

FACTORS THAT INFLUENCE  
TEENAGE SMOKING HABITS

by

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## ABSTRACT

The purpose of this study was to determine whether any significant relationship existed between a teenager's smoking habits and certain selected factors. The factors studied were peer group pressures, the smoking habits of the parents, siblings who smoked and such social factors as the occupation and nationality of the parents.

The hypotheses tested were:

1. Interpersonal factors have the most significant effect on the teenager and have an influence on whether he or she is a smoker or non-smoker.
2. Distinct differences exist between the reasons why males begin to smoke as opposed to why females begin. A female may be more influenced by the parents' smoking habits, especially the same-sex parent, while a male may be influenced by a combined effect of friends, parents, and siblings.
3. A teenager's smoking habit is more representative of their same-sex parent's smoking habits.

The research instrument used in this study was a questionnaire which was specifically designed and constructed to meet the requirements of this study. The subjects used for this study were drawn from schools administered by The Board of Education for the City of Hamilton in Hamilton, Ontario. The subjects, both males and females, ranged in age from 13 to 20 and were drawn from Grades 9 through 12 with 500 students being questioned.

Cross tabulations, which allowed the drawing up of contingency tables for any discrete variables, either numeric or alphanumeric were utilized along with the chi square ( $X^2$ ) test to examine a number of paired relationships.

This study concluded that a person's smoking habits, were not related to one factor alone but rather, a number of factors working together.

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## Chapter I

### INTRODUCTION TO THE PROBLEM

"It is not sufficient to know how many children smoke. We must know something of the characteristics of these children and what distinguishes them from children who do not smoke...and why they start smoking." (Salber, 1962, p. 1018)

Recent studies have shown (American Cancer Society, 1975; Kelson, 1975) that each year the proportions of students who smoke are increasing in most of the grade levels. Kelson demonstrated this trend in a study he conducted from 1964-71 in the State of Ohio, on students from Grades 7 to 12.

Beginners start with exploratory behaviour and the motive for this exploratory behaviour can be tied to a number of different factors such as peer group pressures to smoke, smoking habits of parents, siblings who smoke, and related social factors. The meaning and questions about these selected factors which will be used in this study need to be put forth.

#### Peer Group Pressures

"The group' has been characterized as the most powerful agent in the teenager's life." (Coleman, 1965)

p. 3). But what is the relationship between the smoking habits of an individual and the smoking habits of the group with whom he associates? If an individual is a member of a group where most members smoke, is he more likely to pick up the habit than if he were a member of a group where most do not smoke? Do peer group pressures determine the amount of cigarette smoking? These are interesting questions and some answers need to be found.

#### Smoking Habits of Parents

The smoking habits of the parents as to whether they both smoke, only one smokes, or neither smokes has to be examined. When both parents smoke, is it more likely that their children will smoke? Supposing one parent smokes, is it more likely that their same-sex child will smoke, or opposite-sex child will smoke? What effect does neither of the parents smoking have on the likelihood of children becoming smokers?

#### Siblings Who Smoke

The smoking habits of an individual need to be compared to the smoking habits of that person's brothers and sisters to see if there is any relationship between them. If a person has an older brother who smokes, is he more likely to take up smoking? When a person has an older sister who smokes, is he more likely to take up smoking? Supposing neither smoke, what is the effect?

### Social Factors

Some social factors need to be considered such as the occupation and nationality of the parents as well as the recreational habits of the teenage smokers and these factors may show some overall trends in the smoking habits of the teenagers.

There is no longer any doubt that cigarette smoking is a direct threat to an individual's health. Nevertheless, people are smoking in ever-increasing numbers, at an earlier age, and more heavily than before. This study will look into selected factors that may help explain initiation of smoking in the young.

### Statement of the Problem

The purpose of this study is to determine which of the selected factors (peer group pressures to smoke, smoking habits of parents, siblings who smoke and related social factors) have a significant relationship with teenage smoking habits.

### Subproblems

1. To determine the degree to which teenager's smoking habits are related to parents' smoking habits.
2. To determine if there may exist different motives why males chose to smoke as opposed to why females do.
3. To determine which of the selected factors have the greatest effect on teenage students, leading them to smoke.

### Definitions

Nonsmoker: is defined in this study as a student who in his lifetime has never smoked one cigarette.

Smoker: is a student who has tried smoking, and is presently smoking.

Quitter: is a student who has tried smoking, but has stopped smoking.

Interpersonal factors: "motivation provided by interaction with emotionally significant others such as family members, friends, and acquaintances." (Boss, 1973, p. 381)

### Delimitations

This study is delimited to the 1976-77 school year in the city of Hamilton, Ontario and uses Grades 9 to 12 from the school system of the Board of Education for the City of Hamilton.

### Assumptions

The following assumptions are made:

1. The randomly picked public high schools selected from a stratification of all city high schools into three categories; upper, middle and lower class area schools, are representative of the population in the Hamilton area (Statistics Canada, 1971); and
2. those surveyed gave accurate information.

### Limitations

Besides three common limitations facing studies of this nature, these being; the cooperation given by those surveyed, the accuracy of the questionnaire to measure what it is supposed to measure, and lastly, the sample itself, there were other major limitations placed on this study. First and foremost was an unwilling school system. The Board of Education for the City of Hamilton where this study was conducted, would not allow the random sampling and surveying of their students. What they would allow was the investigator to "supply teach" for the Board, thereby allowing the investigator to survey the classes he was assigned to. The investigator tried to work around this problem by only surveying a class from a school that had been chosen ahead of time with random selection of six schools from the district. Also, the Board of Education for the City of Hamilton censored part of the questionnaire. A section dealing with parental education was felt inappropriate by the Board and had to be deleted before the survey was allowed to proceed.

### Hypotheses

1. Interpersonal factors have the most significant effect on the teenager and have an influence on whether he or she is a smoker or non-smoker.
2. Distinct differences exist between the reasons why males begin to smoke as opposed to why females begin.

A female may be more influenced by the parents' smoking habits, especially the same-sex parent, while a male may be influenced by a combined effect of friends, parents, and siblings.

3. A teenager's smoking habit is more representative of their same-sex parents' smoking habits.

### Significance of the Study

With the trend of teenage smoking on the increase, especially with respect to girls, there is a need to determine reasons why they are taking up the smoking habit.

