| Mainly by myself | 12.6   | 13.7     | 8.9      |
| Mainly with people my own age | 30.1   | 24.7     | 26.7     |
| Mainly with older people | 4.2   | 0.9      | 1.9      |
| No difference, just as likely at any of these times | 51.1   | 59.8     | 60.4     |
| No response     | 2.0    | .9       | 2.1      |
TABLE XII

PSYCHOLOGICAL CLIMATE OF SMOKING
"WHEN DO YOU MAINLY SMOKE CIGARETTES?"

<table>
<thead>
<tr>
<th></th>
<th>Males</th>
<th>Females</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>GRADE</strong></td>
<td>10</td>
<td>11</td>
</tr>
<tr>
<td><strong>Males</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mainly when things are fine; I feel good, happy or am having a good time</td>
<td>18.0</td>
<td>17.7</td>
</tr>
<tr>
<td>Mainly when things are bad; I feel tense, upset or angry about something</td>
<td>13.0</td>
<td>8.4</td>
</tr>
<tr>
<td>No difference; I smoke about the same either time</td>
<td>67.4</td>
<td>72.3</td>
</tr>
<tr>
<td>No response</td>
<td>1.6</td>
<td>1.6</td>
</tr>
<tr>
<td></td>
<td>Smokers</td>
<td>Nonsmokers</td>
</tr>
<tr>
<td>-------</td>
<td>---------</td>
<td>------------</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>10TH GRADE</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Advanced (E)</td>
<td>28.9</td>
<td>(64)</td>
</tr>
<tr>
<td>0</td>
<td>3</td>
<td>90</td>
</tr>
<tr>
<td>Average</td>
<td>168</td>
<td>(371)</td>
</tr>
<tr>
<td>164</td>
<td>375</td>
<td>539</td>
</tr>
<tr>
<td>Slow</td>
<td>39</td>
<td>(86)</td>
</tr>
<tr>
<td>69</td>
<td>56</td>
<td>125</td>
</tr>
<tr>
<td><strong>TOTALS</strong></td>
<td>236</td>
<td>521</td>
</tr>
<tr>
<td>Results were significant (x²=67.55, p .01, 2df)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Smokers</th>
<th>Nonsmokers</th>
<th>TOTALS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>11TH GRADE</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Advanced (E)</td>
<td>29.7</td>
<td>(58.2)</td>
<td>88</td>
</tr>
<tr>
<td>10</td>
<td>78</td>
<td>88</td>
<td></td>
</tr>
<tr>
<td>Average</td>
<td>144.1</td>
<td>(281.9)</td>
<td>426</td>
</tr>
<tr>
<td>146</td>
<td>280</td>
<td>426</td>
<td></td>
</tr>
<tr>
<td>Slow</td>
<td>36.2</td>
<td>(70.9)</td>
<td>107</td>
</tr>
<tr>
<td>54</td>
<td>53</td>
<td>107</td>
<td></td>
</tr>
<tr>
<td><strong>TOTALS</strong></td>
<td>210</td>
<td>411</td>
<td>621</td>
</tr>
<tr>
<td>Results were significant (x²=33.11, p .01, 2df)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
TABLE XIII
(Continued)

### Males

#### 12TH GRADE

<table>
<thead>
<tr>
<th></th>
<th>Smokers</th>
<th>Nonsmokers</th>
<th>TOTALS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Advanced</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(E) (43.1)</td>
<td></td>
<td>(81.9)</td>
<td>125</td>
</tr>
<tr>
<td>0</td>
<td>12</td>
<td>113</td>
<td></td>
</tr>
<tr>
<td><strong>Average</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(183.4)</td>
<td></td>
<td>(348.6)</td>
<td>532</td>
</tr>
<tr>
<td>181</td>
<td>351</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Slow</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(46.5)</td>
<td></td>
<td>(88.5)</td>
<td>135</td>
</tr>
<tr>
<td>80</td>
<td>55</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>TOTALS</strong></td>
<td>273</td>
<td>519</td>
<td>792</td>
</tr>
</tbody>
</table>

Results were significant
($\chi^2=71.11$, .01, 2df)

#### 10TH GRADE

<table>
<thead>
<tr>
<th></th>
<th>Smokers</th>
<th>Nonsmokers</th>
<th>TOTALS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Advanced</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(E) (28.0)</td>
<td></td>
<td>(108.0)</td>
<td>136</td>
</tr>
<tr>
<td>0</td>
<td>10</td>
<td>126</td>
<td></td>
</tr>
<tr>
<td><strong>Average</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(95.3)</td>
<td></td>
<td>(366.7)</td>
<td>462</td>
</tr>
<tr>
<td>106</td>
<td>356</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Slow</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(8.7)</td>
<td></td>
<td>(33.3)</td>
<td>42</td>
</tr>
<tr>
<td>16</td>
<td>26</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>TOTALS</strong></td>
<td>132</td>
<td>508</td>
<td>640</td>
</tr>
</tbody>
</table>

Results were significant
($\chi^2=23.81$, p .01, 2df)
TABLE XIII
(Continued)

