San Fernando Valley State College

The Relationship Between Smoking Practices and Knowledge of Health Hazards of Smoking

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

The purpose of this study was to determine if a relationship existed between the reported smoking behaviors of seventh and eighth grade pupils in the Pleasant Valley School District, Camarillo, California, and their knowledge of the purported health hazards of cigarette smoking.

The test instrument was administered to 917 pupils in the two junior high schools. The test was independent of any health instruction in smoking and health.

Analysis of a random sampling of twenty per cent of the respondents was taken providing these conclusions: 1) there was no significant difference in cognition between the smokers and the non-smokers, the experimenters and the smokers, nor between the experimenters and the non-smokers; 2) the groups responded differently on twelve opinion questionnaire items.
CHAPTER I
INTRODUCTION

The genesis of this study occurred when the author became aware of the growing number of seventh and eighth grade pupils who were being suspended from school for the infraction of smoking on school property or carrying cigarettes on their person on school property.

Administrative personnel, teachers, and the author, have become increasingly aware of the upsurge in the number of cigarette smokers among the young teenage and pre-teenage population. The concern of teachers about the smoking behavior of young people, and the need for factual information about this behavior, provided the impetus for the study. Are more young teenagers smoking because of parental smoking patterns, because of peer influence or, because they lack health knowledge and factual information associated with smoking?

The health education curriculum committee in the school district in which this study was undertaken was given the responsibility of designing a comprehensive health education curriculum, one area of which would be devoted to smoking and health. It is the opinion of the author that information about the purported health hazards of smoking should be introduced in the health curriculum prior to the seventh and eighth grade level. It is felt
that early knowledge of the purported health hazards of smoking may act as a deterrent for young smokers and potential smokers.

**Health Education**

Teaching about smoking and health is but one facet of a total health education program. The philosophy is the same, whether it be for the facet, or the whole. The health educator's first concern is the improvement of health practices. His awareness of health knowledge as the foundation upon which desirable health attitudes and practices are built, and his awareness of the gap between health knowledge and effective health practices provide an area of academic concern. Unfortunately, exposure to and the learning of health knowledge does not always result in effective health practices.

Oberteuffer stated that:

There is far too much evidence today for anyone to support the old-fashioned notion that learning involves the 'intellect' alone. One doesn't 'Pour knowledge into the child to the limits of his absorptive capacity,' as one uninformed scientist told us to do. The brain does not operate all by itself. Learning is dependent upon the condition of the rest of the organism as well as the capacity of the intelligence. Learning is an interaction of the child with his environment, and if we try to teach him something about his health, ..., he will accept or reject, master or slough off, in terms of his health, his emotional state, his feelings, his morning breakfast, his ambition, his everything. No part or
element within him is unrelated to the learning process. ...He reacts as a total personality and thus the study of the dynamics of individual adjustments to environment, gives much light on how people can learn and makes a total program of health education of infinite importance to all of education. (81:74)

Teenage smoking behavior goes beyond the concern of the family or the educator. It has become the concern of the community. Today's teenagers are the community adults of tomorrow, and as members of tomorrow's adult community it is important that they be taught positive health attitudes now, and continue their understanding of health in order to relate these concepts to their future well-being. In an address to the American Public Health Association, Anderson stated that:

Public Health is an organized community program designed to prolong efficient human life. It has no artificial limitations that would restrict its activities to certain types of problems. It must deal with and endeavor to combat those forces that tend to impair or shorten efficient human life and must meet each problem according to its particular needs. (2:1368)

Education about smoking and health is but one aspect of the comprehensive health education program, and a health education program is an important component of total education. Fodor and Dalis have stated: "A common philosophy of education encompasses health knowledge and values as important outcomes of education." (31:17)
The health of young people, prior to the age group under study, is generally supervised by parents, and young people usually accept this supervision as passive non-participants. As young teenagers they should be prepared to accept some responsibility for their own well-being. Frequently, there occurs a dichotomy between parental health supervision which is authoritative in its rigid "Do's" and "Don'ts" when smoking is involved, and peer influence which sanctions smoking. (21:14) It follows that it now becomes the responsibility of the health educator in the school to assert his influence toward the middle of the continuum by presenting factual, clearcut, concise information about smoking, and well planned learning opportunities. Conn stated that:

An educational program...designated to reach individuals before they begin to smoke has the greatest potential for success. The most effective approach to the problem of reducing health hazards due to cigarette smoking is to prevent young people from acquiring the habit. This approach encourages individual decision-making on the basis of what will likely be the most beneficial to one's health. (21:4)

Conn further explained:

...that it generally is easier to prevent boys and girls from developing the habit of smoking than it is to get them to quit smoking once they have the habit. (21:3)
Scope and Delineation of the Study

It was proposed that data would be secured from all male and female pupils, ages eleven to sixteen, in the seventh and eighth grades of the Monte Vista and Los Altos Junior High Schools, Pleasant Valley School District, Camarillo, California, who would be present on the day the questionnaire was administered. Only one question in the investigative tool was designed to classify pupils according to their reported smoking habits. Other questions were related to knowledge of the purported health hazards of smoking. Purposely omitted were questions related to peer influence, parental smoking habits, socio-economic background, academic standing, and athletic and social activities in and out of school. The author does not preclude the important inference of these items, however, it was felt that a subsequent study would serve this purpose to better advantage.

Purpose

It was the purpose of this study to investigate the relationship between the reported smoking practices of seventh and eighth grade pupils and their knowledge of the purported health hazards of smoking.
Terms and Definitions

To facilitate the understanding of the terms used in the text of this thesis, the following definitions are presented.

Health. Probably the first internationally accepted definition of health appears in the Preamble of the Charter of the World Health Organization. Adopted in 1948, the Preamble stated: "Health is a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity". (22:3)

In the twenty years since the Preamble was written, many educators have presented their own interpretation or elaboration of this definition. One of the more recent definitions of health states:

Health is the quality resulting from the total functioning of the individual in his environment, that empowers him to achieve a personally satisfying and socially useful life. (58:10)

Health Education. This term is used in many ways, and has different meanings to different people. There may be an emphasis on education or a process by which agents of education exert influence on an individual so as to affect health behavior. Health education has been defined as:

Health education is the process of providing learning experiences for the purpose
of favorably influencing knowledge, attitudes, and practices relating to individual and community health. (57:22)

Health Instruction. Fodor's earlier definition of Health Instruction (30:5) has been simplified and has now been defined in these words:

Health instruction refers to a plan that provides for the sequential arrangement of learning opportunities designed to favorably influence health attitudes, practices, and cognitive skills that are conducive to the optimum development of the individual, the family, and the community. (31:19)

Health Educator. The health educator, or as employed in this study, is a teacher who teaches health in the public schools. Leventhal stated that: "The health educator evaluates behavior in terms of its effects upon the health of the actor." (67:17)

Health Knowledge. For the purpose of this study, health knowledge is equated with the cognitive skills.

Health knowledge related to factual information in the health and behavioral science fields which is learned for the purpose of modifying behavior in order that the individual concerned may enjoy a better health and have a socially useful concept of health. (64:13)

Health Practices. Health practices are those observable behaviors which may or may not influence one's maximum health. According to Fodor and Dalis,
these may be:

1) sufficiently overt to be evaluated;
2) observable but not conducive to systematic assessment in a classroom setting; and,
3) those practices which may not become part of the individual's behavior pattern until some future time. (31:19)

**School Health Program.** A school health program is a planned course of activities directed toward promoting and/or improving the health of children and youth.

The purpose of a school health program is to provide learning opportunities, experiences, and an environment for children and youth that will favorably influence those attitudes, practices, and cognitive skills which promote individual, family, and community health. (31:18)

**Attitudes.** Health practices, to be most effective and lasting, must be cemented by well-established attitudes. Similarly, health knowledge, to be most effective, must be applied through proper health attitudes. Anderson stated:

> An attitude may be thought of as a tendency to react in a certain way in a given situation. (1:277-278)

Fodor and Dalis interpret attitude as a referrent of affective behavior. (31:19)

**Cognitive Skills.** Knowledge is more than a simple recall of facts. It involves a hierarchy of cognitive skills. Bloom has described these components as recall or knowledge, comprehension, application, analysis,
synthesis, and evaluation. (11:62) Bloom offers these simplified definitions of the components of the cognitive skills.

**Recall or Knowledge.** For measurement purposes, the recall situation involves little more than bringing to mind the appropriate material. (11:201)

**Translation or Comprehension.** The ability to understand a communication and to make use of the material or idea by altering the form of the original communication and retaining accuracy. (11:204)

**Application.** The ability to apply knowledge from one situation to an analogous situation. (11:205)

**Analysis.** Identification of the elements in a communication for the purpose of clarifying the communication and establishing relationships between the component elements. (11:205)

**Synthesis.** The ability to arrange and combine elements to create a pattern not clearly defined previously. (11:206)

**Evaluation.** The ability to judge or assess the value of materials for a given purpose. (11:207)

**Classification of Smokers.** Briney has classified the smokers in his high school study into eight categories, from those who smoke one pack of cigarettes a day to those who have never smoked at all. These classifications are:

1. Smokes more than one pack of cigarettes a day.
2. Smokes about one pack a day.
3. Smokes between 1/2 pack to one pack a day.
4. Smokes regularly but less than a 1/2 pack a day.
5. Smokes cigarettes but not every day.
6. Have tried smoking cigarettes but don't smoke now.
7. Smokes but not cigarettes (pipe or cigars exclusively).
8. Have never smoked at all. (15:29)

Sallek's study of junior and senior high school pupils employed four classifications of smokers. These are:

1. Non-Smoker: A youth who states he has never smoked.
2. Experimenter: A youth who states he has smoked but has not smoked as much as 1 package of cigarettes, 2 cigars, or 1 package of pipe tobacco.
3. Completed Experimenter: A youth who states he has at some time smoked at least 1 package of cigarettes, 2 cigars, or 1 package of pipe tobacco or more but does not meet the criteria established for a smoker.
4. Smoker: A youth who states he has at some time smoked at least 5 packages of cigarettes, 50 cigars, or 5 packages of pipe tobacco. (86:308-309)

Salber and her associates selected these definitions for their classifications of smokers.

... a nonsmoker was defined as a student who in his lifetime had smoked less than ten cigarettes. A discontinued smoker was one who had at some time in the past smoked ten or more cigarettes but who stopped smoking and who did not at the time of the questionnaire consider himself to be a smoker. A smoker was a student who had smoked at least ten cigarettes in the past and who at the time of the questionnaire considered himself to be a smoker, regardless of the amount he smoked. (84:119)

For the purpose of this study, seventh and eighth grade smokers have been arbitrarily classified as follows:

Smoker. A pupil who smokes almost every day.

Occasional Smoker. A pupil who smokes once in a while, but not every day.
Discontinued Smoker. A pupil who smoked almost every day, but no longer smokes.

Discontinued Occasional Smoker. A pupil who smoked once in a while, but no longer smokes.

Non-Smoker. This category includes those pupils who experimented with a few cigarettes and who do not now smoke, as well as those pupils who have never smoked.

Purported Health Hazards (of smoking). The purported health hazards considered in this study are associated with the effects on the respiratory system, changes in the cardiovascular system, and the introduction of carcinogenic materials into the body.
CHAPTER II

REVIEW OF LITERATURE

In this review of the literature the development of opinions, observations, measurements and analyses of the adult population, has been presented in a chronological sequence.