Past studies have tried to determine 'reasons why' but, the problem in dealing with these studies is that the majority were done in the United States on American teenagers with the most recent studies occurring in the late sixties and early seventies. These facts in themselves tend to show a need for an up-to-date Canadian study into factors that influence teenage smoking habits and with the discovery of these factors, an effective educational programme might be developed to counter this rise in teenage smoking habits.

## Chapter II

### REVIEW OF THE LITERATURE

For this review, literature that was deemed relevant to this study was gathered with specific reference to four main areas:

- a) smoking habits of parents;
- b) smoking habits of siblings;
- c) peer group pressures; and
- d) related social factors.

While in some of the above areas there was ample material to review, in others, relevant material was scarce. None the less, an adequate review of the literature was obtainable.

#### Smoking Habits of Parents

The smoking habits of parents versus their children's smoking habits have been studied by many researchers in past years. Cartwright (1959), Horn (1959), Morison (1961), Salber (1961), and Williams (1973) to name a few.

Williams' study (1973) was focused on the affects which both parents smoking, one parent smoking, or neither smoking had to do with the corresponding smoking habits of their offspring. His results indicated that the daughter in a family was more influenced by her parents' smoking habits than was the son, with the mother's smoking habits

having slightly more effect than the father's on the daughter's smoking habits. The relationship between the smoking behaviour of sons and mothers and sons and fathers was found to be non-significant.

Earlier studies by Morison (1961) and especially Horn (1959), one of the pioneers in this area, produced results similar to Williams with respect to the influence a parent has over their same-sex children's smoking habits.

Salber (1961) directed his research to the question of the influence of parental smoking on students' smoking patterns. He chose to attack this question by examining three possible situations namely, where: a) both parents are non-smokers; b) both parents are smokers; or, c) one parent smokes and the other does not.

In Salber's study, as can be seen below in the table, a definite difference exists between a student's smoking habits when he has parents who smoke as compared with students who have non-smoking parents. "In families where neither parent smoked, roughly one-quarter of the students were smokers; whereas in families where both parents were regular smokers, approximately half the students were smokers. In families where only one parent was a smoker and the other a non-smoker, the proportion of smokers among the students was substantially higher than when neither parent smoked and very nearly as high as when both parents smoked." (Salber, 1961, p. 1783)

Percentage of Student Smokers  
According to Parental Smoking Habits

Parent a Current Smoker

	<u>Both Parents</u>	<u>Father Only</u>	<u>Mother Only</u>	<u>Neither</u>
Boys	49.1	43.2	38.2	28.5
Girls	52.2	43.3	47.7	26.4

Studies by Barrett (1962), Cartwright (1959), Kelson (1975), and Palmer (1970) also produced quite similar results as Salber. Barrett's (1962) study was of interest to Canadians as it was one of the few early smoking studies done in Canada. Barrett concluded from his study that the smoking habits of the father, especially if he smoked, had a significant effect on the smoking habits of his children. Barrett also believed that his study showed a relationship existing between a parent's smoking habits and their same-sex children's smoking habits.

Other studies have shown differing results of the influence of parents' smoking habits on their children. In a study by Bewley (1974), a number of social factors that may start the adolescent down the pathway of smoking, one of them being the parents' smoking habits, were looked into. After analysing his data he came to the following conclusion: "there was a significant association between the boys' smoking habits and those of their parents." (p. 39)

Bewley's results showed that forty per cent of the non-smokers in his study had non-smoking parents, while fifty-two per cent of what he classified as heavy smokers had both parents smoking.

### Smoking Habits of Siblings

Salber (1963) looked into the smoking habits of sibships, specifically the influence of older siblings smoking habits on younger siblings. With the use of a questionnaire, he studied close to seven thousand students, both males and females of high school age. His results showed that the "frequency of smoking is much higher among children who are members of families in which there is an older sibling who smokes than among children of families where there are older siblings who do not smoke or where there are no older siblings." (p. 570-571)

Bewley (1974), looked deeper into the smoking habits of the siblings and categorized them into four groups: heavy smokers; light smokers; experimental smokers; and non-smokers. From the analysis of his data he suggested that the smoking habit of the siblings rather than the number is the more important factor associated with smoking. Significant figures in his study were that sixty-nine per cent of what he classified as heavy smokers had a brother or sister smoking, while ninety-one per cent of the non-smokers had no brothers or sisters smoking.

### Peer Group Pressures

Palmer (1970) was interested in gauging the effect of peer group smoking on an individual's smoking habit. His results, as seen on the accompanying page, show certain trends vividly. (Table 1)

Table 1

Subject Smoking Status and the Number and Sex  
of Their Friends Who Smoke

Boy Subjects						
Number of friends smoking	Non- Smoker		Experimental Smoker		Regular Smoker	
		%		%		%
Boy Friends						
0	241	71.1	425	50.1	15	13.5
1	46	13.3	115	13.5	4	2.7
2	20	5.6	102	12.0	8	7.2
3	11	2.9	78	9.2	8	7.2
4	11	2.9	46	5.4	7	6.3
5	10	2.6	52	6.1	22	19.8
All	6	1.5	31	3.7	48	43.2
Girl Friends						
0	323	95.3	774	91.2	67	60.4
1	7	2.1	38	4.5	9	8.1
2	5	1.5	16	1.9	7	6.3
3	3	0.9	7	0.8	8	7.2
4	1	0.3	2	0.2	4	3.6
5	0	0.0	6	0.7	5	4.5
All	0	0.0	6	0.7	11	9.9
Girl Subjects						
Boy Friends						
0	646	87.1	456	69.9	9	29.0
1	54	7.3	82	12.6	1	3.2
2	20	2.7	38	5.8	3	9.7
3	4	0.5	23	3.5	3	9.7
4	2	0.2	9	1.4	0	0.0
5	5	0.7	15	2.3	1	3.2
All	11	1.5	29	4.4	14	45.2
Girl Friends						
0	672	90.6	486	74.5	2	6.5
1	42	5.7	59	9.0	3	9.7
2	15	2.0	44	6.7	2	6.5
3	7	0.9	26	4.0	4	12.9
4	1	0.1	10	1.5	5	16.1
5	3	0.4	17	2.6	3	9.7
All	2	0.3	10	1.5	12	38.7

1 Data from Palmer (1970).

Individuals who were non-smokers may have had some friends who smoked, "but the greater proportion of them indicated that none of their friends smoked". (Palmer, 1970, p. 361) While, at the other end of the continuum, similar trends were found with regular smoking individuals indicating that most of their peer group were smokers.