Females

11TH GRADE

<table>
<thead>
<tr>
<th>Grade</th>
<th>Smokers (E)</th>
<th>Smokers (O)</th>
<th>Nonsmokers (E)</th>
<th>Nonsmokers (O)</th>
<th>TOTALS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advanced</td>
<td>(38.6)</td>
<td>24</td>
<td>(88.4)</td>
<td>103</td>
<td>127</td>
</tr>
<tr>
<td>Average</td>
<td>(129.4)</td>
<td>133</td>
<td>(296.6)</td>
<td>293</td>
<td>426</td>
</tr>
<tr>
<td>Slow</td>
<td>(21.0)</td>
<td>32</td>
<td>(48.0)</td>
<td>37</td>
<td>69</td>
</tr>
<tr>
<td>TOTALS</td>
<td>189</td>
<td>433</td>
<td>622</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Results were significant</td>
<td>(x²=16.29, p .01, 2df)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

12TH GRADE

<table>
<thead>
<tr>
<th>Grade</th>
<th>Smokers (E)</th>
<th>Smokers (O)</th>
<th>Nonsmokers (E)</th>
<th>Nonsmokers (O)</th>
<th>TOTALS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advanced</td>
<td>(42.2)</td>
<td>18</td>
<td>(105.8)</td>
<td>130</td>
<td>148</td>
</tr>
<tr>
<td>Average</td>
<td>(118.2)</td>
<td>132</td>
<td>(296.8)</td>
<td>283</td>
<td>415</td>
</tr>
<tr>
<td>Slow</td>
<td>(23.6)</td>
<td>34</td>
<td>(59.4)</td>
<td>49</td>
<td>83</td>
</tr>
<tr>
<td>TOTALS</td>
<td>184</td>
<td>462</td>
<td>646</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Results were significant</td>
<td>(x²=28.08, p .01, df)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
about something, less than 10 percent of the males but over 25 percent of the females cited this to be the case. It appears that the females have a greater tendency to use cigarettes in an uncomfortable situation.

The majority, more than two-thirds of the smokers, stated that they used cigarettes in either of these situations. This percentage of combination cause smokers increases with each successive grade level, reaching 76.3 percent among the male seniors and 69.8 percent among the female seniors.

ADDITIONAL FACTORS INFLUENCING SMOKING BEHAVIOR

Because of previous research findings from studies such as those of Salber and associates (38,39), that indicated the factors of intelligence and socioeconomic class as influencing adolescents' smoking behavior, these factors and others were included for investigation in this study.

Smoking and mental level. The mental level of the students was determined by their academic placement in classes designated slow, average, or advanced at the time of the questionnaire. The term "mental level", as used here, does not presume to be interpreted as intelligence quotient. However, it can be assumed that the students with high I.Q.'s and/or high achievement are those found in the advanced classes, with the converse being true of the students in the slow classes.
To establish if a significant difference existed between the mental level of the smokers and nonsmokers, chi-square tests were performed. As is indicated in Table XIII, there existed a difference which is significant at the .01 level. This finding suggested that there is a significant relationship between scholastic achievement and nonsmoking behavior, with the students in the advanced classes having a lower incidence of smoking than those students in the average classes, who in turn, have a lower incidence of smoking than the students in the slow classes.

An interplay of several factors may account for this trend. It may be that the students in the advanced classes have more, and perhaps, better information pertaining to smoking and health, i.e., enriched science classes, than do the students in the average or slow classes. In addition, the students in the advanced classes may have developed the ability to assimilate the information, whereas the other students may feel that the health hazards do not pertain to them and do not accept the information. Previous research (21,38) has also indicated that the less scholastically successful tend to smoke more due to the frustration from failure to maintain high scholastic standards.

Educational aspirations and smoking behavior. To determine and compare the educational aims of the smoking and nonsmoking students, the question: "how far do you plan to
go in school?" was asked.

Figure 19 graphically presents the percentage of students with a high educational level, i.e., those students who stated that they planned to attend college.

It is evident that the nonsmokers have a higher level of educational aspiration than the smokers. While over 75 percent of the male nonsmokers and 65 percent of the female nonsmokers indicated they planned to go on to college, only 50 percent of the male and 35 percent of the female smokers stated their goal as college.

Males at all grade levels had higher percentages than the respective females, but the female nonsmokers' aspirational levels were greater than those of the male smokers at each grade level.

Socioeconomic status and smoking behavior. In order to ascertain the effect of socioeconomic status on smoking behavior, the sample population from three of the ten schools in the study was surveyed. One of the schools represented an upper-middle to upper-class area, one a middle-class area, and the last one draws students from a primarily lower-middle to lower-class area. The school from the lower socioeconomic area has a high proportion of minority students the majority being Mexican-American and Black, whereas the population of the other schools is predominantly Caucasian.