In the late 1580's, following a trip to the colonies, Sir Walter Raleigh introduced tobacco to his countrymen in Britain. The use of several forms of tobacco was quickly adopted by both men and women, much to the dismay of Raleigh's king, who in 1604, published his Counterblaste to Tobacco. James' diatribe, probably the earliest indictment against the use of tobacco, concluded with these words:

Have you not reason then to bee ashamed and to forbeare this filthie noveltie, so basely ground-ed, so foolishly received, and so grossly mis-taken in the right use there of? In your abuse there of sinning against God, harming yourselves both in person and in goods, and taking also thereby the markes and notes of vanitie upon you: by the custome there of making your selves to be wondered at by all forraigne civil Nations, and by all strangers that come amongst you, to be scorned and contemned. A custome lothsome to the eye, hateful to the Nose, harmfull to the braine, dangerous to the Lungs, and the blacke stinking fume there of, neerest resembling the horrible Stygian smoke of the pit that is bottomelesse. (55:36)

Few problems of public concern have had as many words written about it, as many studies and as many
statistics reported about it as cigarette smoking. The problem, far from being solely an American problem, has been and is being investigated all over the world. Cigarette smoking is no longer a concern of only the present adult community; it has become a vital problem involving the future adult community.

A recent anthology, *Studies and Issues in Smoking Behavior*, edited by Zagona, contains twenty-one pages, double columned, of bibliography. There are about nine hundred references in the bibliography, and almost every state in the United States is represented as well as thirty foreign countries. More than thirty disciplines are represented, from Obstetrics to Pediatrics to Geriatrics, from Business to the Military, the Health Sciences, the Social Sciences, and the Behavioral Sciences, to mention a few. (106) In another publication, *Summary of Research*, a report of the Advisory Committee to the Surgeon General of the Public Health Service, eighty-two references are given for its fifteen-page report. (95)

With the vast amount of material available, it appeared that an in-depth review of literature relative to smoking could be an Herculean undertaking. The pattern for this review of literature, therefore, encompassed three major areas: 1) the purported health hazards of smoking; 2) teenage smoking patterns and behavior, with sub-heads: a) influence of parents and other adults,
b) peer influence, and, c) relationship of knowledge of the purported health hazards of smoking to the smoking behavior of teenagers; and, 3) educational techniques in the area of smoking and health.

Although cigarette smoking is a very real problem among pre-teenagers and teenagers, illnesses, debilities, and deaths attributed to smoking are not usually observable and measurable until adulthood. The review of literature which follows, involves the observations, measurements, and analyses of the adult population.

**Purported Health Hazards of Smoking**

...after a careful evaluation of evidence in more than 10,000 studies, it is summed up in that sentence so familiar to us all: 'Cigarette smoking is a health hazard of sufficient importance in the United States to warrant appropriate remedial action'. (65:1)

In 1895, Mulhall, a physician and an admitted smoker of twenty-five years, stated that:

A few, who like myself, have made practical observations will tell you that they never saw a child ... who used tobacco habitually whose health was not in some manner badly impaired. What else would one expect the tender growing organism to do but wilt under the steady daily influence of a drug like nicotine? (76:716)

Mulhall decried the WCTU's attempt to crush the cigarette evil by asserting that opium and other narcotics were found in cigarettes. "Vice cannot be cured by misrepresentation," Mulhall said. (76:716)
Mulhall reported that doctors were able to tell which of their patients smoked and which did not, by throat examinations. They observed that professional singers, to be in good voice, abstained from smoking, especially before a concert. Also observed was the fact that college students who smoked had smaller chest expansions than those who did not smoke. The practitioners agreed that there was a "dearth of literature relative to smoking and disease in medical literature". (76:720)

Further Mulhall stated that:

There is no such instructor of the public as the press, and I trust that our newspapers will publish and broadcast such information as this and kindred essays may give them on what is fast becoming a national vice in American youth - the cigarette habit. (76:717)

In the late 1920's, Bogen, in one of his studies on smoking, disclosed that 286 brands of cigarettes were on the American market. These were tested for "strongness" and "mildness", and for nicotine content. He noted that domestic brands had a 2.50 per cent nicotine content, that denicotinized cigarettes a 1.10 per cent nicotine content, and tobacco-free cigarettes, 0.00 per cent. Bogen stated that nicotine was not the only dangerous agent to be found in cigarettes, and named "aldehyde formed during the combustion, from ammonia produced from other nitrogenous substances during the course of smoking" as well as the heat from the smoke itself and "the irritating tarry
substance comprising the so-called tobacco oil". Bogen found that many substances in tobacco smoke are not always found in the unsmoked tobacco, and he strongly urged further analysis and investigation. (12:1110-1112)

Bogen noted that certain conditions were so frequently associated with cigarette smoking that "the causal connection seems indisputable." Those he named were cardiac arrhythmias, shortness of breath, thrombo-angiitis obliterans, nicotine amblyopia, and chronic inflammation of the upper respiratory passages. "It still remains for the smoker to decide whether he desires to pay this price for the enjoyment he derives from it." (12:1113)

Berkson, a physician-researcher, stated that:

The most important known "cause" of cancer and some other diseases, notably those of the cardiovascular system, is age. We might say speculatively that smoking accelerates the rate of living and advances age and age causes cancer. (8:339-340)

In review, Berkson concluded that while he did not fail to appreciate the "pioneering effort with which the statistical studies on smoking and cancer represent" and that he recognized the tentative evidence of relationship, nonetheless, he did not believe "causation had been established" and he was of the opinion that there was much work to be done, with adequate time for evaluation before findings could be considered significant. (8:343)
A few years later, Berkson opened an address to the Federation Internationale Pharmaceutique in Brussels with this statement: "According to innumerable accounts... it has been conclusively established that smoking is an important cause of cancer of the lung." (9:206)

He reported that it had become extremely unpopular to question these conclusions. Nonetheless, he intended to question them. The relationship between smoking and lung cancer, Berkson said, had been "derived from" the results of statistical studies. Reports that lung cancer deaths had increased in this same period led to the hypothesis that cancer of the lung "had been caused by smoking."

According to the studies, Berkson continued, theoretically tobacco smoke contained known carcinogens and that these inhaled produced pulmonary cancer. (9:207) Statistical studies by Doll and Hill in England and Hammond and Horn in the United States (40, 41, 42) were reviewed by Berkson. On the bases of these studies Berkson doubted the validity of the interpretations and stated that cancer of the lung was a "biologic, not a statistical problem."

He noted that although cancer of the lung was higher among smokers than among non-smokers of the sample populations, it was, nonetheless, lower than the death rate from lung cancer among the general population. (9:208)

Berkson, having stated that in a selected sampling a "spurious statistical association" could be produced,
explained that the Hammond-Horn study showed greater sensitivity by examining factors other than lung cancer. In addition to a cigarette smoking relationship to lung cancer, Hammond and Horn investigated the relationship between cigarette smoking and 1) coronary artery disease, 2) other cancers, 3) cerebral vascular disease, 4) gastric and duodenal ulcers, 5) cirrhosis of the liver, and 6) all other causes of death. (9:12, 38:1307)

In summation, Berkson stated:

It appears to me that hardly can there be any serious doubt that the definitive important finding of these statistical studies is not that there is an association between smoking and cancer of the lung, but that there is an association between smoking and deaths from all causes generally. (9:224)

In the summary and conclusions of the 1951-1953 research on Smoking and Death Rates, Hammond and Horn concluded that:

It was found that men with a history of regular cigarette smoking have a considerably higher death rate than men who have never smoked or men who have smoked only cigars or pipes. (40:1328)

In this study, involving 187,766 Caucasian males between the ages of fifty and sixty-nine, it was found that 52 per cent more deaths occurred among men with a background of regular smoking habits.

In a later report by Hammond and Horn, these researchers concluded that among men who smoked two packs of cigarettes a day, the death rate was 123 per cent
higher than among non-smokers; that regular cigar smokers had a 22 per cent higher death rate than non-smokers; regular pipe smokers were only 12 per cent higher than men who had never smoked; and that the death rate of the occasional smoker was not significantly different from non-smokers. (41:1172)

Abstracting the Hammond and Horn study Death Rates by Cause (42:1308), this author found these conclusions: 1) that relationships with smoking are evident, and there is an extremely high association for a few diseases, such as cancer of the lung, cancer of the esophagus, and gastric ulcer; 2) a very high association for a few diseases such as pneumonia and influenza, duodenal ulcer, aortic aneurysm, and cancer of the bladder; 3) a high association for a number of diseases such as coronary artery disease, cirrhosis of the liver, and cancer of several sites, a moderate association for cerebral vascular lesions; and, 4) little or no association for a number of diseases, including chronic rheumatic fever, hypertensive heart disease, nephritis, nephrosis, diabetes, leukemia, cancer of the rectum, cancer of the colon, and cancer of the brain.

In a brief forward to the 1950-1964 Smoking and Health report to the Surgeon General of the Public Health Service, these statements appear:

The mortality trend for lung cancer continued upward. Cohort analyses shows that more
recently born cohorts are at a higher risk of dying from lung cancer at younger ages than were their predecessors.

and:

There were substantial increases during 1950-64 in mortality from three of the eight groups of diseases associated with but not clearly causally related to smoking - arteriosclerotic heart disease, including coronary disease, especially in the male population; cirrhosis of the liver, with the most marked increase for the non-white population; and emphysema, especially for the whole male population. (92:iv)

The Advisory Committee's 1950-1964 report was one of many of the more recent studies that included the female population in its research. The committee who evaluated the data stated that the sex differential for smoking had grown smaller over the years. Male cohorts, born after 1900, began to smoke earlier in life and while large scale cigarette smoking by women did not occur until the 1920's and 1930's, 32 per cent of the female population was smoking by 1955 as compared to 65 per cent of the male population. The female smoking population, therefore, was included in this research since there is a rise in morbidity from a number of causes, including lung cancer, among women, and the rise in mortality from lung cancer has been relatively greater than among male smokers since 1960. (92:1)

The 1950-1964 report on Mortality From Diseases Associated With Smoking (75) is a condensation of the
most cogent data found in the detailed study, *Smoking and Health*. (92) Studies were based on age, sex, color, and smoking habits. Findings were presented under two headings. The first, "Mortality From Diseases Causally Related to Smoking," lists cancer of the lung (75:2, 92:31), cancer of the larynx (75:5, 92:32), cancer of the lip (75:6, 92:32) and chronic bronchitis and emphysema (75:7, 92:31).

Mortality from diseases associated with, but not clearly related to smoking, also included several conditions. Although there were relatively high frequencies, the Advisory Committee did not think the data adequate to establish a causal relationship. These diseases are: arteriosclerotic heart disease, including coronary artery disease (75:9, 92:32), cirrhosis of the liver (75:10, 92:39, 342), and emphysema (75:12, 92:31). Noted here is the observation that the female population had the greater relative increase in mortality from emphysema in the age group 65-74 years. In this age group the death rate was about 12 times higher in 1964 than in 1950. (75:13) Also included in the associated-but-not-clearly-related-to-smoking diseases are: ulcer of the stomach (75:15, 92:39), cancer of the esophagus (75:15, 92:32), cancer of parts of the oral cavity other than the lip (75:17, 92:37), cancer of the bladder and other urinary organs (75:18, 92:37, 225), and specified non-coronary
cardiovascular diseases, including hypertensive heart
disease and general arteriosclerosis. (75:19, 92:43, 326)

In the 1964 report on Health vs. Cigarette Smoking
prepared for the governor of California, it was stated that:

The markedly increasing incidence of lung cancer,
a condition which today ranks as the most common
form of fatal cancer, and which in 1963 caused the death of more than 41,000 Americans, may be
justly described as "epidemic". (44:3)

A resolution adopted by the California State Board
of Health in July 1963 stated that in view of data
presented in the five points listed below, the State
Board of Health favored a state-wide campaign to control
cigarette smoking. These five points are:

1. The risk of dying from lung cancer is 14 times
   as high among cigarette smokers as among
   non-cigarette smokers, and 26 times higher for
   those who smoke two or more packs a day.