Palmer continued on in this area of study and looked at the source(s) of encouragement for a person to take his first cigarette. (Table 2) From his results, Palmer states that "boys were generally either encouraged to smoke or actually smoked with other boys while girls maintained the same relationship with other girls." (p. 363) The majority of the males and females who were surveyed in this study stated that the main source of encouragement to smoke, came from friends of the same sex.

From Palmer's data it appears that neither parents nor siblings assumed any major part in encouraging the smoking habit outright, as do the peer groups. This can be readily seen in Table 2 where the parents and siblings receive such low responses (usually under 10%) as a source of encouragement.

Foss (1973) in his study, was able to find results similar to those of Palmer (1970), with respect to the smoking habits of an individual versus the smoking habits of the individual's friends.

Using Foss' results, it can be seen that an individual who does not smoke is more likely to associate with friends of similar preferences (50% of former smokers and 89% of people who have never smoked, in this study, stated that the majority

Table 2

## Subject Smoking Status and Source of Encouragement to Smoke

	<u>Non-Smoker</u>				<u>Experimental Smoker</u>				<u>Regular Smoker</u>			
	Boys		Girls		Boys		Girls		Boys		Girls	
		%		%		%		%		%		%
All Alone	--	--	--	--	137	16.1	84	12.9	13	11.7	2	6.5
Boy Friend	92	63.0	24	14.6	431	50.7	38	5.8	55	49.5	5	16.1
Girl Friend	3	2.1	60	36.8	9	1.1	232	35.6	7	6.3	14	45.2
Brother	5	3.4	6	3.7	87	10.2	65	10.0	12	10.8	0	0.0
Sister	1	0.7	6	3.7	10	1.2	63	9.7	3	2.7	2	6.5
Mother	1	0.7	1	0.6	8	0.9	40	6.1	0	0.0	1	3.2
Father	1	0.7	4	2.5	46	5.4	53	8.1	4	3.6	2	6.5
Other Relative	19	13.0	38	23.3	119	14.0	75	11.5	12	10.8	4	12.9
Other	24	16.4	24	14.7	2	0.2	2	0.3	5	4.5	1	3.2

of their friends are non-smokers). Also, in comparison, it can be seen that people who do smoke will probably associate with a group of friends who smoke (68% of smokers in this study stated that most of their friends smoked).

Proportion of Friends Who Smoke

	None or Few	Several or Most	Total
Smokers	11 (32%)	23 (68%)	34
Former Smokers	11 (50%)	11 (50%)	22
Never Smokers	32 (89%)	4 (11%)	36
Total	54	38	92

Cartwright (1959), Lemin (1967), and Newman (1971) also did research studies into the effect of peer group pressures on the smoking habits of those involved in a group. These investigators again found that an individual was influenced by the smoking habits of his friends or the group of people he associates with. Lemin (1967) was to conclude that "the drive for conformity is influenced by the smoking habits of friends." (p. 304)

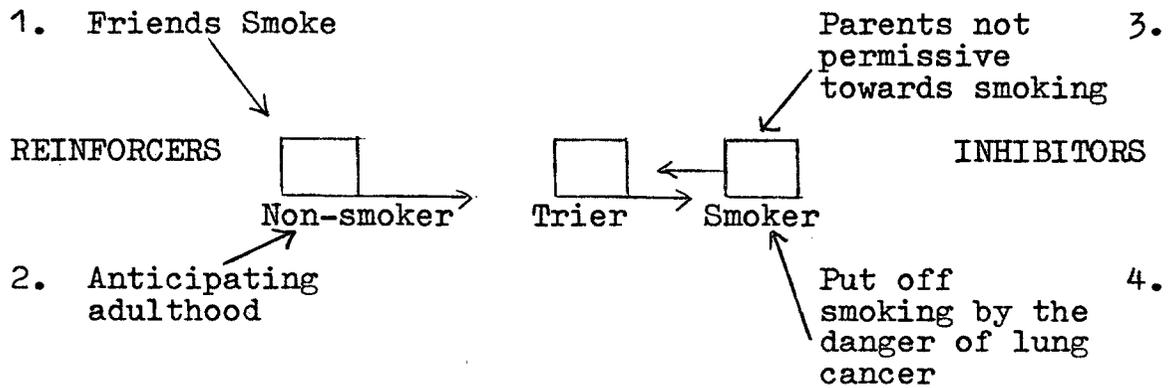
Levitt (1970) conducted a multivariate study of correlative factors with respect to a young person's cigarette smoking habits. The main reason for this investigation was to determine the important variables involved in what influences a person's smoking habits so that preventive programmes could be developed to attack these variables.

Inferences from the analysis of his data led Levitt to state "that the peer group predictor variables--a smoking best friend and a smoking group of friends--are of paramount importance in determining whether or not the respondent is a smoker." (Levitt, 1970) Levitt concluded that while by itself peer group pressures may not initiate this smoking habit, they do support and maintain the smoking behaviour.

### Related Social Factors

Bynner (1970) put forward a "Recruitment Model" which was composed of four variables that he believed had the most bearing on a teenagers' smoking habits. These were:

- "1. number of friends who smoked;
2. anticipation of adulthood (a measure of the extent to which a boy had participated in such leisure activities as going out drinking with friends, going to coffee bars, going to dance halls, staying out late with a group of older boys and girls);
3. parents permissiveness (a measure of the extent to which parents adopted permissive attitudes towards their children's smoking); and
4. whether put-off smoking by the danger of lung cancer." (p. 161)



The reinforcers in the model are friends who smoke and the anticipation of adulthood. Lung cancer and its dangers along with the parents lack of permissiveness towards smoking are the inhibitors.

An example of this model would be the case where a teenager was under considerable pressure from his friends to take-up smoking. If his parents were indifferent towards his smoking, and he was not put off by the health consequences of smoking, he would be very likely to take up the cigarette. Bynner found that 88 per cent of the subjects in his study that were confronted by these three characteristics were smokers.

This model suggests that an attempt should be made at trying to weaken the peer group pressure to smoke. Perhaps with more discouragement of smoking from both the parents and the school health instructor coupled with better health education, this result could be obtained.