As is illustrated in Table XIV, there was slight
Figure 19

How Far Do You Plan To Go In School
(Percentage That Answered They Planned To Go To College)
TABLE XIV

SOCIOECONOMIC STATUS AND SMOKING BEHAVIOR

Males

<table>
<thead>
<tr>
<th>Grade</th>
<th>Low Socioeconomic School</th>
<th>Middle Socioeconomic School</th>
<th>High Socioeconomic School</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Percentage of Smokers</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Grade 10</td>
<td>11</td>
<td>12</td>
</tr>
<tr>
<td>Low Socioeconomic School</td>
<td>21.4</td>
<td>44.4</td>
<td>34.2</td>
</tr>
<tr>
<td>Middle Socioeconomic School</td>
<td>34.0</td>
<td>43.3</td>
<td>22.3</td>
</tr>
<tr>
<td>High Socioeconomic School</td>
<td>47.6</td>
<td>21.9</td>
<td>34.7</td>
</tr>
</tbody>
</table>

Females

<table>
<thead>
<tr>
<th>Grade</th>
<th>Low Socioeconomic School</th>
<th>Middle Socioeconomic School</th>
<th>High Socioeconomic School</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Percentage of Smokers</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Grade 10</td>
<td>11</td>
<td>12</td>
</tr>
<tr>
<td>Low Socioeconomic School</td>
<td>27.8</td>
<td>26.2</td>
<td>27.7</td>
</tr>
<tr>
<td>Middle Socioeconomic School</td>
<td>29.2</td>
<td>26.8</td>
<td>29.6</td>
</tr>
<tr>
<td>High Socioeconomic School</td>
<td>26.5</td>
<td>37.8</td>
<td>37.9</td>
</tr>
</tbody>
</table>
difference in the incidence of smoking among the males in the school populations, with approximately one-third of the male students being smokers. Among the females there is relatively little difference between the students in the lower and middle socioeconomic areas, but the girls from the upper-class area had the highest incidence of smoking, being approximately six percentage points above the girls in the other areas at 34.1 percent.

This data seemed to imply that smoking is a very democratic practice, which is limited neither to the very rich nor the very poor. While the incidence of smoking is quite similar from school to school, it may be that the students smoke for different reasons. For the students in the lower socioeconomic areas, smoking may serve as a release from frustration or boredom, whereas the students from the more affluent areas may use cigarettes to gain peer approval or adult status.

**SUMMARY**

The data presented in this chapter revealed that the majority of the senior high school students were non-smokers, although most had experimented with cigarettes. Of the students who classified themselves as smokers, the number of males exceeded that of the females. It was also determined that the percentage of smokers increased with each successive grade level. It was found that a significant number of the smokers were smoking by age twelve and
that the majority had begun by age fourteen. As to future
smoking behavior, relatively few of the current nonsmokers
predicted this, whereas two-thirds of the smokers indicated
that they would probably be smokers in five years.

The students had a high level of knowledge regard­
ing the harmful effects of smoking, especially the rela-
tionship between smoking and lung cancer. A level of sig­
nificance was found to exist between the students' health
knowledge and their smoking behavior.

From the attitude questions it was demonstrated
that the students' attitudes toward smoking corresponded
with their smoking practices. Another factor that was
positively related to the students' smoking behavior was
their mental level, with the most advanced students having
the lowest incidence of smoking. High educational aspira-
tions were also related to a low incidence of smoking. The
students' socioeconomic class was not found to be a factor
in the determination of smoking status.

Chapter V presents a more detailed review of the
findings of the study, conclusions derived from the find-
ings, and recommendations suggested for further work or
study in this area.
CHAPTER V
SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

This chapter presents a summary of the thesis and its findings, the conclusions based on the findings, and the investigator's recommendations derived from the study.

SUMMARY

The purpose of this study was (1) to determine the incidence of smoking behavior among senior high school students in a selected population, (2) to establish the students' level of knowledge regarding the harmful effects of cigarette smoking, (3) to investigate the attitudes toward smoking that were held by the students, (4) to determine if a relationship existed, and to what extent, between the students' smoking practices and their health knowledge and between their behavior and their expressed attitudes concerning smoking, (5) to discover if other factors, such as mental level, socioeconomic status, or level of educational aspiration, contribute to the students' smoking practices, and (6) to evaluate the study's findings with the aim of ascertaining possible implications for the future educational programs that would be successful in reducing the extent of cigarette smoking among adolescents.

A questionnaire survey was the method used to collect the data. The questionnaire was administered to

Because the public health problem caused by cigarette smoking is largely preventable, action toward the resolution of this problem must be taken. Emphasis must be put on the adolescent years, the developmental period of a person's life, when the patterns of behavior are established. A survey of the literature was made to provide an understanding of the problem and to gain insights into the previous work that has been done and the educational proposals that were developed from these studies.

After deleting 31 incomplete questionnaires, the data from the remaining 4,504 were processed by computer to obtain frequency distributions and their accompanying percentages. Chi square tests were performed to determine the significance of the relationships between the students' smoking behavior and other variables. The results of the study were organized under four major headings:

1. The smoking status of the students.

2. The students' level of knowledge regarding the hazardous effects of smoking and the relationship between this knowledge and the students' smoking behavior.

3. The students' expressed attitudes toward smoking and the relationship between these attitudes and the students' smoking status.
4. The additional factors, such as mental level, socioeconomic status, and educational aspirations, as they relate to the students' smoking patterns.