2. If the trend of lung cancer rate continues in
   California, 100,000 California children now of
   school age will die from lung cancer before
   reaching the age of 70.

3. Deaths from coronary heart disease are almost
twice as high among cigarette smokers as among
   non-smokers.

4. Men in the 25-64 year age group who smoke
   cigarettes suffer more activity-limiting
   chronic disease and disability than
   non-smokers.

5. According to a 1955 survey, Californians, both
   male and female, smoke more cigarettes than the
   nation at large; of particular significance is
   that smoking among persons under 24 years of
   age is substantially greater than in the nation
   as a whole. (44:5)
The California Summary reported that the 1960 census of school-age children in California revealed that in the age group five through seventeen, there were 1,890,209 male children and 1,820,042 female children in the same age group. Of these numbers, the estimated lung cancer deaths among these children before they reach age seventy are: boys - 44,455 and girls, 7,191. (44:21)

Many voluntary and government organizations vitally concerned with the problems of smoking, contributed statements to the California study. There was a unanimity of findings and concern in the state, the country, and abroad. (44:23-26)

Each report read by this writer, presented additional findings based on newer studies, and the Summary of the Surgeon General's Committee was no exception. Listed under "Other Condition" was this observation:

Maternal Smoking and Infant Birth Weight. Women who smoke cigarettes during pregnancy tend to have babies of lower birth weights. Information is lacking on the mechanism by which this decrease in birth weight is produced. It is not known whether this decrease in birth weight has any influence on the biologic fitness of the newborn;

and,

It is more prudent to assume that the established association between cigarette smoking and coronary disease has causative meaning than to suspend judgment until no uncertainty remains. (92:10)

Statements such as those noted above prompted this writer to include in her study the phrase "purported health
hazards of smoking" rather than accept the health hazards of smoking without reservations.

Information in a pamphlet issued by the National Tuberculosis Association in 1966, disclosed that 70 million Americans smoked; that 523 billion cigarettes were purchased in 1963 at a cost of about $7,000,000,000; and, that cigarette smoking may be responsible for 125,000 deaths a year, or one every four minutes. (19)

With the wealth of overwhelming evidence against cigarettes and to avoid duplication of efforts and to pool their findings, the American Heart Association, American Cancer Society, National Tuberculosis Association, the American Public Health Service, the American Medical Association, and the United States Public Health Service have joined forces in taking an official stand on the harmful effects of cigarette smoking. Except for the American Medical Association, all have united to create the National Interagency Council on Smoking and Health. (10:8)

Guthrie is of the opinion that while more research is needed, there is already sufficient evidence to start thinking in terms of a good educational program. To reinforce a sound educational program, more research is indicated to reveal exactly what in cigarettes causes the damage. No further research is needed, Guthrie wrote, to tell how many Americans will die prematurely each year, or
to explain disability caused by emphysema-bronchitis, both closely identified with smoking. (37:1)

In 1967, the Department of Health, Education and Welfare authored a new survey titled Cigarette Smoking and Health Characteristics. In an earlier study, the population studied was twenty-five years and over. (75:1) The newer study included non-institutionalized persons seventeen years and over. (18:1) It was reported that both male and female cigarette smokers "reported a higher rate of chronic conditions than did persons who had never smoked." This study is as detailed as earlier studies, and conditions and their analyses, as in earlier studies, included: heart conditions (including rheumatic heart disease), hypertension without heart involvement, chronic bronchitis and/or emphysema, chronic sinusitis, peptic ulcer, arthritis, hearing impairments, and all other chronic conditions. (18:10-11)

Hearing impairment is another possible hazard of smoking. In summary, male smokers and male non-smokers presented the same rate of hearing impairments. However, the heavy smokers, two packs and more per day, had an estimated thirty-four per cent higher rate of hearing impairments than the non-smokers, with the difference occurring among the 17-44 year age groups. As smoking increased among females, the prevalence of hearing impairments also increased. (18:16)
The survey, which was taken in 1964-1965, also reported that infective and parasitic diseases occur more frequently among smokers and the relationship is more apparent among female smokers. In addition, the relationship between influenza and smoking is more evident among males than females, and, there appears to be some relationship between smoking and injuries. Restricted activity days, bed days, and work-less days were noticeably higher among male and female smokers than among male and female non-smokers. (18:16-18)

Williams has stated that if the habit of smoking is to be given up, it must be given up for a good reason. That reason has been provided, Williams said, by the discovery that "our chief cause of death, arteriosclerosis, is linked to cigarette smoking" and "evidence is accumulating rapidly." Further, it has been shown that smoking can increase the tendency of blood to clot. Nicotine, Williams disclosed, may cause platelets to become adherent, "thus imitating thrombus formation." (104:1-2)

Larson, examining his own patients' case records, found that among patients with histories of emphysema, almost all were smokers. (62:4) Microscopic examinations have shown definite changes in the capillaries of the alveolar walls, and this may in turn, lead to the destruction of the alveolar walls, associated with emphysematous lungs. (62:7) This type of destruction is
permanent, no restoration is possible, and only the arrest of the progress of the disease can be hoped for. (62:10)

Linden, whose study was devoted to California women who smoked, stated that in 1940, 130 California women died of lung cancer. In 1950, the number was 257, and in 1960 the number had risen to 758, an increase of over 300% in the latter four year period. Linden observed that when the tables were adjusted for age groups, there occurred an increased death rate from lung cancer in the 35-64 age group, the group which included young women who began to smoke in the post-World War I period when smoking among young adult females became popularized. (68:12) Linden reconciled the higher death rate from lung cancer in women in California with a proportionately higher number of female smokers in this state. (68:16)

Stewart, in an address at an American Cancer Society Science Writers' Seminar in 1966, reported that the findings in the 1964 Report of the Surgeon General's Advisory Committee on Smoking and Health was based on an evaluation of 11,000 studies, and that since this report, 1,300 additional studies have been published. (94:1)

Stewart told his audience that the National Center For Health Statistics released these figures, based on a 1964-1965 study.

12,000,000 more chronic conditions reported by Americans 17 years old and older than would be the case if everyone had the same
prevalence of chronic conditions as non-smokers;
300,000 extra coronary attacks;
1,000,000 extra cases of chronic bronchitis or emphysema;
nearly 2,000,000 extra cases of sinusitis;
more than 1,000,000 extra cases of peptic ulcer;

there are 3,000,000 more man days of restricted activity reported among cigarette smokers than would be the case if all had the rates of non-cigarette smokers, and 900,000 more days spent ill in bed. (94:2)

Stewart said that it cannot be stated with certainty how much of the aforementioned statistics represent "cause-and-effect relationship subject to reduction by reducing cigarette smoking. (94:2) He is of the opinion that there would be a tremendous reduction in these figures.

Stewart presented some heartening figures: there are 18 million ex-smokers; that a smaller percentage of the male population smoke cigarettes than at any time during the past half century; that in the early 1950's more than 60 per cent of this country's physicians smoked and today the number is less than 30 per cent. (94:10)

Davis has reported that none of the 1964 conclusions relative to the hazards of smoking were "shaken", but rather, were strengthened by the more than 2,000 additional studies. The cost of disabilities to the
Social Security Administration for those incapacitated by chronic bronchitis and emphysema is second only to that of heart disease. For men in the 35-59 age group, excess deaths among current cigarette smokers account for one out of every three deaths; for women, one out of every fourteen. Cessation of smoking, even modifying smoking habits, and reducing the dosage of tar and nicotine, reduce risks - "even for longtime, heavy smokers." (25:102)

In another presentation, Davis related that new studies are including female smokers. In the past, their morbidity and mortality rates have been far lower than for males, but with increased smoking behavior, and at an earlier smoking age for females, should it continue over a long period of time, the difference may soon disappear. (26:3)

It is difficult to impress youth with the reported hazards of smoking. Davis stated that studies are now in progress to develop more useful information about immediate effects of smoking on the body so that new content and methods can be developed to reach youth. So far, many boys and girls seem little interested in the long-range implications. (26: 7)

Cigarette Smoking Behavior and Patterns of Teenagers

The second section of this literature review encompasses three areas of interest relative to the
smoking habits of teenagers. These areas are: the influence of adults on the smoking behavior of young people; the influence of a teenager's peers on his smoking behavior; and, the relationship of the knowledge of health hazards of smoking to the smoking behavior of teenagers.

The Relationship of the Smoking Practices of Parents and Other Adults to the Smoking Practices of Youth

In 1949, Warner and Srole, investigating the social systems of American ethnic groups, listed as part of the data the amount of money spent per year on tobacco. They found that with the upper class and the lower upper class constituting 3.00 per cent of the population studied, and the lower lower class and the upper lower class 57.82 per cent of the population studied, little difference was found in their tobacco spending habits. (101:296) Employing Hollingshead's class discrimination (45:69-135), Lampert and his associates, in a 1966 study, found that in the lower grades, sixth, seventh, and eighth, a higher percentage of students from the lower classes smoked. This difference in smoking habits, by social class, disappeared in high school. (61:37-38)

An early study by Salber and MacMahon established a relationship between smoking habits of teenagers and
social habits, social class, and parental smoking habits. Some of the findings indicated that the heavy cigarette smokers among youth, the five-packs-a-week smokers, were found in the lowest socio-economic category. (83:1781) Further, the authors stated that smoking is related to both social class and parental smoking patterns, and since "... parental, or at least paternal smoking habits themselves are related to social class" the relationship of these two variables were frequently examined simultaneously. (83:1785) The result of this study prompted the investigators to hypothesize that the answer to the question of whether there exists an association of student smoking habits with social class that is independent of association with parental smoking patterns appeared less clear. (83:1787) In summarizing this study, Salber and MacMahon asserted that the two associations, that is, social class and parental smoking habits, were independent of each other, but that each was related to student smoking habits when the other was held constant. (83:1789)

A somewhat analogous study in 1962 by Barrett, included the influence of each smoking parent on the teenager. Barrett reported that when the smoking parent was the father, the incidence of smoking was greater in male children, and conversely, when the smoking parent was the mother, the greater incidence was found among female children. (6:501)
In the late 1950's independent studies by Haenzel (39), Bothwell (14), and Horn (46, 47, 48, 49, 50, 51, 52, 53) and their associates, studied the smoking habits of a population eighteen years of age and over, and the consensus of opinion was that there existed a similarity in the smoking habits of high school students. It was suggested that future investigations study younger age groups.