Wohlford (1970) looked into the effect of broken versus intact families and patterns of parent-child imitation of smoking behaviour. He determined that there was no significant

relationship between the child's smoking behaviour and whether his family was intact or broken.

Studies by Aronow (1976), Best (1961), Dische (1976), Doll (1976), Hammond (1962), Pornell (1951), and others too numerous to mention, all concluded that smoking is a danger to a person's health. Researchers like Bothwell (1959), Boyle (1968), Kelson (1975), and Street (1967) tried to determine whether school children realized the health consequences of smoking; and ascertain these school children's subsequent smoking habits.

The results of these studies produced some enlightening facts. Boyle (1968) found that "most pupils believe smoking cigarettes could cause lung cancer, but present smokers were less convinced than former smokers and non-smokers". (p. 1287) In Kelson's (1975) study, 91.1% of those students whom he questioned expressed the belief that smoking is harmful to the health of the person. In an earlier study by Bothwell (1959), 15.3% of the present smokers and 84.7% of the non-smokers were aware of the connection between cigarette smoking and lung cancer.

### Summary

From the literature review there seems to be strong suspicion that a young person's smoking habits can be affected by the people he or she is associated with (the family and friends).

Most of the literature reviewed was dated early 1970 or before, and in most cases limited to one or two factors being taken into consideration. Therefore, newer, more expanded, up-to-date studies need to be undertaken.

## Chapter III

### METHODS AND PROCEDURES

The procedures and methods used in this study of "factors that may have an effect on teenage smoking habits" were examined under the following headings:

- a) research instrument selected for use;
- b) description of the research instrument;
- c) population for study and how it was chosen;
- d) administration of the research instrument;
- e) processing of the data; and
- f) statistical analysis.

#### Research Instrument Selected for Use

The research instrument selected for use in this study was a questionnaire which was specifically designed and constructed for this study. This questionnaire was developed after a thorough and careful examination of other surveys and questionnaires, related or otherwise, and with a general over-all knowledge and adherence to the principles of questionnaire construction.

Description of the research instrument. The questionnaire, which can be found in the appendix (A), was constructed to gain the most relevant information possible about a student and yet at the same time, the questionnaire was kept a reasonable

length to increase the accuracy of the information.

The majority of the 32 questions in the questionnaire involved forced responses. The few questions where write-in responses were needed dealt with parental occupation and parental birthplace.

The questionnaire itself attempts to gain the following information:

- a) parental nationality, occupation, and smoking habits;
- b) such social factors as the number of older brothers and sisters in the family and their smoking habits;
- c) smoking habits of the individuals being questioned as well as academic and activity interests; and
- d) the history of the first sampling of smoking as well as other contributing factors to the continuing or quitting of the habit.

#### Population for Study and How It Was Chosen

The subjects used for this questionnaire were drawn from the Hamilton Public School Board, in Hamilton, Ontario. The subjects ranged in age from 13 to 20 and from Grades 9 through 12, both males and females.

The schools that were used were determined by stratification of all the public high schools in the city into three categories; lower, middle and upper class, or income-area, high schools as determined by Statistics Canada (1971). Two schools from each category were randomly picked as representative of the population in that category, with 500 students being questioned.

Administration of the Research Instrument

After permission was asked and obtained from the Hamilton School Board to administer the questionnaire in their school system, a pilot study was undertaken to work out any problems that may exist in the questionnaire itself. After three administrations with minor modification the final make-up of the questionnaire was determined.

The questionnaire was administered to the students, class by class, rather than at one large sitting, with average class size being about 25 students. It was found that it took about 10 minutes to give directions and complete the questionnaire. To minimize any problems with administering the questionnaire, the investigator was the only one to give the questionnaire, with initial directions being uniform for all testing.

These general instructions were as follows:

Most of the questions involve a yes/no response which can be circled, but in some instances a written one-or-more word response is necessary. Also take special note of any words underlined, for example, questions 9 and 10 are concerned about your older brothers and sisters, not your younger ones.

Do not write your name on the questionnaire and do not discuss your answers with your classmates at this time.

Please be as accurate as possible and take your time.

The pilot study was conducted in late November and early December of 1976, with the main study running from January to February, 1977.

### Processing of the Data

The students chosen in this study marked their responses directly on the questionnaire itself. Therefore, later, it was necessary to transfer their responses on to data processing cards, using a code, where certain positions on these cards were reserved for the responses from each question.

Most of the variables examined, such as age, grade level, sex, number of brothers and sisters, and smoking habits could easily be transferred from the questionnaire to the data cards. However, the mother's and father's occupation and their corresponding country of birth, needed to be converted to certain levels and groups.

For the parental occupations, Warner's Scale for Rating Occupations was employed. For a more indepth explanation of Warner's Scale reference should be made to his book 'Social Class in America' (Warner, 1960, p. 140-141).

For the case of the parent's country of birth, five categories were arbitrarily set up. They were:

- 1) Canada,
- 2) United Kingdom,
- 3) United States,
- 4) Other European, and
- 5) Other.

Once the information had been transferred from the questionnaire to data cards, a computer was used for tabulation and further analysis of the information.

### Statistical Analysis

The punched data was checked for keypunch errors using programme Datavet. Datavet was written by Trevor Lambert at the University of Birmingham Computer Centre and was developed "to check data prior to using a programming package such as SPSS (Statistical Package for the Social Sciences) to analyse the data" (McMaster University, 1976, p. 1).

Because of its versatility and ease of handling the type of information obtainable in this study, the SPSS (Statistical Package for the Social Sciences) was chosen to handle the actual analysis and calculation of the data required (Nie, 1975).

Crosstabulations, which allow the drawing up of contingency tables, two-way to n-way, for any discrete variables, either numeric or alphanumeric, were utilized to examine a number of paired relationships. These paired relationships were tested with a chi square ( $X^2$ ) test, a description of which can be found in Ferguson, Chapter III, 1971.

### Parental Factor

1. There is no significant relationship between a father's occupation and whether his offspring has ever smoked.
2. There is no significant relationship between a mother's occupation and whether her offspring has ever smoked.
3. There is no significant relationship between a father's occupation and whether his son has ever smoked.
4. There is no significant relationship between a father's occupation and whether his daughter has ever smoked.
5. There is no significant relationship between a mother's occupation and whether her son has ever smoked.