**Current Smoking Status**

Of the total survey population, approximately thirty-three percent of the males and twenty-seven percent of the females were classified as smokers. As the grade level increased, the percentage of smokers also increased, rising from an average of twenty-six percent in the tenth grade to an average of thirty-two percent in the twelfth grade. At each grade level the number of male smokers exceed that of the female smokers.

A substantial percentage of the smokers, 32.4 of the males and 18.8 of the females, indicated that they had begun smoking by the age of twelve. Only four percent of the smokers stated that they began smoking after they reached the age of sixteen.

The majority of the students considered themselves to be nonsmokers, although many of these students have tried smoking but did not continue to practice. The smoking experimentation increased with each successive grade level, so that by the twelfth grade only eight percent of the students responded that they had never tried cigarettes.
Predicted Future Smoking Behavior

Because predictions of future smoking behavior may serve to illustrate both future smoking habits and present attitudinal feelings toward smoking, an attempt was made to obtain the students' responses in this area.

When questioned regarding their smoking practices five years hence, the current smokers are more likely to express the intent for future smoking than are the current nonsmoking students. Whereas an average of sixty-eight percent of the current smokers predict future smoking, less than three percent of the current nonsmokers indicated intent for future smoking. The percentage of students who stated that they were undecided with regard to future smoking was less than three percent.

Questions designed to evaluate the students' health knowledge were included in the study. The findings from this area are presented here.

Knowledge Regarding Smoking and Health

Students had an overall high level of knowledge concerning the harmful effects of smoking. Over eighty-five percent of the students at each grade level correctly identified the link between smoking and lung cancer, and over seventy-five percent of the respondents at each grade level were aware of the relationship between cigarette smoking and respiratory diseases, such as emphysema. The
relationship between smoking and heart disease was not as well understood, with approximately forty percent of the students correctly answering this question.

In most instances the level of health knowledge increased with the increase in grade level, and the females had a higher percentage of correct replies than did the males in the corresponding grades.

Investigation was made into the relationship between the students' health knowledge and their smoking behavior, since many educational programs designed to reduce the amount of smoking among students are based on the premise that knowledge is a major precursor of behavior. The results from the research findings are reported here.

**Relationship Between Students' Smoking Involvement and Their Health Knowledge**

By applying chi square tests to the data it was found that a high level of significance existed between the students' smoking behavior and their health knowledge. The nonsmoking students had the highest percentage of correct replies, whereas the smoking students had the lowest. It could not be determined from the available data if the difference in knowledge between the smokers and the nonsmokers was due to an actual lack of information among the smokers, or whether the difference was due to the smokers rejecting the information because it
was dissonant with their smoking behavior.

The area of the survey which dealt with the students' attitudes toward smoking was most informative. Findings from these data indicated the following.

Student's Attitudes Toward Smoking

In general, the students who smoked consistently expressed more favorable attitudes toward smoking than did the nonsmoking students.

When questioned regarding the legal prohibition of smoking by minors, nonsmokers expressed the opinion that the law regarding smoking should be strictly enforced, whereas the smokers were not in favor of this proposal. Nevertheless, a large percentage of the smokers, approximately one-fourth, agreed that the laws prohibiting the sale of cigarettes to minors should be strictly enforced.

The smoking students also considered cigarettes relaxing, pleasurable, helpful when nervous or embarrassed, and enjoyable to use when having a good time, while the nonsmoking students disagreed with these statements.

When questioned regarding their feelings toward others smoking, it was found that a large percentage of both the smokers and the nonsmokers have encouraged others to not start smoking, as well as urging others to cut down or quit smoking. Asked if they would want their own children to smoke, over one half of the smokers and three-fourths of the nonsmokers replied that they hoped
that their children would not take up smoking.

The smokers' feelings toward their habit were examined and it was found that less than fifty percent of the smokers stated that they had no desire to stop smoking. Approximately twenty percent of the smoking students responded that they definitely planned to quit. It was also found that over one-half of the smokers were concerned as to the possible deleterious effects of smoking on their health.

As to when and with whom they smoke, the majority of smokers replied that they smoke just as frequently with their peers as they do with older persons and that they smoke both when upset or angry and when happy.

Relationship Between Students' Smoking Status and Their Attitudes Toward Smoking

As previously noted with regard to their knowledge, the students' smoking behavior also corresponded with their expressed attitudes toward smoking, with the smokers expressing favorable opinions and the nonsmokers expressing unfavorable attitudes.

When examining the influence of their peers on the students' smoking behavior, it was found that the smokers related the feeling that their peers were indifferent or unconvinced of the harmful effects of smoking, whereas the nonsmokers believed that their peers were convinced of the harmful effects of cigarette smoking.
When a statistical test was performed on this date, the difference between the smokers and the nonsmokers was significant at the .01 level. Similar results were obtained when comparing the differences between the smokers and nonsmokers with regard to their impressions of adults' feeling toward smoking.

To discern if the students' mental level, socioeconomic class, or educational aspirations played a role in the determination of their smoking practices, these factors were analyzed with regard to the students smoking behavior. The following results were obtained.