In 1961, Sallek, with an anonymous questionnaire study of 6 per cent of a total seventh through twelfth grade population in Erie County, New York, found that in 39.6 per cent of the homes both parents or guardians smoked; in 35.6 per cent of the homes, one parent or guardian smoked; in 17.1 per cent of the homes, neither parent or guardian smoked. Of the male and female pupils in the sampling, 71.8 per cent reported that the father or male guardian smoked, and 47.0 per cent of the sampling indicated that the mother or female guardian smoked. The data reported that of males thirteen years old or younger, 9.3 per cent smoked at home, and the proportion increased to 48 per cent in the eighteen year old and older group. Among females, the number increased from 5.5 per cent to 33.9 per cent in the same age groups. (86:309-310, 85:9-10) In the analysis of the data, Sallek stated that there is

a definite association between the smoking practices of students and their parents.
The proportion of youths whose parents smoke are more frequently smokers themselves than are other classifications of youths. Youths whose parents do not smoke are more frequently non-smokers than are other classifications of youth. (86:313)

A 1962 study by Andrus and his associates stated that the cigarette smoking behavior of children probably is "influenced by teachers, clergymen, physicians, and a large portion of the adult population who smoke. Probably the most important is the influence of parents." The study reported that both parents of 37 per cent of the smoking pupils smoked and 46 per cent had at least one parent who smoked. Seventeen per cent of the pupils who smoked reported no parental smoking. (3:246-247)

Horn, too, found that a child is more likely to smoke if his parents smoke than if they do not smoke. (48:17-18)

Horn's comments on the influence of adults on the smoking behavior of youth have been reinforced by others involved in the total study of smoking. Several participants at a Conference on the Behavioral Aspects of Smoking were of the opinion that physicians, parents, and teachers may be influencing factors for, as well as giving up smoking. It was, however, suggested that "the effect of a teacher's smoking behavior on his students has not been carefully explored." (72:16)

The influence of adults and parents on the smoking behavior of youth has been examined too often to be
lightly dismissed. An official teaching guide for Smoking and Health in Illinois, labels smoking as a "'contagious' disease". Most smokers have one or more parents who smoke, and "it may have been part of their environment from infancy on." Further, the parent, the physician, the Scout leader, the teacher, anyone in position of leadership, can establish smoking images which some youths are likely to imitate. (5:15)

The Illinois Teaching Manual stated that as the result of an education campaign on smoking, some parents, when made aware of the impact on their children, changed their own smoking behavior. The authors restated the importance of a teacher's image and suggested that a teacher "might be expected to control his own habit, if need be, in the interests of teaching acceptable habits to his students." (5:63)

LeMaistre reported that a study done by Public Health Service and Student American Medical Association revealed that the number of physicians smoking today is 22.5 per cent of those who responded, as against 60 per cent fifteen years ago. Following this pattern are dentists and medical and dental students. Physicians, Le Maistre said, can set the pace for their patients' smoking behavior, by their own behavior. LeMaistre's contention was that the smoking problem will not be solved until the education reaches the entire community.
When individuals have been encouraged to give up smoking, young people can be encouraged not to start. (65:709)

Horn, too, is concerned with the adult smoking behavior as it affects young people. It is this "adult behavior" that appeals to young people. Identification and imitation of an admired adult who smokes, is a strong factor in the onset of smoking practices for many children. (52:4)

Horn repeatedly stated that a child is more likely to smoke if his parents or older brothers or sisters smoke than if they do not. By the same token, some children of smoking parents do not smoke. Children frequently emulate adults whom they admire and the example of adults, Horn continued, "should not be underestimated." Further, a parent, teacher, or adult leader who is a cigarette smoker "can influence the motivation of youth to smoke, can support the perceptions that might lead to the decision to start." (51:4-5, 7)

In another presentation, Horn repeated his philosophy relative to the influence of cigarette smoking adults on youth. He said:

Perhaps the most pervasive thought . . . is the importance of the personal behavior of those people who work with children. One can easily see that smoking by an adult leader can influence the motivation for smoking by youth, can support the perceptions that might lead to the decision to start,
can encourage the learning to use the cigarette in affect management, and can provide strong environmental re-inforcement of the behavior. (49:10)

A replication of the Horn Study in Portland in 1958, by Creswell and his associates in 1967 in Illinois, included a section on parental smoking behavior and its relationship to the smoking behavior of children. The study showed that smoking behavior of junior and senior high school students is related to parental smoking behavior and that the rate of smoking among students is highest when both parents smoke. When neither parent smokes, the number of young smokers is smaller. One "ex-smoker" parent also reduces the number of young smokers. If one or both parents have discontinued smoking, the rate of student smoking is about as low as when neither parent has been a smoker. Further, the smoking of boys conforms more closely to their fathers with 22.7 per cent of the regular youthful smokers coming from homes where only the father smoked, and 05.8 per cent from homes where only the mother smoked. (23:9-10)

Segal prefaced his paper by explaining that his interest in the smoking habits of young people is twofold - professional because of his training and personal because one of his children would soon be a teenager. Segal wrote:

... no matter how sound a school or community education program is ..., the really potent impact on the child is made at home. In the
development of attitudes toward smoking - as in attitudes toward sex or religion - it is parental guidance that matters most. (88:4)

and:

... your attempts to influence your children against starting - or continuing - to smoke, clearly have less chance of success if you smoke yourself. "Do as I say, not as I do," has never been a very productive line for parents, and it is likely to have little or no effect in counterbalancing the powerful psychological pull the idea of smoking exerts on teenagers. (88:10)

Horn reported that when questions were asked of adults who smoked, about their reasons for smoking, the responses were: social forces, interpersonal influences, and exposure to mass media. When the same questions were asked of young persons, the responses were: exploration, curiosity, adult emulation, peer conformity, rebellion against authority, identity searching, and immediate gratification. (53:6-7)

It appears that youth and adults claim an analogous influence; that of interpersonal influence for adults, and peer conformity for youth.

**Relationship Between Smoking Behavior of Youth and Smoking Practices of Peers: Behavior and Influence of Peer Group**

The sociologist Borgatta, participating in the Behavioral Aspects of Smoking Conference, reported that:

If the facts are accurate and persons of lower education and lower socio-economic status are
the ones more likely to be the early smoker, this is not merely because they are less "smart". They are more concerned with the immediate rewards available to them, particularly from their peers. From the point of view of persons who are responding to peer culture, being "adult" is really (mis) - defined as being the kind of person who is a leader of the peer group. It is not the acceptance of adult normative standards. Very often in our youth culture being an adult is a matter of declaring a form of independence from parental control rather than accepting adult standards.

In this era the norms of society do not reflect stringent attitudes toward child rearing with considerable attention to the undertaking of responsibility by youth. This, if one wants to consider the possibility of countering the effects of peer culture, one must really consider the problem of changing the values of society as a whole in these matters in order to change these relatively specific things. It is doubtful that most planners would be prepared to undertake the changing of the whole structure of parent-child relationships in order to control a behavior like smoking. What can change, however, is that which is considered appropriate in the peer culture itself. (13:9)

Several investigators, in the past few years, have examined influences other than parental and other adults on the smoking behavior of youth. Newer studies by Salber and her associates, as well as other investigators reviewed here, presented a change in investigative objectives. A 1962-1963 study revealed a correlation between the peer group and smoking behavior of teenagers. The reasons given by teenage smokers were: because the "gang" smoked; to be the "big shot"; or, to impress the group. In summarizing this study, the authors stated
"conformity is the common reason" apparent in teenage smoking behavior. (84:119, 121)

Review of some of the statistics associated with teenage smoking revealed that it has been roughly estimated that about 30 per cent of American teenagers smoke. At the high school level, between 40-55 per cent of twelfth graders, are smoking. Reasons vary, but simply, it may be the "in" thing to do. (90:9)

In the 1964 report to the Surgeon General, student smoking and the relationship to peers was noted.

Some students of smoking behavior have looked at the interacting forces of dynamics of "striving for status" in a broader sense as showing the inter-relatedness of basic psycho-social needs. Some of these are: to be accepted by one's reference persons, particularly one's peer groups, to develop self-esteem and an acceptable self image; and to cope with painful feelings of inadequacy. Of these, striving for adult status is only one aspect. It is entirely possible that if smoking is related to trying to gain status, it may be more in terms of keeping abreast of one's peers than in terms of deliberately wanting to be an adult.

At present, there is persuasive, but not convincing, evidence that smoking adolescents may, in many cases, be related to needs for status among peers, self-assurance, and striving for adult status. (96:15)

This observation and that of Borgatta, mentioned above, seem to be in complete agreement.

Just as a parent is never "socialized" (sic) only for his role in the family, the child is never "socialized" only for his role in the family, but to structures
outside the family as well. The child is "socialized" for his role in the family, the school, and in the peer group. (82:35)

In the school, the generation line is enhanced by pupil-teacher roles; in the peer group the dominant characteristic is the age level, often with membership of one sex. No adult authority is imposed and within the group there develops a differentiation of roles, particularly with respect to leadership. (82:115) In the peer group, the child encounters for the first time, a system, or society, that is not adult controlled. (82:121) On occasion, in the peer group, one finds role changes. A child who may have had a deferent role in the family constellation, may find himself in a dominating or parental role, in the peer group. (82:123) While most pre-adolescent peer groups tend to be structured horizontally, rather than by stratification the adolescent peer group tends to be very sensitive as to how, as a group, they rate, and whether theirs is the "right crowd". (82:130)

Jannings has stated that children need approval from others of their own age, possibly more than approval from their teachers. Occasionally when teachers suspect that group behavior is interfering with classroom work, groups will be separated. Jannings felt that when this is done, young people learn to live two lives; one
officially and one under cover, "in order to satisfy the social needs forbidden by the school." (56:5)

Jannings indicated that peer behavior or group behavior can be taught, that is, they can be taught to behave in a socially acceptable manner. Since pupils are taught in groups, what is learned is bound to affect each other. (56:6) This idea could provide the framework for the selection of curricular content to add to the process of "individual expression" and "of the ways in which they apply elsewhere." (56:8)

Taba and her associates also have investigated the social needs of the adolescent society, and have reported that "children are transients in the classroom." They are affected by the home, the neighborhood, peers, groups in schools, and groups out of school, but daily association of a boy or a girl with others of his own age - his peers - is very important. (98:9-10) Social belonging is a psychological necessity. (98:71) Since these boys and girls are eager to be part of a crowd, they conform. But, as one teacher reported, these young people can learn to accept and value differences. If boys and girls are to learn to respect differences of opinion, if they are to be secure enough to be able to be different and to accept differences in others, "we have to provide experiences to teach them these feelings and skills." (98:118)
Coleman, another student of adolescent society behavior, concurs with other investigators, that adolescents look to each other rather than the adult community for their social rewards. This social phenomenon has "significant implications for educational theory and practice." (20:11) Adults, Coleman reported, must know how to shape the direction adolescent society takes, since the breaking down of the adolescent society in order to re-establish old controls is improbable in today's society. Coleman suggested that the adult society "learn how to control the adolescent community as a community" and to use this to further a program of education. (20:12)

Coleman reported the results of a questionnaire administered to boys and girls in nine public schools. The questions were designed to find out how many of the students smoked, smoked regularly, smoked occasionally, or never smoked. The respondent had been advised that no one they knew would ever see the questionnaire. Coleman observed:

It is useful to point out that the principal protection against response bias in a self administered questionnaire seems to lie in such guarantees, rather than in the characteristics of the administration. A teenager may understate his smoking . . . if parents or teachers could see his responses; he may overstate smoking . . . if another teenager could see it. But if only strangers, whether adult or teenagers, see it, he will likely respond more truthfully. (20:16)
Salber and her associates found that reasons given for smoking could be listed under seven headings. These are: 1) conformity to peer group; 2) adult emulation; 3) to impress others; 4) curiosity and novel experience; 5) rebellion against authority; 6) enjoyment and tension release; and, 7) miscellaneous. One item of interest under miscellaneous was "To lose weight." The seven headings given for not smoking, or for stopping smoking, were: 1) Health (items classified under this heading were: a) health hazard; b) lung cancer caused by smoking; c) affects my asthma; d) causes dizziness; e) stunts growth; f) cigarette smoke makes me ill; g) developed a cough.) 2) athletics; 3) money; 4) influence of others; 5) moral or aesthetic objections; 6) dislike or no enjoyment; and, 7) miscellaneous. Several responses listed under the miscellaneous item were: to resist being one of the crowd; "because my father and sister are chain smokers and I don't want to be one"; or, "not worth doing just to act grown up."