6. There is no significant relationship between a mother's occupation and whether her daughter has ever smoked.
7. There is no significant relationship between a father's birthplace and whether his offspring has ever smoked.
8. There is no significant relationship between a mother's birthplace and whether her offspring has ever smoked.
9. There is no significant relationship between a teenager's smoking habits and the parent(s) who makes up the household he lives in.
10. There is not significant relationship between a boy's smoking habits and the parent(s) who makes up the household he lives in.
11. There is no significant relationship between a girl's smoking habits and the parent(s) who makes up the household she lives in.

#### Parents' Smoking Habits

12. There is no significant relationship between a mother's smoking habits and whether her offspring has ever smoked.
13. There is no significant relationship between a mother's smoking habits and whether her son has ever smoked.
14. There is no significant relationship between a mother's smoking habits and whether her daughter has ever smoked.
15. There is no significant relationship between a father's smoking habits and whether his offspring has ever smoked.
16. There is no significant relationship between a father's smoking habits and whether his son has ever smoked.
17. There is no significant relationship between a father's smoking habits and whether his daughter has ever smoked.

18. There is no significant relationship between a mother's smoking habits and whether her offspring presently smoke.
19. There is no significant relationship between a mother's smoking habits and whether her son presently smokes.
20. There is no significant relationship between a mother's smoking habits and whether her daughter presently smokes.
21. There is no significant relationship between a father's smoking habits and whether his offspring presently smoke.
22. There is no significant relationship between a father's smoking habits and whether his son presently smokes.
23. There is no significant relationship between a father's smoking habits and whether his daughter presently smokes.

#### Older Brother's and Sister's Smoking Habits

24. There is no significant relationship between the number of older smoking brothers a person has and whether that person has ever smoked.
25. There is no significant relationship between the number of older smoking brothers a male has and whether that younger male has ever smoked.
26. There is no significant relationship between the number of older smoking brothers a female has and whether that younger female has ever smoked.
27. There is no significant relationship between the number of older smoking sisters a person has and whether that person has ever smoked.
28. There is no significant relationship between the number of older smoking sisters a male has and whether that younger male has ever smoked.

29. There is no significant relationship between the number of older smoking sisters a female has and whether that younger female has ever smoked.
30. There is no significant relationship between the number of older smoking brothers a person has and whether that person presently smokes.
31. There is no significant relationship between the number of older smoking brothers a male has and whether that younger male presently smokes.
32. There is no significant relationship between the number of older smoking brothers a female has and whether that younger female presently smokes.
33. There is no significant relationship between the number of older smoking sisters a person has and whether that person presently smokes.
34. There is no significant relationship between the number of older smoking sisters a male has and whether that younger male presently smokes.
35. There is no significant relationship between the number of older smoking sisters a female has and whether that younger female presently smokes.

#### Peer Group Effect on Smoking Habit

36. There is no significant relationship between the smoking habits of a person's five best friends and that person's smoking habits.
37. There is no significant relationship between the smoking habits of a male's five best friends and that male's smoking habits.

38. There is no significant relationship between the smoking habits of a female's five best friends and that female's smoking habits.

#### Educational Plans and a Person's Smoking Habits

39. There is no significant relationship between the educational plans of a person and that person's present smoking habits.
40. There is no significant relationship between the educational plans of a male and that male's present smoking habits.
41. There is no significant relationship between the educational plans of a female and that female's present smoking habits.

#### Participation Level and a Person's Smoking Habits

42. There is no significant relationship between a person's smoking habits and the number of recreational activities one participates in.
43. There is no significant relationship between a person's smoking habits and the number of outdoor activities one participates in.
44. There is no significant relationship between a person's smoking habits and the number of school activities one participates in.
45. There is no significant relationship between a person's smoking habits and the number of school teams one participates on.

#### Effect of Early Age Smoking on a Person's Later Smoking Habits

46. There is no significant relationship between a male's early age smoking and his later smoking habits.
47. There is no significant relationship between a female's early age smoking and her later smoking habits.

## CHAPTER 4

### RESULTS

The results of this study were put into contingency tables to allow comparisons of the various variables, as well as to determine by the use of Chi square whether there are any significant relationships between these different variables, when compared to one another.

#### The Sample of the Population

The sampling of the population was achieved by the use of the following subjects, charted to show the age and grade breakdown of this study.

Table 3

Grade Breakdown of Those Surveyed

Grade	Male	Female	Row Total	
9	97	85	182	Count
10	67	20	87	
11	39	92	131	
12	45	55	100	
Total	248 49.6	252 50.4	500 100.0	Percentage

Table 4

## Age Breakdown of Those Surveyed

Age	Male	Female	Row Total	
13	4	1	5	Count
14	45	40	85	
15	77	45	122	
16	52	71	123	
17	47	66	113	
18	20	22	42	
19	3	6	9	
20	0	1	1	
Total	248 49.6	252 50.4	500 100.0	Percentage

Examination of these two tables shows that the majority of the subjects fall into the age range of 15-17 years of age, with more males being surveyed in the early high school grade levels (9 and 10), and more females in the later grades. Overall the number of males and females surveyed in this study came out almost equal with 248 males being questioned and 252 females.

Common Numbers in This Section

Numbers that appear frequently throughout the various sections, with respect to a person's smoking habits, are presented in Table 5.

Table 5

## Smoking Characteristics of Those Surveyed

	Never Smoked	Those who have tried smoking	Total	Those who smoke now	Those who do not smoke now	Total
Male	46	202	248	73	175	248
Female	60	192	252	96	156	252
Total	106	394	500	169	331	500
Row Percentage of Total	21.2	78.8	100.0	33.8	66.2	100.0

This table shows that 21.2% of those surveyed have never smoked, leaving 78.8% who have smoked. Those who smoke now make up only 33.8% of the total questioned.

#### Parental Factors

The question as to whether a person's smoking habits were related to his/her parents' occupation of birthplace was of concern in this section, with the following results.

When a father's or mother's occupation was compared to whether his or her offspring had ever smoked the following was true from this study.