Additional Factors Relating to Smoking Behavior

The students' mental level was found to be a significant determinant of smoking behavior, with the students in the advanced classes having the lowest incidence of smoking behavior, and the students in the slow classes having the highest degree of smoking involvement. The students' mental level is composed of many factors, including their intelligence and their motivation, and it should not be interpreted as a measure of intelligence. Because of the various factors comprising mental level, it is not possible to cite which is the most responsible for influencing smoking behavior.

To determine the impact of socioeconomic class on the students' smoking behavior, comparisons of the incidence of smoking were made among three schools, one
representing a upper-middle to upper-class area, one representing a middle-class area, and one composed of students from a lower-class area. The latter school also included many students of minority background, mainly Black and Mexican-American. Relatively no difference was found to exist among the school populations with regard to smoking involvement. This finding suggests that in this particular geographic area the socioeconomic level of the students does not influence their smoking practices.

With regard to smoking behavior and level of educational aspiration, it was found that the nonsmokers had greater aspirations than the respective nonsmokers. While over seventy-five percent of the male nonsmokers and sixty-five percent of the female nonsmokers stated that they planned to attend college, only fifty percent of the male smokers and thirty-five percent of the female smokers indicated college as their educational goal.

CONCLUSIONS

The following conclusions were derived from the analysis of the questionnaire study:

1. Of the total students population, thirty-three percent of the males and twenty-seven percent of the females considered themselves to be cigarette smokers.

2. While the majority of the students were non-smokers, approximately ninety percent of these current nonsmokers have experimented with cigarettes.
3. At each grade level, the percentage of male smokers exceeded the percentage of female smokers.

4. The percentage of smokers increased with each successive grade level, with thirty-two percent of the tenth grade boys reporting smoking and thirty-five percent of the senior boys indicating similar practices. A similar increase occurred among the girls, the percentage of smokers increasing from twenty-one percent in the tenth grade to twenty-nine percent in the twelfth grade.

5. Among the smokers, one-fourth were smoking by the age of twelve, and by the age of fourteen, sixty-seven percent of the males and fifty-eight percent of the females had begun smoking. Less than four percent of the smokers started after the age of sixteen.

6. Cigarette consumption increased with each successive grade level among the male smokers, but the heaviest use of cigarettes by the females, over three packages a week, is found among the tenth grade girls.

7. Over two-thirds of the current smokers predict future smoking behavior, while only three percent of the current nonsmokers forecast future smoking involvement.

8. Nearly one-half of the students correctly identified the relationship between cigarette smoking and heart disease.

9. Approximately three-fourths of the students recognized the deleterious effects of smoking on the
respiratory system.

10. Over eighty-five percent of the students identified the causal relationship between smoking and lung cancer.

11. Female students had a higher frequency of correct replies regarding health knowledge than did the corresponding males.

12. In general, the students level of health knowledge increased with each successive grade level.

13. Non-smoking students had a higher degree of knowledge regarding the harmful effects of smoking than did the smoking students in the same grade.

14. Significant chi square values were obtained to validate the conclusion that the students health knowledge is a factor influencing their non-smoking behavior.

15. In general, the smokers tended to express more favorable attitudes toward smoking than did the non-smokers.

16. Smoking students agreed with the statements that characterized smoking as a pleasurable, relaxing activity, helpful when nervous or embarrassed, nice to do when having a good time, or when angry or upset about something. Non-smoking students disagreed with these statements and considered smoking to be a dirty habit.

17. Over one-half of the non-smokers and one-
fourth of the smokers indicated that they favored strict enforcement of the laws prohibiting the sale of cigarettes to persons under the age of eighteen.

18. The students' smoking behavior was influenced by their impressions of their peers' attitudes toward smoking, with the smoking students replying that they felt their peers were indifferent or unconvinced of the hazards of cigarette smoking and the nonsmokers reporting that their peers' felt smoking was harmful to one's health.

19. The students' smoking practices were also influenced by their impressions of adults' attitudes concerning the deleterious effects of smoking.

20. Parental approval of smoking may also exist as a factor contributing to the students' smoking behavior, since over twenty percent of the smokers indicated that their parents approved of their smoking. Also, while approximately eighty percent of the nonsmokers replied that their parents would forbid or disapprove of their smoking, only forty percent of the smokers answered accordingly.

21. A significant relationship was found to exist between the students mental level and their smoking behavior, with the students in the advanced group having the lowest incidence of smoking and the slow students the highest.

22. The socioeconomic level of the students was not found to be a factor in determining their smoking
involvement.

23. A higher level of educational aspiration was found among the nonsmokers than the smokers. While over seventy-five percent of the male nonsmokers and sixty-five percent of the female nonsmokers intend to attend college, less than fifty percent of the male and thirty-five percent of the female smokers stated college as their educational goal.

RECOMMENDATIONS

The results from this study indicate that a substantial number of students begin smoking at an increasingly early age. In addition, the increase in the number of smokers as the students advance in age creates a situation which presents an immediate challenge to persons who are concerned with the health of youth.