One of the four conclusions in this Salber study was: "The influence of the peer group was stated to be a very important factor in initiating smoking."

Segal, too, acknowledged the "herd instinct." He wrote that more high-school smokers, when asked why they smoked, said they smoked to "go along with the
crowd" and "to keep from being different." The adolescent, Segal continued, "harbors an especially strong need to feel accepted by his friends and what they do."

Segal is of the opinion that parents should try to point out that "this kind of acceptance isn't worth much, and that no great achievement has ever sprung from blind conformity." Segal admitted that this kind of advice may not be the most effective, but encouragement to teenagers to develop traits that will make them "stand out" in the crowd may have more positive results.

(88:8)

Weir, in his study of Teacher-Student Perceptions of Smoking, has stated that everyone is concerned about accurate self-perception. Teenagers are especially concerned with this process plus accurately describing himself to others by his behavior. Weir wrote:

... for it is during these years, that the greatest changes in one's self image takes place. Much of the adolescent's time and energy is expended in the often painful process of self-definition and description. Change occurs in the image and the adolescent wishes to project and he also finds a new and broadening spectrum of available behaviors as he passes from childhood to adulthood. Examples of these opportunities are, the possession and operation of an automobile, part-time employment with accompanying economic independence, increasing authority in selection of dress and personal grooming, regular smoking of cigarettes, etc.

We believe the function served by smoking for many beginning smokers is to express certain self-perceptions and to lay claim to characteristics and traits by which he would like to be known. (103:24)
Davis, too, has noted the involvement of youth with their self-image. This is especially true, he said, "when their image of being grown up and independent included the smoking practice . . . ." (26:7)

In another paper, Davis stated that if pupils in the lower grades were helped to develop ego strength, these children could be aided in "developing skills in reaching their own decisions and not always going along with the gang." (24:2-3)

Lampert and his associates administered a questionnaire on smoking to more than one thousand boys and girls in grades six through twelve. The test was designed to elicit responses on three scales: moral, peer, and facts. These researchers found that non-smokers reported "less feeling of peer pressure to smoke." (61:36)

To children and teenagers death and disorder in a remote and half legendary condition called middle age are particularly unreal. How can it compare with impressing your friends right now? (7:6)

This succinct statement sums up rather well the problems of health hazards and peer influence and their relationship to the smoking behavior of youth.

Relationship of Knowledge of Purported Health Hazards of Smoking to Smoking Behavior of Teenagers

Many investigators of smoking have included in their studies questions designed to assess the relationship of youth and their socio-economic background,
academic achievement, participation in athletics, and the education levels achieved by their parents. All studies show some degree of relationship. These relationships, while recognized as integral and important facets on any smoking study, have not been reviewed in this paper. Already reviewed have been the relationships between parental and other adults smoking behavior on youth, and peer influence on the smoking behavior of youth. In this section a review of literature referrent to the smoking behavior of youth and their knowledge of the purported health hazards of smoking is presented.

Although there has been a tremendous increase in the literature related to educational techniques for teaching about health both in the elementary and senior high schools, there is, nonetheless, a paucity of studies which explore the relationship of this knowledge to the smoking habits or behavior of young people.

Lampert and his associates, in an attempt to assess antismoking campaigns in public schools, tested 1002 pupils from three grade schools and two high schools in Missoula, Montana. The attitudinal test questions were presented in three areas: moral, peer, and facts. (61:34) The investigators found that those who scored high on the moral scale were very likely to score high on peer and fact scales. (61:36) Lampert and his associates found little differences on the fact scale
among pupils in the lower grades, but found a difference among juniors and seniors, and they suggest that:

It is entirely possible that students in the lower grades are either ignorant of the facts (in fact, a few students in the lower grades penciled in "?" after some of the items dealing with "facts") or the items on facts do not seem relevant to this group of students, who are, by and large among the healthiest in the population. (61:38)

Lampert and his associates agree that information gathered from the fact scale is "not as conclusive" as the facts from the moral or peer scales, (61:38) and their suggestions for education are reviewed in the section on education for smoking.

Salber and her associates, in their 1963 study in the Newton, Massachusetts Schools, were interested in gathering and categorizing the reasons given by high school pupils for smoking. One observation noted in this study was that among students who had stopped smoking there was "little social class difference in their motivation for so doing, except that health reasons appear to be less important in the lowest social groups." (84:123-124) The study does not indicate whether or not health knowledge was a factor in the "health reasons".

On the evening of January 16, 1968, the Columbia Broadcasting System presented the National Smoking Test.*

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*Copies of the National Smoking Test, the transcript of the broadcast, and the results of the national sampling were provided by Vern Diamond, Producer/Director of the National Smoking Test, Columbia Broadcasting System, New York, New York.
Of the eighteen True-False questions, three were directly concerned with health knowledge. Data from the national sampling revealed that: 79 per cent of the respondents were aware of lower death rates among long-time smokers who had stopped smoking; 62 per cent knew that heart and lung damage occurs less frequently among pipe and cigar smokers; and only 45 per cent were correct in their response of "False" to the question which stated that "a cigarette smoker gets the greatest concentration of tars and nicotines from the first few puffs." The studio audience which was composed of YMCA members from New York, and employees from two telephone companies, had an overall average on the True-False portion of 40 for smokers and 35 for non-smokers. (79:3-5)

Briney stated the purpose of his study was "to investigate the relationship, if any, between knowledge and behavior in respect to a specific area of health, i.e., cigarette smoking." The study was conducted in a San Francisco Bay area suburban community. The test instrument was administered to 156 boys and 192 girls in the senior class. (15:28) The study's discussion notes that:

It is important to note, however, that there is little difference between boys and girls in their level of knowledge about the effects of smoking as indicated by achievement test scores. (15:33)
Briney suggested that there may be other factors of greater importance to boys and girls than knowledge about the effects of smoking and health, and he presented the viewpoint of behavioral scientist Godfrey M. Hochbaum, who said:

• • • unfortunately, knowledge alone does not motivate a person to act in accordance with it . . . (15:33).

In summation, Briney stated:

• • • it could be said that this study showed a lack of significant relationship between knowledge and behavior in regard to cigarette smoking for boys but a positive relationship for girls, i.e., girls who have higher knowledge scores about the effects of smoking are less likely to be smokers than those with low knowledge scores (15:34).

The purpose of the Fodor-Glass-Weiner study was "to develop meaningful educational programs that will affect smoking behavior." This multi-faceted study involved measurements from "400 healthy male students at San Fernando Valley State College (200 smokers and 200 non-smokers) between 17 and 22 years of age." (33:94-95) The study included extensive physiological tests, a personal information questionnaire, and a questionnaire designed to test the subjects' knowledge about smoking and health. The latter test was devised to measure cognitive skills suggested by Bloom.(11:201-207) These
cognitive skills were presented in the Definitions in Chapter I of this paper.

Fodor and his associates found that smokers were more informed about smoking and health than non-smokers. Employing Bloom's taxonomy, these investigators found that in the area of Recall non-smokers knew that: smoking is associated with emphysema and heart disease; that the Heart Association advises against smoking; and, that smoking increases the pulse rate. In the area of Analysis, fewer smokers felt that carbon monoxide was a harmful ingredient in cigarette smoke. In Synthesis, fewer smokers thought that increasing the filter length would serve as a prevention for the absorption of nicotine. In Evaluation, the authors' found that the more informed smokers felt it unnecessary for teenagers to worry about smoking until there is more conclusive evidence indicating real harmful effects. These respondents also felt that smoking was no cause for worry for the normal, healthy person, that occasional smoking is not harmful, that at times cigarette smoking can be beneficial, and that smoking may be a sign of individualism. Fewer respondents were of the opinion that smoking is a sign of weakness. Responses to Application showed that among the better informed respondents, few would advise young people not to smoke. (33:96)
The Fodor-Glass-Weiner study revealed that knowledge and the cognitive skills do not discourage smokers from smoking, nor from discouraging young people who may be starting to smoke. The authors suggested that "merely disseminating information" about the effects of smoking and health "may not necessarily alter smoking behavior" and that a new concept in educational programs, health education rather than smoking education, must be developed. (33:97)

**Education for Smoking**

Education for and about smoking, to be effective, must conform to the best educational techniques and these techniques should reflect the philosophy of the educational environment proscribed by the school district. Leslie and his associates have stated that: "schools exist to improve society," and as tools of society schools are only as effective as the contribution they are able to make toward "social betterment". The authors further set forth that schools have the responsibility and opportunity to "help protect, maintain, and improve the health of pupils". (66:19)

Anderson is of the opinion that health attitudes, knowledge, and practices are "reciprocal and inter-related". Health attitudes, he said, are the result of knowledge and practices. (1:277) Students at the
junior high school level "need and are interested in fundamental questions and problems, not detailed data." Anderson warned against insignificant questions and often meaningless details. Honest presentation of main factors in a study will make a unit "comprehensive, meaningful, and impressive to youngsters". (1:373)

Desirable attitudes should be recognized as related to growth and accomplishment, rather than an end in itself. Since the abstraction "health" has little meaning to young pupils, it may be difficult to design a program that will induce them to follow a regime of healthful living that will benefit them later. (100:54) At the junior high school level pupils may be less willing to follow health practices introduced in the curriculum, and may even reject rules of health learned earlier. (100:399)

Oberteuffer and Beyrer have written that "one important aspect of health education involves decision making." The educated person, the authors reported, seeks optimum health and desires a better understanding of himself in order to make changes when indicated, to think critically about health, and "to feel secure in the face of change." (81:48) Grout concurred with Oberteuffer and Beyrer and stated that junior high school classroom activities should be so designed as to assist pupils in making decisions. (35:256)
Swinehart, in an article which appeared in the *American Journal of Public Health* in 1966, discussed changes in pupil reactions which had taken place since the Surgeon General's Report on Smoking and Health had been made public. He was of "the opinion that there had been little change in the habits of the pupils. As the result of his investigation, Swinehart presented his "Implications for Health Education Programs." His three main points were: 1) messages repeated too often become ineffective, and "the more the better" may have negative consequences, may produce hostility toward communication, greater rigidity in existing attitudes, and forgetting or distorting earlier information; 2) messages which stress personal and social implications of health damage (caused by smoking) are more effective than those which stress bodily damage, as such; and, 3) "health problems which have not been experienced lack sufficient reality to have much impact on present behavior", also, "a risk is not a certainty and high expectation of health damage may not be high enough to require action." (97:2025)

Davis has said:

Educating individuals to make a personal decision to not do something that about 1/2 the people do . . . is going to be tough. This is particularly true with youth when their image of being grown up or independent includes the smoking practice; when their friends, parents or other models smoke, and when the unsavory results of smoking are completely beyond their immediate personal experience
... Nonetheless, our task is clear. Through education we must find better ways to reach youth and adults with the facts to motivate them to make wise decisions about their own practices, and to develop the inner strength to cope with the contradictory influences which surround them. (25:4)

Davis reported that schools with education programs for smoking and health have shown little evidence of having changed the smoking practice of pupils, or deterred pupils from becoming smokers. Nevertheless, Davis felt that schools play an important role and stated that: "the need to find successful education approaches is very great." Further, Davis said: "It is important that we develop more vital, meaningful ways to reach teachers, pupils, and adults who work with youth."