Table 6

Comparison Between a Father's Occupation  
and Whether His Offspring Had Ever Smoked

Father's Occupation	Ever Smoked		Row Total	
	Yes	No		
1 (e.g. lawyers, doctors)	9	4	32	Count
2 (nurses, teachers)	6	1		
3 (supervisors)	8	4		
4 (foremen, plumbers)	52	14	66	
5 (salesmen, police)	71	14	85	
6 (steelworker)	177	49	226	
7 (construction worker)	40	14	54	
9 (unemployed)	31	6	37	
Total	394 78.8	106 21.2	500 100.0	Percentage

$$\chi^2 = 3.36$$

$$p = .7313$$

Table 7

Comparison Between A Mother's Occupation  
and Whether Her Offspring Had Ever Smoked

Mother's Occupation	Ever Smoked		Row Total	
	Yes	No		
2 (e.g. nurses, teachers)	19	3	35	Count
3 (supervisors)	3	1		
4 (foremen, plumbers)	7	2		
5 (salesmen, police)	28	8	36	
6 (steelworkers)	64	20	84	
7 (construction worker)	14	5	19	
8 (housewife)	255	67	326	
9 (unemployed)	3	1		
Total	393 78.8	107 21.2	500 100.0	

$$\chi^2 = 1.30$$

$$p = .9904$$

When these charts were tested by chi square no significant relationships were found. It is interesting to note here that father's occupation level 6 was the most common response given by those surveyed. This typifies the kind of town, a

steel town, that Hamilton is known for. Level six in Warner's Social Classification is made up of semi-skilled workers (steelworkers). For mother's occupation, level 8 (housewife), was by far the most common response given.

With a further analysis of the preceding charts, the male/female responses of the offspring were separated and the following results were obtained.

Table 8

Comparison Between a Father's Occupation  
and Whether His Son Had Ever Smoked

Father's Occupation	Male Ever Smoked		Row Total
	Yes	No	
1 (e.g. lawyers, doctors)	5	1	57
2 (nurses, teachers)	1	1	
3 (supervisors)	5	0	
4 (foremen, plumbers)	34	10	
5 (salesmen, police)	37	6	43
6 (steelworker)	87	21	108
7 (construction worker)	22	5	40
9 (unemployed)	11	2	
Total	202	46	248

$$\chi^2 = .916$$

$$p = .8119$$

Table 9

Comparison Between a Father's Occupation  
and Whether His Daughter Had Ever Smoked

Father's Occupation	Female Ever Smoked		Row Total		
	Yes	No			
1 (e.g. lawyers, doctors)	4	3	30	11	Count
2 (nurses, teachers)	5	0			
3 (supervisors)	3	4			
4 (foremen, plumbers)	18	4			
5 (salesmen, police)	34	8	42		
6 (steelworkers)	90	28	118		
7 (construction worker)	18	9	27		
9 (unemployed)	19	5	24		
Total	191 76.2	61 23.8	252 100.0	Percentage	

$$\chi^2 = 2.197$$

$$p = .1784$$

Table 10

Comparison Between a Mother's Occupation  
and Whether Her Son Had Ever Smoked

Mother's Occupation	Male Ever Smoked		Row Total	
	Yes	No		
2 (e.g. nurses, teachers)	8	1	36	Count
3 (supervisors)	1	1		
4 (foremen, plumbers)	3	2		
5 (salesmen, police)	18	2		
6 (steelworkers)	32	9	41	
7 (construction worker)	7	1	162	
8 (housewife)	132	30		
9 (unemployed)	1	0		
Total	202 81.5	46 18.5	248 100.0	Percentage

$$\chi^2 = .4186$$

$$p = .6764$$

Table 11

Comparison Between a Mother's Occupation  
and Whether Her Daughter Had Ever Smoked

Mother's Occupation	Female Ever Smoked		Row Total			
	Yes	No				
2 (e.g. nurses, teachers)	11	2	27	8	35	Count
3 (supervisors)	2	0				
4 (foremen, plumbers)	4	1				
5 (salesmen, police)	10	6				
6 (steelworkers)	32	11			43	
7 (construction worker)	8	3				
8 (housewife)	123	37	133	41	174	
9 (unemployed)	2	1				
Total	192	60			252	
	76.2	23.8			100.0	

$$\chi^2 = .097$$

$$p = .7357$$

Chi square again showed that there was no significant relationship between any of the above factors.

When a father's and mother's birthplace was compared to their children smoking habits, the following resulted:

Table 12

Comparison Between a Father's Birthplace  
and Whether His Offspring Had Ever Smoked

Father's Birthplace	Ever Smoked		Row Total	
	Yes	No		
1 (Canada)	213	39	252	Count
2 (United Kingdom)	29	4	35	
3 (United States)	1	1		
4 (Other European)	53	25	78	
5 (Other)	98	37	135	
Total	394 78.8	106 21.2	500 100.0	Percentage

$$\chi^2 = 14.56$$

$$p = .0028$$

Table 13

Comparison Between a Mother's Birthplace  
and Whether Her Offspring Had Ever Smoked

Mother's Birthplace	Ever Smoked		Row Total	
	Yes	No		
1 (Canada)	211	41	252	Count
2 (United Kingdom)	29	5	34	
3 (United States)	3	1	4	
4 (Other European)	54	23	77	
5 (Other)	97	36	133	
Total	394 78.8	106 21.2	500 100.0	Percentage

$$\chi^2 = 10.54$$

$$p = .0293$$

Both these tables were found to have a significant relationship existing between the variables father's birthplaces and whether his offspring had ever smoked as well as mother's birthplace and whether her offspring had ever smoked. With regard to tables 12 and 13, for birthplaces in Canada and the United Kingdom, a higher percentage difference exists between those who had never tried smoking and those who had.