The following recommendations were based on the finding of this study and the review of the literature relevant to the smoking practices of adolescents.

1. Because children begin to smoke at a very early age, instruction regarding the physiological, psychological, and sociological aspects of smoking must begin in the elementary school. Education of the students prior to their involvement with cigarettes would seem more productive than trying to induce the students to stop smoking after the smoking habit has been established.
2. Since a significant relationship was found to exist between the students' health knowledge and their smoking behavior, efforts must be made to inform every student as to the harmful effects of cigarette smoking. However, since it could not be determined if the smokers' lack of health knowledge was due to an actual lack of information, or to their denial of the knowledge which was in contradiction with their behavior, attempts must be made to reach these smoking students in different ways, using methods that would not produce a level of anxiety that would cause them to block out the information.

3. The medical evidence against cigarette smoking, stressing both the immediate and long-term effects, should be provided as the background for the discussion of the other aspects of the smoking problem. The smoking issue should either be examined in classes other than those dealing directly with health, or the health education classes should incorporate other aspects of the issue. Examples of different approaches that might prove effective could include the students' analysis of the psychological appeals used in cigarette advertising, or a discussion of the motivations that cause students to start smoking, with the students offering suggestions for alternatives to smoking. The historical background of smoking may provide an interesting history lesson, ending, perhaps, with an overview of the current political and
social problems of smoking.

4. Based on the review of the literature and the author's personal experiences it is felt that emphasis must be placed on the students' involvement in smoking programs, rather than the traditional lecture method, where the students are passive nonparticipants. Involvement in the educational process could produce nonsmoking self-images, which would be dissonant with smoking. Such participation might include student-produced films, posters for art displays, and articles or cartoons for school newspapers, as well as the more conventional activities of class and panel discussions, group or individual reports, and surveys of attitudinal opinions relating to smoking.

5. Efforts should be made to integrate smoking into the current topics of concern to the students, such as ecology and individual rights. When mentioned, the students can clearly see the irony of being against pollution, while actively contributing to air pollution by smoking. The topic of individual rights also involves an interesting area for discussion. Specifically, does the nonsmoker have the right to breathe fresh, clean air or must he be subject to the smokers who wishes to smoke, thus creating a substantial amount of noxious cigarette smoke?

6. Peer group pressure is a most potent form of
persuasion and can be used advantageously in smoking programs. Since a majority of the students expressed negative opinions toward smoking, attempts should be made to have these attitudes openly expressed. Allowing students to characterize smoking as ugly, stupid, unglamorous, unmasculine, unfeminine, and a dirty, smelly habit, may generate more smokers to reconsider their behavior than an exhaustive recounting of the hazardous health effects of smoking. This open-expression technique may also reinforce the nonsmoking students, who are perhaps thinking of taking up the habit.

7. Because one-third of the current smokers predicted future nonsmoking behavior, an approach using a "Do It Now" theme may provide some success. Recognition could be given to students who have quit and ex-smoking may become a symbol of status, much as it currently is among adults. Nonsmoking students could also be encouraged to participate by stressing their responsibility for their friends' welfare. If they consider themselves friends, they should not reinforce their smoking friends by taking an occasional cigarette or by ignoring their friends' smoking. Instead, they can tactfully express their concern and the hope that their smoking friends will discontinue smoking.
BIBLIOGRAPHY


11. Crail, John W. "Big Count: Stark County School


CITY HIGH SCHOOL QUESTIONNAIRE

This is a survey being conducted by the U.S. Public Health Service. The answers are desired for research and statistical purposes. What we are trying to do is to find out how people feel about a number of things, and we would like your help in this matter. Your teachers or other people in your school will not see the answers you have written. You don't have to answer any question if you don't really want to; but frankly, we would like you to answer all the questions that apply in your case and when you do answer a question - please be as truthful as possible.

1. What is your age in years and months? (Specify)
   ____ years and ____ months

2. Are you: (check one) (1) ____ Male; or (2) ____ Female

3. What is your school year? (check one)
   (1) ____ 9th (freshman) (3) ____ 11th (junior)
   (2) ____ 10th (sophomore) (4) ____ 12th (senior)

4. How far do you plan to go in school? (check one)
   (1) ____ I do not plan to finish high school
   (2) ____ I plan to finish high school
   (3) ____ I plan to go to college
   (4) ____ I plan to attend more school, but not college
           (E.G. vocational, trade)
5. What is the highest level of schooling that your mother completed? (check one)

(1) ___ Some Grammar School
(2) ___ Finished Grammar School
(3) ___ Some High School
(4) ___ Finished High School
(5) ___ Some College
(6) ___ Finished College

6. What is the highest level of schooling that your father completed? (check one)

(1) ___ Some Grammar School
(2) ___ Finished Grammar School
(3) ___ Some High School
(4) ___ Finished High School
(5) ___ Some College
(6) ___ Finished College

7. Check the ONE statement (and only one) that best describes your cigarette smoking at present: (check one)

(1) ___ I usually smoke cigarettes just about every day
(2) ___ I now smoke cigarettes once in a while but not every day
(3) ___ I used to smoke cigarettes just about every day, but I don't smoke them now.
(4) ___ I have just tried cigarettes a few times to see what they were like.
(5) ___ I have never smoked cigarettes at all.