Davis attacked the frequently used education techniques, and said "failure and discouragement" would be encountered if there were only "annual one-shot" approaches to pupils and faculties; if a moralistic approach is used; if the same materials and methods are used repeatedly; and, if both smokers and non-smokers are approached in the same way. (26:8) Davis admitted that even "outstanding, imaginative, creative, hard-working, well-supported teachers and school curriculum" may find competition from outside forces which encourage youthful smoking behavior. (26:9)
Davis submitted that a classroom education program for health and smoking is far from a unilateral endeavor. Current projects are exploring ways and means to improve teaching methods, develop experiences and provide classroom material at different grade levels. One University is attempting to reach students through its Greek letter societies. The Children's Bureau is interested in approaching youth leaders and young people. The National 4-H Foundation in several areas have developed programs between organized voluntary youth groups and voluntary health resources. The American Dental Association has become interested in an education program, as have the American Association for Health, Physical Education, and Recreation, and the National Congress of Parents and Teachers. (26:12-13)

Creswell and his associates found that a "student-centered" approach is more successful in changing attitudes in regards to a teenager's non-smoking position, and, "strong support is given for introducing anti-smoking education programs into the junior high curriculum."
(23:19) The investigators concluded the discussion of their investigation with this suggestion:

It would appear that the remote theme which emphasized the relationship of lung cancer to cigarette smoking in terms of effects later in life, displays no current personal relevance for the teenager of today who is perhaps more concerned with the immediate problems of his teen years. The contemporary
approach, however, appeals to the teenager on a more rational basis particularly in terms of its inherent implications for the teen sub-culture. (23:22-23)

Several observers of pupils smoking behavior have indicated that meaningful education should be introduced in the lower grades. Leedham reported on a communication with John W. Crail of Louisville, Ohio. Crail had completed a study of grade-school pupils, and as the result of the study, was of the opinion that meaningful education for health and smoking must be introduced in the lower grades. (63:135) Andrus also suggested that programs be directed at "the younger pre-adolescent age group to deter their starting the smoking habit." (3:247) Sallek has recommended that "formal and informal instruction and guidance for youth should be undertaken in sixth or seventh grade, or both . . . ." (86:313)

Horn admitted that educators are in a "rather new area in smoking education," and he asked the rhetorical question: "What after all are our goals in health education?" Horn is of the opinion that the aim of teachers is to teach children that their actions affect their lives, that their actions may cause their ill health, and that every person has an obligation to himself to maintain good health. (52:3) Horn submitted that experimentation with curriculum changes and teacher-in-service education "when effectively tapped, can be a strong potential in reducing the development of future cigarette smoking." (52:4)
"Knowledge is not enough for behavior change ..." (24:3) Education is the means by which the recipient is helped to perceive the problems of smoking and health, Davis said. (24:3) A framework, or model, of smoking behavior change should be concerned with motivation, economics, self-control, and the psychological factors. Efforts are being made to adapt psychological factors to the young smokers, but, Davis said, "more work will have to be done before it will have real utility." Effective preventive education approaches can be made by the development of content and methodology, based on the psychological factors of smoking. (24:4)

Unlike Grout, who suggested the inclusion of pupil-designed posters as part of an educational program for smoking (35:256), Schwartz and Dubitsky conceded that posters and the like, have very little effect on a program. Anti-smoking campaigns are not the answer and present educational programs have been only slightly effective. Before an effective curriculum can be developed, educators must explore and identify "the needs and pressures facing the adolescent" and a program prepared which the young pupil "can understand and relate to his own particular situation." (87:180-181)
Many educators are firm in their convictions that new and meaningful health education programs must be developed, programs based on updated theories of education. In the meantime, old techniques, "while not necessarily invalid, must be studied carefully before we place too much faith in them." (48:18) Horn has pointed out that schools are currently interested in the "planning and development of units within the school curriculum" which will make use of materials now available. Among areas of study being prepared for these units are physiology, pharmacology, demonstrations, audio-visual aids, and consumer health. Consumer health involves pupils in the discussion and analysis of advertising techniques. (48:19)

In the 1964 Report, the Advisory Committee on Cigarette Smoking and Health to the Governor of California, presented twelve recommendations. The fourth of these recommendations stated:

4. Educational efforts to be concentrated primarily on youngsters who have not yet started to smoke cigarettes. In particular,

a. The State should develop an extensive educational program with suitable materials and specially trained teaching personnel, focused primarily on young people. The program should include those engaged in or training for the health and teaching professions, and adults generally.
b. The entire State health education program should be strengthened to enhance the effectiveness of specific efforts on cigarette smoking and health. A Framework in Health Instruction, providing continuity for all health instruction, would enable the teaching of health principles to be improved generally. (44:8-9)

In addition to Point 4 and the two sub-points, the committee urged the amending of several education codes, all of which would strengthen health teaching and content in the California public schools. The Advisory Committee also recommended greater State involvement in research, development of education techniques, and the establishment of "periodic California Youth Congresses on Smoking and Health . . . " . (44:9-10)

In 1964, the Departments of Public Instruction and Public Health, State of Illinois, designed a framework for teaching about smoking and health. The ninety page guide provides scientific information relative to cigarette smoking as well as ideas for teaching about smoking and health. The Appendix includes a student questionnaire, and a skeletal bibliography.

In 1967, the Pennsylvania Committee on Smoking and the Health of Youth presented a composite of its activities, titled Smoking and Health, The Pennsylvania Story. Twenty-five state and voluntary organizations
contributed time, effort, and findings to the study. Suggestions for an educational approach were more general than the Illinois Handbook mentioned above, but both efforts indicated the interest of educators and those professionals in public health in providing a framework for school curricula until curriculum committees of school districts are able to design one that will meet their own requirements and fit into their existing educational programs.

Fodor and his associates have pointed out that:

'Smoking education', in fact, must become health education, taking into consideration the multiplicity of factors related to smoking and health (physical, mental, and social). (33:97)

The Fodor-Glass-Weiner study revealed that smokers (at the college level) are more informed than non-smokers about the health hazards associated with cigarette smoking. The hierarchy of cognitive skills related to smoking and health have not served as a deterrent to smoking, "nor do the smokers advise young people not to smoke." (33:97) The authors were of the opinion that: "The most pertinent educational implication of this study is the attempt to develop new teaching content related to smoking and health." (33:96) As educators and researchers become more aware of the immediacy of the problem, the development of this approach becomes
more meaningful. Fodor, Glass, and Weiner, as well as others (26, 88), are cognizant of the fact that young people and youth are not concerned about possible infirmities in their later years. Educational content must therefore be concerned with providing information about the immediate effects of smoking. (33:96) The authors further stated that:

The educational program developed cannot deal solely with cigarette smoking and its effect on a single organ, or a number of organs. Any aspect of health education must be related to the total functioning and well being of man. (33:98)

The list of provocative pamphlets for pupils is endless, but the author would be remiss if she failed to acknowledge several sources of material designed for the pre-teenager and the teenager. These are: Children's Bureau, United States Department of Health, Education, and Welfare, the Heart Associations, the Cancer Societies, and, the Tuberculosis and Health Associations.
CHAPTER III
RESEARCH PROCEDURES AND DESIGN

Meyer and Heidgerkin, discussing the applicability of a research design, state that a researcher is impelled by the needs of a practical situation. This practical situation may emanate from an on-the-job occurrence, and it may seek to test a hypothesis inspired from the practical situation. (74:373).

The selection of this investigation met the needs suggested by Meyer and Heidgerkin, and the reasons for this study were presented in the Introduction of Chapter I. To recapitulate briefly, an increasing number of seventh and eighth grade pupils in the Pleasant Valley School District were observed smoking on or near the campi. It appeared that this was a most opportune time to investigate the smoking habits of these seventh and eighth grade pupils and their present knowledge of the health hazards of cigarette smoking.

Population

All male and female pupils of the seventh and eighth grades, a total of 917, in the Los Altos and Monte Vista Junior High Schools, Camarillo, California, comprised the population tested. The respondents in this population were categorized as follows: Los Altos, seventh grade male, seventh grade female, eighth grade male, and eighth grade
female; Monte Vista, seventh grade male, seventh grade female, eighth grade male, and eighth grade female. A random sampling of twenty per cent from each of these categories was taken, providing a total of 185 subjects for analysis. A breakdown of the random sampling is provided in Table I.

Questionnaire

A modified questionnaire, based on the instrument employed in the Fodor-Glass-Weiner* study (15, 32, 74) was utilized for this project. This questionnaire met the needs for determining whether or not there existed a relationship between the smoking habits reported by seventh and eighth grade pupils in the Pleasant Valley School District and their knowledge of the purported health hazards of smoking.

The revised Fodor-Glass-Weiner questionnaire, the instruction sheet, and the answer sheet are included in the Appendix.

Conferences

This project was presented to the Superintendent and the Director of Education in the Pleasant Valley School District, Camarillo, California. The steps in the

*The author gratefully acknowledges the permission granted by Dr. John Fodor for the modification of the questionnaire employed in the Fodor-Glass-Weiner study.
proposed procedure were explained in detail. The Superintendent and the Director of Education agreed to the study if the findings were made known to them and to the health education curriculum committee as soon as results were available. Full cooperation was secured. Next, the project was presented to the principals of the Los Altos and Monte Vista Junior High Schools, and meetings were scheduled with the faculty of each school.

Two meetings were held, one with each faculty. The purpose of the study was outlined in detail. There was a brief review of the questionnaire, and in order to ensure a standard test administration, the instruction sheet was reviewed several times with the teachers. It was agreed that each teacher would appoint a "monitor" from his class. The monitor would call for the test materials for his room, and at the close of the test period collect the sealed answer sheets, place them in the large envelope provided for this purpose, and deliver the large envelope, sealed, to the school nurse in the health office. This would eliminate, or at least reduce, the possibility of teacher involvement. This course was adopted to encourage pupils to respond truthfully, and without fear of disciplinary action.

Teachers wholeheartedly endorsed the "non-involved" idea. One exception was agreed upon. If pupils in the remedial reading program, or pupils of Mexican background
with a language handicap asked for reading help, the teacher could explain or clarify, as simply as possible, a question asked of him.

**Test Schedule**

The home-room period was selected for the test. This selection prevented communication between pupils of the same school and between schools. This period is the only period during the school day in which all pupils are in a classroom and is the first class of the school day. Monte Vista graciously reversed the morning and afternoon sessions, thus permitting the author to travel from Los Altos to Monte Vista and prepare the test materials for these rooms.

Experimentation and pretesting assured the author the test should take no longer than one class period of forty minutes. Principals voluntarily offered a few minutes "grace" of the "passing time" between classes, if needed.

**Test Environment**

At the conclusion of opening exercises, each teacher advised his pupils of the test, and appointed the monitor. As soon as the monitor delivered the test materials to his room, teacher and pupils read the instruction sheet and the teacher retired to his desk. Since this was not a timed test, pupils could begin at once.
At the Monte Vista Junior High School, a deviation from the usual classroom climate occurred. Because of the absence of the principal from the school, the teacher/vice-principal served in this capacity. This left his classroom without a teacher. At his invitation, the author served as teacher for his class. Over the inter-communication system, the acting principal explained the reason for the change in the morning and afternoon programs, and advised all pupils that teachers would explain the test procedure. To his own room, he read the instructions and told his pupils to begin the test as soon as they were ready.

Sampling

In preparation for a random sampling of the returned answer sheets, the sealed envelopes containing the answer sheets were removed from the large sealed envelopes and sorted into eight groups, by school, grade, and sex, as designated in the upper right hand corner of the individual pupil's envelope. Next, in each group, every sealed envelope was numbered, beginning with the number one, and advancing consecutively.