The comparison between whether a person smokes now and who they are living with gave the following results:

Table 14

Comparison Between Who A Respondent Lives With  
and Their Present Smoking Habit

Live With	Smoke Now		Row Total	
	Yes	No		
Father and Mother	127	201	328	Count
Just Mother	28	13	41	
Just Father	9	6	15	
Neither	5	5	10	
Total	169 42.9	225 57.1	394 100.0	Percentage

$$\chi^2 = 15.13$$

$$p = .0017$$

From this table a significant relationship was found to exist. With the separation of the responses into male/female categories the subsequent analysis revealed:

Table 15

Comparison Between Who a Male Respondent Lives With  
and His Present Smoking Habit

Live With	Male Smoke Now		Row Total	
	Yes	No		
Father and Mother	60	117	177	Count
Just Mother	5	7	12	
Just Father } Neither } 8	6 } 2 }	3 } 2 }	13	
Total	73 36.1	129 63.9	202	Percentage

$$\chi^2 = 4.177 \quad p = .2113$$

Table 16

Comparison Between Who a Female Respondent Lives With  
and Her Present Smoking Habit

Live With	Female Smoke Now		Row Total	
	Yes	No		
Father and Mother	67	84	151	Count
Just Mother	23	6	29	
Just Father	3	3	12	
Neither	3	3		
Total	96 50.0	96 50.0	192	Percentage

$$\chi^2 = 11.88$$

$$p = .0078$$

In the case of the table for the male responses, no significant relationship was found to exist, but it is interesting to note that the majority of the boys who live at home and had once smoked, no longer smoke. (Table 15)

The table for the female responses on the other hand, shows a significant relationship existing between a girls' smoking habits and the family make-up of the house she lives in.

When the males in this study were seen living with just their fathers and the females just with their mothers a much higher percentage of these people turned out to be smokers rather than non-smokers.

Parents' Smoking Habits

The mother's and father's smoking habits as compared to whether their offspring had ever tried smoking is shown first, followed by an analysis of the mother's and father's smoking habit compared to their children's present smoking habits.

Table 17

Comparison Between a Mother's Smoking Habits  
and Whether Her Offspring Ever Smoked

Mother Smokes	Ever Smoke		Row Total	
	Yes	No		
Yes	160	26	186	Count
No	234	80	314	
Total	394 78.8	106 21.2	500	Percentage

$$\chi^2 = 8.57$$

$$p = .0034$$

The above table, contains the results obtained from this study with respect to a comparison between the mother's smoking habits and whether their children had ever tried smoking. A significant relationship was found to exist between these two variables and a further analysis produced the following tables:

Table 18

Comparison Between a Mother's Smoking Habits  
and Whether Her Son Ever Smoked

Mother Smokes	Male Ever Smoke		Row Total	
	Yes	No		
Yes	78	15	93	Count
No	124	31	155	
Total	202 81.5	46 18.5	248	Percentage

$$\chi^2 = .349$$

$$p = .5548$$

Table 19

Comparison Between a Mother's Smoking Habits  
and Whether Her Daughter Ever Smoked

Mother Smokes	Female Ever Smoke		Row Total	
	Yes	No		
Yes	82	11	92	Count
No	110	49	159	
Total	192 76.2	60 23.8	252	Percentage

$$\chi^2 = 10.64$$

$$p = .0011$$

With the introduction of the sex variable, it was found that the table concerned with the male's response does not show a significant relationship existing between the mother's

smoking habits and whether her sons had ever tried smoking. As for the female's response, a significant relationship was still found to exist between these variables.

The male and female tables illustrate that a larger percentage of the females, who had tried smoking had mothers who also smoked. The percentage was lesser in males who tried smoking and had mothers who smoke.

Next, the father's smoking habits need to be considered and analysed against whether his offspring has ever tried smoking. From this study the following results were obtained:

Table 20

Comparison Between a Father's Smoking Habits  
and Whether His Offspring Had Ever Smoked

Father Smokes	Ever Smoke		Row Total	
	Yes	No		
Yes	240	53	293	Count
No	154	53	207	
Total	394 78.8	106 21.2	500	Percentage

$$\chi^2 = 3.66$$

$$p = .0556$$

No significant relationship was found to exist between the variables in the above chart, and even with further analysis, with male/female responses separated in the charts below, no significant relationship was found to exist.

Table 21

Comparison Between a Father's Smoking Habits  
and Whether His Son Had Ever Smoked

Father Smokes	Male Ever Smoke		Row Total	
	Yes	No		
Yes	123	25	148	Count
No	79	21	100	
Total	202 81.5	46 18.5	248	Percentage

$$\chi^2 = .422$$

$$p = .5157$$

Table 22

Comparison Between a Father's Smoking Habits  
and Whether His Daughter Had Ever Smoked

Father Smokes	Female Ever Smoke		Row Total	
	Yes	No		
Yes	117	28	145	Count
No	75	32	107	
Total	192 76.2	60 23.8	252	Percentage

$$\chi^2 = 3.25$$

$$p = .0715$$

With the analysis of the parental smoking habits versus their children's early experiences with smoking completed, it now seems appropriate to examine the present smoking habits

of the students questioned. Therefore the parental smoking habits versus their children's present smoking habits, as to whether they are still smokers or now non-smokers, was analysed.

In the following three tables, the mothers' smoking practices will be compared to her children's smoking habits, at least to those who have stated that they have tried smoking.

Table 23

Comparison Between a Mother's Smoking Habits and Whether Her Offspring Presently Smokes

Mother Smokes	Smoke Now		Row Total
	Yes	No	
Yes	90	70	160
No	79	155	234
Total	1690 42.9	225 57.1	394

Count

Percentage

$$\chi^2 = 18.71$$

$$p = .0001$$

Table 24

Comparison Between a Mother's Smoking Habits and Whether Her Son Presently Smokes

Mother Smokes	Male Smoke Now		Row Total
	Yes	No	
Yes	36	42	78
No	37	87	124
Total	73 36.1	129 63.9	202

Count

Percentage

$$\chi^2 = 4.84$$

$$p = .0278$$

Table 25

Comparison Between a Mother's Smoking Habits  
and Whether Her Daughter Presently Smokes

Mother Smokes	Female Smoke Now		Row Total	
	Yes	No		
Yes	54	28	82	Count
No	42	68	110	
Total	96 50.0	96 50.0	192	Percentage

$$\chi^2 = 13.30$$

$$p = .0003$$

In Table 23, a relationship is found to exist between these two variables, with this relationship still existing in Tables 24 and 25 when the responses of the students were separated by sex. A stronger relationship was found to exist between a mother's smoking practices and her daughter's, than between mother and son.