IF YOU CHECKED: 7 (1) or 7 (2); Skip to Question 14, Page 4, otherwise continue on to Question 8

BEFORE TURNING THE PAGE;

Make sure you have answered each question
PART II

ANSWER THE FOLLOWING QUESTIONS ONLY IF YOU CHECKED (3), (4), OR (5) IN Q. 7 PAGE 2

8. Do you think you will either start or smoke cigarettes again later on?
   (1) ____ Definitely yes
   (2) ____ Probably yes
   (3) ____ Probably not (skip to Q. 10)
   (4) ____ Definitely not (skip to Q. 10)

9. (If "definitely yes" or "probably yes")
   Do you think you will be a cigarette smoker five years from now? (check one)
   (1) ____ Definitely; (2) ____ Probably;
   (3) ____ Probably not; (4) ____ Definitely not

10. If you were to begin to smoke now, is there anyone you know who might be upset about it?
    (1) ____ Yes; (2) ____ No; If no, skip to Q. 12

11. If yes to Q. 10, which of the following people might be upset about it?
    (1) ____ Your mother (6) ____ Your teacher(s)
    (2) ____ Your father (7) ____ Your doctor
    (3) ____ Both of your parents (8) ____ Your minister, priest or rabbi
    (4) ____ Your best girl friend (9) ____ Other; Write
    (5) ____ Your best boy friend

12. How would your mother feel if you started smoking?
    (check only one answer)
    (1) ____ Forbid it (2) ____ Disapprove
    (3) ____ Approve (4) ____ Indifferent (5) ____ I don't know
13. How would your father feel if you started smoking? (check only one answer)

(1) ____ Forbid it  (2) ____ Disapprove
(3) ____ Approve    (4) ____ Indifferent
(5) ____ I don't know

NOW, PLEASE SKIP TO QUESTION # 28, PAGE 7, AND FINISH ANSWERING THE QUESTIONNAIRE

BEFORE TURNING THE PAGE: Make sure you have answered each question.
PART III  ANSWER THE FOLLOWING QUESTIONS ONLY IF YOU ARE A CURRENT CIGARETTE SMOKER, THAT IS, YOU CHECKED (1) OR (2) IN Q. 7 PAGE 2

14. In terms of years or months how long have you been smoking?
   ____ Years (and/or) ____ months

15. About how many cigarettes, on the average, do you smoke a week? (check one)

   (1) ____ Less than one-half pack (10 cigarettes) a week

   (2) ____ About one-half pack (10 cigarettes) a week

   (3) ____ About one pack (20) a week

   (4) ____ About two packs (40) a week

   (5) ____ About three packs (60) a week

   (6) ____ More than three packs (60 plus) a week

16. Do you usually smoke filter cigarettes? (check one)

   (1) ____ Yes  (2) ____ No

17. When do you mainly smoke cigarettes? (check one)

   (1) ____ Mainly when by myself

   (2) ____ Mainly when with people my own age

   (3) ____ Mainly when with older people

   (4) ____ No difference, just as likely at any of these times

18. When do you mainly smoke cigarettes? (check one)

   (1) ____ Mainly when things are fine; I feel good, happy, or am having a good time.

   (2) ____ Mainly when things are bad; I feel tense, upset, or angry about something.
(3) ____ No difference; smoke about the same either time

19. How much do you enjoy cigarettes? (check one)
   (1) ____ I enjoy each cigarette
   (2) ____ I enjoy most cigarettes
   (3) ____ I enjoy cigarettes only at certain times and places
   (4) ____ I really don't enjoy cigarettes

CHECK WHICH OF THESE REASONS ARE WHY YOU STARTED AND WHY YOU SMOKE NOW:

20. Started smoking because: (check all that apply)
   (1) ____ Just to try it  (2) ____ Friends smoke
   (3) ____ Enjoy it  (4) ____ Calms me
   (5) ____ To feel grown-up  (6) Other: Write in

21. Smoke now because: (check all that apply)
   (1) ____ Just to try it  (2) ____ Friends smoke
   (3) ____ Enjoy it  (4) ____ Calms me
   (5) ____ To feel grown-up  (6) ____ Can't Stop
   (7) Other: Write in

22. Are you in any way concerned about the possible effects of cigarette smoking and your health? (check one)
   (1) ____ Not at all concerned
   (2) ____ Only slightly concerned
   (3) ____ Fairly concerned
   (4) ____ Very concerned

23. Do you ever smoke in the presence of either of your parents: (check one)
   (1) ____ Yes; (2) ____ No
24. How does your mother feel about your smoking? (check one)

(1) ____ Says it's OK to smoke
(2) ____ Disapproves
(3) ____ Forbids my smoking
(4) ____ Knows I smoke, but I don't know how she feels about it
(5) ____ She doesn't know I smoke
(6) ____ Doesn't care one way or the other
(7) ____ Don't know if she knows that I smoke