Employing a table of random digits (105:287) twenty per cent of the respondents in each group was drawn, totaling 185 respondents. Data relevant to each group are included in Table I.
TABLE I

DEMOGRAPHIC DATA OF RESPONDENTS

<table>
<thead>
<tr>
<th>Los Altos</th>
<th>Sex</th>
<th>Grade</th>
<th>Respondents</th>
<th>Absentees</th>
<th>Per cent Tested</th>
<th>20% Randomly Selected</th>
</tr>
</thead>
<tbody>
<tr>
<td>F</td>
<td>7</td>
<td></td>
<td>121</td>
<td>6</td>
<td>99.95</td>
<td>24</td>
</tr>
<tr>
<td>M</td>
<td>7</td>
<td></td>
<td>124</td>
<td>8</td>
<td>99.94</td>
<td>25</td>
</tr>
<tr>
<td>F</td>
<td>8</td>
<td></td>
<td>97</td>
<td>9</td>
<td>99.92</td>
<td>20</td>
</tr>
<tr>
<td>M</td>
<td>8</td>
<td></td>
<td>95</td>
<td>9</td>
<td>99.20</td>
<td>20</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Monte Vista</th>
</tr>
</thead>
<tbody>
<tr>
<td>F</td>
</tr>
<tr>
<td>M</td>
</tr>
<tr>
<td>F</td>
</tr>
<tr>
<td>M</td>
</tr>
</tbody>
</table>

917 51 99.946 185

Questionnaire Design

The questionnaire employed in this study (Appendix C) was adapted and modified from the more comprehensive instrument of the Fodor-Glass-Weiner smoking project at San Fernando Valley State College. Questions were chosen to meet the criteria of cognition as defined by Bloom (11) and presented in Terms and Definitions in Chapter I. Questions one through five were included to identify respondents by age, sex, school, grade and smoking behavior. Questions six through twelve were intended to test the respondents' recall of factual information; thirteen through eighteen, translation or comprehension; nineteen through twenty-two, analysis; twenty-three through
twenty-seven, evaluation; and, twenty-eight through thirty-four, synthesis. Numbers thirty-five and thirty-six were eliminated from the analysis because they were irrelevant to the study.

**Preparation of Responses For Analysis**

Conference with the thesis committee chairman and the newly appointed bio-statistician to this study, resulted in several changes and simplifications in the preparation of the responses for the analysis.

Smoking behavior patterns were based on the responses of the 185 randomly selected respondents, and the students were categorized as shown in Table II.

### TABLE II

**RESPONDENTS' REPORTED SMOKING BEHAVIOR**

<table>
<thead>
<tr>
<th>Number</th>
<th>Description</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>I have never smoked cigarettes at all</td>
<td>70</td>
</tr>
<tr>
<td>2.</td>
<td>I have tried cigarettes a few times just to see what they were like</td>
<td>57</td>
</tr>
<tr>
<td>3.</td>
<td>I used to smoke once in a while</td>
<td>20</td>
</tr>
<tr>
<td>4.</td>
<td>I used to smoke just about every day</td>
<td>4</td>
</tr>
<tr>
<td>5.</td>
<td>I smoke cigarettes once in a while, but not every day</td>
<td>20</td>
</tr>
<tr>
<td>6.</td>
<td>I usually smoke just about every day</td>
<td>14</td>
</tr>
</tbody>
</table>

On the basis of the categories in Table II, data were further simplified into three categories, shown in Table III. The smoking behaviors were now assigned to three classifications: Group I, those who reported they have never smoked; Group II (formerly Groups 2 and 3)
considered "experimenters"; and, Group III (originally Groups 5 and 6), current smokers. With the elimination of the original Group 4, N = 181, the new grouping appears as follows:

**TABLE III**

NEW CLASSIFICATION OF REPORTED SMOKING BEHAVIORS

<table>
<thead>
<tr>
<th>Group</th>
<th>Behavior</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group I</td>
<td>Never Smoked</td>
<td>70</td>
</tr>
<tr>
<td>Group II</td>
<td>Experimenters</td>
<td>77</td>
</tr>
<tr>
<td>Group III</td>
<td>Smokers</td>
<td>34</td>
</tr>
</tbody>
</table>

There are fifty-nine possible correct answers in the cognition area, questions five through twenty-seven, and including number thirty-three. Questions number twenty-eight through thirty-four reflected the opinions of the respondents, and these responses are presented in percentages in Chapter IV, Table V.
Analysis of the Data

Twenty-three items were used to obtain a total knowledge score. The frequency distribution of responses is included in Appendix E. Table IV provides the pertinent statistics obtained for the three groups. Differences between means were investigated by student's t-test.

<table>
<thead>
<tr>
<th>TABLE IV</th>
</tr>
</thead>
<tbody>
<tr>
<td>SCORES OF KNOWLEDGE FOR THREE GROUPS</td>
</tr>
<tr>
<td>GROUPS</td>
</tr>
<tr>
<td>---------</td>
</tr>
<tr>
<td>Never Smoked</td>
</tr>
<tr>
<td>Experi­menters</td>
</tr>
<tr>
<td>Smokers</td>
</tr>
<tr>
<td>Mean</td>
</tr>
<tr>
<td>Standard Deviation</td>
</tr>
<tr>
<td>Sample Size</td>
</tr>
<tr>
<td>Minimum Score</td>
</tr>
<tr>
<td>Maximum Score</td>
</tr>
</tbody>
</table>

There were no statistically significant differences at the 0.05 level between the means of the three samples.
The results indicate that there were no significant differences in the responses between Group I, those who have never smoked, and Group III, the reported smokers; nor was there a significant difference in responses between Group II, the reported experimenters, and Group III, the reported smokers. Concomitantly, there was no significant difference in responses in Group I, the reported non-smokers, and Group II, the reported experimenters.

A non-smoothed ogive curve, Figure I, representing cumulative percentage frequencies of the scores for reported non-smokers, experimenters and smokers, is presented in Appendix F.

Opinion Responses

Responses to questions number twenty-eight through thirty-four but excluding number thirty-three, were considered opinion or attitude responses and were tabulated in percentages. These results are shown in Table V.

The following set of statements are based upon the percentage breakdown in Table V.

a. Fewer smokers were of the opinion that smoking is a sign of weakness, than were non-smokers or experimenters.

b. More smokers than non-smokers or experimenters were of the opinion that smoking is a sign of strength.
### TABLE V

**OPINION RESPONSES IN PER CENT**

<table>
<thead>
<tr>
<th></th>
<th>I Never Smoked</th>
<th>II Experimenters</th>
<th>III Smokers</th>
</tr>
</thead>
<tbody>
<tr>
<td>28. When a person decides to smoke, it is:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. A sign of weakness</td>
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</tr>
<tr>
<td>b. A sign of conformity</td>
<td>31.43</td>
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</tr>
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<td>11.43</td>
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<td>32.35</td>
</tr>
<tr>
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<td>00.00</td>
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<td>20.59</td>
</tr>
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<td>3.89</td>
<td>5.88</td>
</tr>
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<td>29. Teenagers smoke because:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. It makes them feel important</td>
<td>32.86</td>
<td>36.36</td>
<td>35.30</td>
</tr>
<tr>
<td>b. It makes them feel more adult</td>
<td>44.28</td>
<td>31.17</td>
<td>23.53</td>
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<tr>
<td>c. They have nothing else to do</td>
<td>1.44</td>
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<td>5.88</td>
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<tr>
<td>d. Adults tell them not to smoke</td>
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<td>19.48</td>
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<tr>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
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<td>23.53</td>
</tr>
<tr>
<td>b. A sign of individual-ism</td>
<td>8.57</td>
<td>19.48</td>
<td>20.59</td>
</tr>
<tr>
<td>c. A sign of conformity</td>
<td>10.00</td>
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<td>5.88</td>
</tr>
<tr>
<td>d. A sign of strength</td>
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<td>31. Most smokers:</td>
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<td>a. Enjoy smoking</td>
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<td>b. Use smoking as a crutch</td>
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<td>c. Can't break the habit</td>
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<td>d. Don't believe smoking is harmful</td>
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<td>2.60</td>
<td>8.82</td>
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32. When a person decides not to start smoking, it is:
   a. A sign of weakness
   b. A sign of individualism
   c. A sign of conformity
   d. A sign of strength
   No response

34. The warning label on cigarette packages, which reads "Caution: Cigarette Smoking May Be Hazardous To Your Health":
   a. Has not influenced my decision to smoke
   b. Has influenced my decision to stop smoking
   c. Has had no influence on my decision to stop smoking
   d. Has not influenced me because I haven’t paid any attention to it
   No response

<table>
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<th></th>
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<th>II</th>
<th>III</th>
</tr>
</thead>
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<td></td>
<td></td>
</tr>
<tr>
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<tr>
<td></td>
<td>7.14</td>
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<td>17.65</td>
</tr>
<tr>
<td>a. A sign of weakness</td>
<td>24.28</td>
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<td>26.47</td>
</tr>
<tr>
<td>b. A sign of individualism</td>
<td>7.15</td>
<td>10.39</td>
<td>26.47</td>
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<td>c. A sign of conformity</td>
<td>55.71</td>
<td>39.00</td>
<td>44.12</td>
</tr>
<tr>
<td>d. A sign of strength</td>
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<td>3.89</td>
<td>5.88</td>
</tr>
<tr>
<td>No response</td>
<td>5.71</td>
<td>3.89</td>
<td>5.88</td>
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</table>

<table>
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<th>II</th>
<th>III</th>
</tr>
</thead>
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<td></td>
<td></td>
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<tr>
<td></td>
<td>17.14</td>
<td>20.78</td>
<td>29.41</td>
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<tr>
<td>a. Has not influenced my decision to smoke</td>
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<td>5.88</td>
</tr>
<tr>
<td>b. Has influenced my decision to stop smoking</td>
<td>4.29</td>
<td>11.69</td>
<td>17.69</td>
</tr>
<tr>
<td>c. Has had no influence on my decision to stop smoking</td>
<td>38.57</td>
<td>28.57</td>
<td>35.30</td>
</tr>
<tr>
<td>d. Has not influenced me because I haven't paid any attention to it</td>
<td>14.28</td>
<td>6.49</td>
<td>11.76</td>
</tr>
<tr>
<td>No response</td>
<td>14.28</td>
<td>6.49</td>
<td>11.76</td>
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</table>
c. Fewer smokers than non-smokers or experimenters felt smoking is a sign of individualism.

d. All three smoking behaviors had high per cent responses to "It makes them feel important" and "It makes them feel adult".

e. More smokers than non-smokers or experimenters were of the opinion that teenagers smoke because adults tell them not to smoke.

f. More experimenters and smokers were of the opinion that to stop smoking is a sign of individuality than were smokers.

g. All three behaviors had high per cent responses to a sign of strength when a smoker decides to stop smoking.

h. All three behaviors had a high per cent response to "Most smokers can't break the habit".

i. More experimenters than smokers or non-smokers were of the opinion that not to start smoking is a sign of individualism.

j. More smokers than experimenters or non-smokers were of the opinion that not to start smoking is a sign of strength.

k. None of the smokers were of the opinion that smokers used smoking as a crutch.
1. More smokers and non-smokers than experimenters were of the opinion that the warning on cigarette packages has had no influence on their smoking behavior because they haven't paid any attention to it.
Summary

It was the purpose of this study to determine whether or not there existed a relationship between the reported smoking habits of seventh and eighth grade pupils in the two junior high schools of the Pleasant Valley School District, Camarillo, California, and their knowledge and opinions about the purported health hazards of smoking.

The modification of the test instrument and the methods of analyses were the primary means of research for the study. Items on the instrument were approved by the questionnaire's authors and the thesis committee, the superintendent and the director of education in the Pleasant Valley School District.

From the analyses, it was determined that in the areas of cognition, there were no significant relationships between the reported smoking behaviors of the respondents and their knowledge of the health hazards of smoking. In the area of opinions and attitudes, more non-smokers and experimenters than smokers were of the opinion that the decisions to start smoking is a sign of weakness. More smokers and experimenters were of the
opinion that smoking is a sign of individualism, than were non-smokers. More non-smokers and experimenters felt that smoking makes the smokers feel more adult, than did smokers. All classes were high in response to "It makes them feel important".

All three classes had a higher response to a feeling of importance for smokers, as well as an indication of strength to stop smoking. A higher number of smokers were of the opinion that most smokers enjoy smoking, than were non-smokers and experimenters. There were no responses from smokers relative to the use of smoking as a crutch. None of the classes have been affected by the warning which appears on all cigarette packages.

Conclusions

1. There was no significant difference in cognition between the smokers and the non-smokers, the experimenters and the smokers, nor between the experimenters and the non-smokers.

2. The groups responded differently on twelve opinion questionnaire items.
BIBLIOGRAPHY


65. LeMaistre, Charles A. "Where the Action is on Smoking." A paper presented at the National Interagency Conference on Smoking and Health, College Park, Maryland, May 1, 1966.


77. My Dear, This'll Kill You. National Tuberculosis Association, Publication No. 72, 1966.


APPENDICES
APPENDIX A

INSTRUCTIONS TO PUPILS
INSTRUCTIONS
HEALTH INVENTORY QUESTIONNAIRE

This questionnaire is being administered by your teacher. It is part of a research project in health education, to determine how much information you have about cigarettes and smoking.

Please note that each of you has been given an answer sheet with the questionnaire, and a plain envelope. When you have finished the questionnaire, FOLD YOUR ANSWER SHEET AND PLACE IT IN THE ENVELOPE, THEN SEAL THE ENVELOPE. In the upper right hand corner of the envelope check for the appropriate information, that is, whether you are male or female, a seventh or eighth grade student, attending Los Altos or Monte Vista Junior High School.

One of your classmates will place all of your sealed envelopes in a large envelope, and this also will be sealed before it leaves your classroom.

These steps are taken to insure confidence, so that you are free to respond honestly. It is important that you answer each question as honestly as possible because the answers will provide information to be used in planning future programs.
APPENDIX B
<table>
<thead>
<tr>
<th></th>
<th>MALE</th>
<th></th>
<th>FEMALE</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>7th GRADE</td>
<td></td>
<td>8th GRADE</td>
</tr>
<tr>
<td></td>
<td>LOS ALTOS</td>
<td></td>
<td>MONTE VISTA</td>
</tr>
</tbody>
</table>
APPENDIX C

QUESTIONNAIRE
QUESTIONNAIRE

INSTRUCTION: ON THE ANSWER SHEET, CIRCLE THE NUMBER, LETTER OR LETTERS, THAT YOU THINK ARE THE BEST ANSWERS.

1. What is your age?
   (The figure on the first line indicates the years, and the figure on the second line indicates the number of months since your last birthday.)

2. a. Male   b. Female

3. What is your grade?  a. 7th  b. 8th

4. Which school do you attend?
   a. Los Altos   b. Monte Vista

5. Read this question carefully, then check the ONE statement, and only one, that best describes your cigarette smoking behavior.
   a. I usually smoke cigarettes just about every day.
   b. I smoke cigarettes once in a while, but not every day.
   c. I used to smoke cigarettes just about every day.
   d. I used to smoke once in a while.
   e. I have tried cigarettes a few times just to see what they were like.
   f. I have never smoked cigarettes at all.

6. The ingredients reported to be found in cigarette smoke are:
   a. Carbon dioxide   e. Arsenic
   b. Cholesterol   f. Tar
   c. Nicotine   g. Lead
   d. Oxygen   h. Carcinogens

THESE QUESTIONS WERE PLANNED TO FIND OUT WHAT YOU HAVE LEARNED AND REMEMBERED ABOUT SMOKING AND HEALTH. QUESTIONS MAY HAVE SEVERAL CORRECT ANSWERS. CIRCLE ALL LETTERS YOU THINK ARE THE RIGHT ANSWERS.
7. The ingredient in cigarette smoke which has been reported to affect heart action is the:  
   (CHOOSE ONE)  
   a. Nicotine  
   b. Nitrogen  
   c. Carbon monoxide  
   d. Oxygen  
   e. Carbon dioxide  
   f. Tars  
   g. Residue from burned cigarette paper  
   h. Heat from the burning tobacco  

8. Which of the following have been used as "slang" names for cigarettes?  
   a. Coffin nail  
   b. Main liner  
   c. Butt  
   d. Reefer  
   e. Weed  
   f. Java  
   g. Fag  
   h. Cancer stick  

9. Individuals have reported which of the following reasons for smoking cigarettes?  
   a. Increases alertness  
   b. Has a calming effect  
   c. Aides digestion  
   d. Gives something to do with the hands  
   e. Is grown-up  
   f. Relieves bad taste in the mouth  
   g. Helps to concentrate better  
   h. Gives one something to do  

10. Which of the following organizations have advised against smoking?  
    a. American Medical Association  
    b. American Heart Association  
    c. American Cancer Association  
    d. Tobacco Research Institute  
    e. Public Health Service  
    f. American Tobacco Company  
    g. Surgeon General  
    h. National Institutes of Health  

11. Which of the following have been used in cigarette advertising?  
    a. Pinch the filter  
    b. Real taste, satisfies longer  
    c. I came back  
    d. What's up front that counts  
    e. For those who think young  
    f. Sold American  
    g. I'll eat my hat  
    h. Bet you can't have just one
12. Individuals have reported which of the following reasons for not smoking cigarettes?
   a. Smoking decreases alertness
   b. Gives indigestion
   c. Tastes bad
   d. Hinders concentration
   e. Leaves a bad taste in the mouth
   f. Looks funny
   g. Causes dizziness
   h. Stains fingers

THE NEXT 6 QUESTIONS ARE TO BE ANSWERED "TRUE" OR "FALSE". CIRCLE THE CORRECT ANSWER ON THE ANSWER SHEET.

13. The term "health" means the absence of disease.

14. A "carcinogen" is a substance preventing the formation of cancer.

15. The term "atherosclerosis" means disease of the liver.

16. The term "cancer" means abnormal growth of cells.

17. The endocrine gland that produces "stress" hormones is called the adrenal gland.

18. "Hazardous" means harmful.

THE NEXT 4 QUESTIONS MAY HAVE MORE THAN ONE CORRECT ANSWER. READ EACH QUESTION CAREFULLY AND CIRCLE THE CORRECT LETTER OR LETTERS.

19. Which of the following ingredients in cigarette smoke are believed to be harmful to man?
   a. Carbon dioxide   e. Tars
   b. Oxygen          f. Carcinogens
   c. Nitrogen        g. Nicotine
   d. Arsenic         h. Carbon monoxide
20. The ingredients in cigarette smoke affect the circulatory system by:
   a. Enlarging blood vessels
   b. Narrowing blood vessels
   c. Lowering blood pressure
   d. Raising blood pressure
   e. Decreasing heart rate
   f. Increasing heart rate

21. Which of the following ingredients in cigarette smoke exert the greatest effect on the circulatory system and heart?
   a. Nicotine
   b. Tars
   c. Carcinogens
   d. Nitrogen
   e. Oxygen

22. Which of the following ingredients in cigarette smoke are most associated with the development of lung cancer?
   a. Nicotine
   b. Tars
   c. Nitrogen
   d. Oxygen
   e. Carbon monoxide

The following 5 questions require "true" or "false" answers and have been included to get your opinions about smoking. There are no right or wrong answers, only opinions.

23. The only time a person should really stop smoking is when his doctor tells him to stop.

24. It is unnecessary for teenagers to worry about cigarette smoking until more conclusive evidence is presented indicating real harmful effects.

25. Normal, healthy people can smoke cigarettes without worrying.

26. Cigarette smoking is not harmful for the person who smokes occasionally.

27. At times, cigarette smoking may be beneficial.
CHOOSE THE ONE ANSWER YOU THINK MAKES THE MOST SENSE IN THE FOLLOWING 5 QUESTIONS.

28. When a person decides to smoke, it is:
   a. A sign of weakness
   b. A sign of conformity
   c. A sign of individualism
   d. A sign of strength

29. Teenagers smoke because:
   a. It makes them feel important
   b. It makes them feel more adult
   c. They have nothing else to do
   d. Adults tell them not to smoke

30. When a person decides to stop smoking, it is:
   a. A sign of weakness
   b. A sign of individualism
   c. A sign of conformity
   d. A sign of strength

31. Most smokers:
   a. Enjoy smoking
   b. Use smoking as a crutch
   c. Can't break the habit
   d. Don't believe smoking is harmful

32. When a person decides not to start smoking, it is:
   a. A sign of weakness
   b. A sign of individualism
   c. A sign of conformity
   d. A sign of strength

33. You have learned about heart disease and your friend has not. What would you tell him to do to reduce his chance of having a heart attack. (CIRCLE THE BEST STATEMENTS.)
   a. Get some exercise every day
   b. Smoke filtered cigarettes
   c. Avoid tension
   d. Get a physical exam at least once a year
   e. Stay thin
   f. Don't eat fatty foods
   g. Stay calm
   h. Exercise vigorously every day
   i. Don't smoke cigarettes
   j. Don't inhale
34. The warning label on cigarette packages, which reads "Caution: Cigarette Smoking May Be Hazardous to Your Health":

a. has not influenced my decision to smoke
b. has influenced my decision to stop smoking
c. has had no influence on my decision to stop smoking
d. has not influenced me because I haven't paid any attention to it

35. Because I do not smoke, or because I have stopped smoking, I will be able to:

a. save money
b. reduce the number of dental cleanings
c. apply for lowered insurance rates from some companies
d. none of these
e. all of these

36. If you smoke one package of cigarettes every day, how much money will you "burn up" in a year?

a. $75.00
b. $110.50
c. $127.50
d. $165.00

37. Recently, a television program was devoted to cigarette smoking. Its purpose was to find out what information about cigarette smoking smokers and non-smokers have. Did you see this program?

a. yes
b. no
APPENDIX D

ANSWER SHEET

FOR HEALTH QUESTIONNAIRE
ANSWER SHEET FOR QUESTIONNAIRE

1. 10 11 12 13 14 15 16
   1 2 3 4 5 6 7 8 9 10 11
2. a b
3. a b
4. a b
5. a b c d e f
6. a b c d e f g h
7. a b c d e f g h
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14. True False
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28. a b c d
29. a b c d
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31. a b c d
32. a b c d
33. a b c d e f g h i j
34. a b c d
35. a b c d e
36. a b c d
37. a b
APPENDIX E

FREQUENCY DISTRIBUTION OF RESPONSES OF REPORTED SMOKERS, EXPERIMENTERS, AND NON-SMOKERS
### Frequency Distribution Responses of Reported Smokers, Experimenters, and Non-Smokers

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APPENDIX F

CUMULATIVE FREQUENCY CURVE

IN PER CENT
FIGURE I
CUMULATIVE FREQUENCY CURVE
IN PER CENT

Smokers
Experimenters
Non-smokers

Scores
PER CENT