25. How does your father feel about your smoking? (check one)

(1) ____ Says it's OK to smoke
(2) ____ Disapproves
(3) ____ Forbids my smoking
(4) ____ Knows I smoke, but I don't know how he feels about it
(5) ____ He doesn't know I smoke
(6) ____ Doesn't care one way or the other
(7) ____ Don't know if he knows that I smoke

26. At present, which items below describes your feeling toward your cigarette smoking?

(1) ____ I am satisfied and have no wish to quit
(2) ____ I wish I had never started, but I don't plan to quit now.
(3) ____ I want to quit, but I am not sure that I can.
(4) ____ I definitely plan to quit.
27. What would you say is the possibility that five years from now you will still be smoking cigarettes? Would your answer be: (check one)

(1) ____ Definitely yes  (2) ____ Probably yes
(3) ____ Probably not  (4) ____ Definitely not

BEFORE TURNING THE PAGE: Make sure you have answered each question.
**PART IV EVERYONE: PLEASE ANSWER THE REMAINING QUESTIONS**

**QUESTIONS 28 THROUGH 41**

Here are some statements that other people have made about cigarette smoking. For each of the statements listed below, check the answer which best describes how you feel about it.

<table>
<thead>
<tr>
<th>CHECK ONE FOR EACH QUESTION</th>
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<tr>
<td><strong>STONGLY AGREE</strong> (1)</td>
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</table>

28. Cigarettes are pleasurable (check one)

29. Cigarettes do more good for a person than harm (check one)

30. Smoking costs more than the pleasure it is worth (check one)

31. I hope my children never smoke (check one)

32. Smoking is something nice to do when you're having fun or enjoying yourself (check one)

33. There is nothing wrong with smoking (check one)
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<th></th>
<th></th>
<th>STRONGLY AGREE (1)</th>
<th>MILDLY AGREE (2)</th>
<th>NEITHER AGREE NOR DISAGREE (3)</th>
<th>MILDLY DISAGREE (4)</th>
<th>STRONGLY DISAGREE (5)</th>
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<tbody>
<tr>
<td>34.</td>
<td>Smoking is a dirty habit (check one)</td>
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<td>35.</td>
<td>Cigarette smoking frequently causes death and disease (check one)</td>
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<td>36.</td>
<td>There is nothing wrong with smoking as long as a person smokes moderately (check one)</td>
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<td>37.</td>
<td>Smoking cigarettes is harmful to the health (check one)</td>
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<td>38.</td>
<td>Smoking helps people when they feel nervous or embarrassed about something (check one)</td>
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<td>39.</td>
<td>The law against the sale of cigarettes to people under the age of 18 should be strongly enforced (check one)</td>
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<td>40.</td>
<td>Cigarette smoking helps people to relax (check one)</td>
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41. A person should have the right to decide for himself (check one)

QUESTIONS 42 THROUGH 45

FOR EACH OF THE FOLLOWING DISEASES CHECK WHETHER YOU THINK CIGARETTE SMOKERS ARE DEFINITELY, PROBABLY, PROBABLY NOT, OR DEFINITELY NOT MORE LIKELY TO GET THAT DISEASE THAN ARE PEOPLE WHO DO NOT SMOKE CIGARETTES.

CIGARETTE SMOKERS ARE...MORE LIKELY TO GET: (Check one of these for each disease)

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<tr>
<th></th>
<th>DEFINITELY YES</th>
<th>PROBABLY YES</th>
<th>NO OPINION EITHER WAY</th>
<th>PROBABLY NOT</th>
<th>DEFINITELY NOT</th>
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<tbody>
<tr>
<td>42. Heart Disease (check one)</td>
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<td>43. Lung Cancer (check one)</td>
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<td>44. Diseases that cause difficulty in breathing like bronchitis or emphysema (check one)</td>
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<td>45. Polio (check one)</td>
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46. Did you ever try to persuade someone else not to start smoking cigarettes?

(1) ___ Yes (2) ___ NO
47. Did you ever try to persuade someone else to cut down or quit smoking cigarettes?
   (1) ___ Yes  (2) ___ No

48. Has cigarette smoking affected the health of anyone you know personally? Check one:
   (1) ___ Yes  (2) ___ No

QUESTIONS 49 AND 50

IN GENERAL, WHAT DO MOST PEOPLE YOU KNOW THINK ABOUT THE CONNECTION BETWEEN SMOKING AND HEALTH? (check one)

<table>
<thead>
<tr>
<th>DEFINITELY HARMFUL</th>
<th>PROBABLY HARMFUL</th>
<th>MOST HAVE NO OPINION</th>
<th>PROBABLY NOT HARMFUL</th>
<th>DEFINITELY NOT HARMFUL</th>
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49. Most people my own age think smoking is: (check one)
   _____ _____ _____ _____ _____

50. Most grown-ups think smoking is: (check one)
   _____ _____ _____ _____ _____

51. At what age should a boy have the right to decide for himself whether or not to smoke? Write in age: __________________________

52. At what age should a girl have the right to decide for herself whether or not to smoke? Write in age: __________________________