Quite similar results were found when the father's smoking habits were compared to those of their sons and daughters, as can be seen in the tables below:

Table 26

Comparison Between a Father's Smoking Habits  
and Whether His Offspring Presently Smokes

Father Smokes	Smoke Now		Row Total	
	Yes	No		
Yes	119	121	240	Count
No	50	104	154	
Total	169 42.9	225 57.1	394	Percentage

$$\chi^2 = 10.53$$

$$p = .0012$$

Table 27

Comparison Between a Father's Smoking Habits  
and Whether His Son Presently Smokes

Father Smokes	Male Smoke Now		Row Total	
	Yes	No		
Yes	54	69	123	Count
No	19	60	79	
Total	73 36.1	129 63.9	202	Percentage

$$\chi^2 = 7.38$$

$$p = .0066$$

Table 28

Comparison Between a Father's Smoking Habits  
and Whether His Daughter Presently Smokes

Father Smokes	Female Smoke Now		Row Total	
	Yes	No		
Yes	65	52	117	Count
No	31	44	75	
Total	96 50.0	96 50.0	192	Percentage

$$\chi^2 = 3.15$$

$$p = .0759$$

Again a relationship was found between a father's smoking inclinations and his offspring's who took up the habit, as can be seen in table 26. But, when the table was further analysed by separating the sexes, something different occurred.

A significant relationship was still found to exist between father and son but not between father and daughter. Of special interest in the father-son table is the proportion of sons who have quit smoking when their father does not smoke (almost 76% of those who have fathers who do not smoke have quit smoking).

### Older Brothers' and Sisters' Smoking Habits

In this section the number, if any, of older brothers and sisters who smoke will be taken into consideration, and compared against certain variables.

The first such comparison will involve the number of

older brothers who smoke versus whether the respondent in this study had ever smoked.

Table 29

Comparison Between the Number of Older Brother Who Smoke and Whether The Respondent Had Ever Smoked

Number of Older Brothers Who Smoke	Ever Smoke		Row Total	
	Yes	No		
0	73	23	69	Count
1	82	10	92	
2	33	3	57	
3	14	2		
4	5	0		
Total	207 84.9	38 15.1	245	Percentage

$$\chi^2 = 21.803$$

$$p = .0355$$

Table 30

Comparison Between the Number of Older Brothers Who Smoke and Whether The Male Respondent Had Ever Smoked

Number of Older Brothers Who Smoke	Male Ever Smoke		Row Total	
	Yes	No		
0	44	8	52	Count
1	31	3	59	
2	12	1		
3	9	1		
4	2	0		
Total	98 89.2	13 10.8	111	Percentage

$$\chi^2 = 1.46_{1.28}$$

$$p = .5425$$

Table 31

Comparison Between the Number of Older Brothers Who Smoke and Whether The Female Respondent Had Ever Smoked

Number of Older Brothers Who Smoke	Female Ever Smoke		Row Total
	Yes	No	
0	29	14	44
1 } 2 } 3 } 4 }	51 } 20 } 6 } 3 }	7 } 3 } 0 } 0 }	90
Total	109 81.3	25 18.7	134

$$\chi^2 = 8.75$$

$$p = .0254$$

For table 29, a relationship was found to exist between these two variables, but when the male-female responses of those questioned were separated into tables 30 and 31, something different occurred. A significant relationship was found to exist for only the number of older brothers who smoke versus the number of females who had ever tried smoking and not for the male responses.

An interesting trend can be seen in all three of the above tables. As the number of older brothers who smoke increases, in almost all cases, the percentage difference between whether a person had or had not ever tried smoking increases.

A good example of this occurs in table 29, where for no older brothers who smoked, 76% of those who responded for this instance had tried smoking. When the number of brothers who

smoked was increased by one, the percentage of those who had ever tried smoking, in this instance, jumped to 89.1%.

The next comparison is of the number of older sisters who smoke versus whether those questioned for this study had ever tried smoking. No significant relationship was found between any of the variables in table(s) 32, 33 or 34.

Similar trends, as were the case with the number of older brothers who smoked, were found to exist here, with increasing numbers of older sisters who smoke corresponding with increased proportions of respondents who had tried smoking.

Table 32

Comparison Between The Number of Older Sisters Who Smoke and Whether The Respondent Had Ever Smoked

Number of Older Sisters Who Smoke	Ever Smoke		Row Total
	Yes	No	
0	87	28	115
1	76	13	89
2	33	3	53
3	11	2	
4	1	0	
5	3	0	
Total	211 82.5	46 17.5	257

$$\chi^2 = 3.839$$

$$p = .1531$$

Table 33

Comparison Between the Number of Older Sisters Who Smoke  
and Whether The Male Respondent Had Ever Smoked

Number of Older Sisters Who Smoke	Male Ever Smoke		Row Total
	Yes	No	
0	44	11	55
1	43	6	71
2	15	2	
3	2	0	
4	1	0	
5	2	0	
Total	107 84.9	19 15.1	126

$$X^2 = 1.85$$

$$p = .7943$$

Table 34

Comparison Between The Number of Older Sisters Who Smoke  
and Whether The Female Respondent Had Ever Smoked

Number of Older Sisters Who Smoke	Female Ever Smoke		Row Total
	Yes	No	
0	43	17	60
1	33	7	71
2	18	1	
3	10	1	
4	0	0	
5	1	0	
Total	105 80.2	36 19.8	131

$$X^2 = 6.67 \quad 5.62$$

$$p = .1684$$

An analysis between the number of older brothers and sisters who smoke versus the present smoking habits of those respondents who stated that they had tried smoking is what follows in the next few sets of tables. First the older brothers:

Table 35

Comparison Between the Number of Older Brothers Who Smoke and Whether The Respondent Presently Smokes

Number of Older Brothers Who Smoke	Smoke Now		Row Total
	Yes	No	
0	25	48	73
1	47	35	82
2	15	18	33
3 } 4 }	12 } 3 } 15	3 } 2 } 5	20
Total	102 49.0	106 51.0	208

$$\chi^2 = 14.2$$

$$p = .0051$$

Table 36

Comparison Between The Number of Older Brother Who Smoke and Whether The Male Respondent Presently Smokes

Number of Older Brothers Who Smoke	Male Smoke Now		Row Total
	Yes	No	
0	14	30	44
1	19	12	31
2 } 3 } 4 }	6 } 7 } 14	7 } 2 } 10	24
Total	47	52	99

$$\chi^2 = 7.833$$

$$p = .04$$

Table 37

Comparison Between The Number of Older Brothers Who Smoke and Whether The Female Respondent Presently Smokes

Number of Older Brothers Who Smoke	Female Smoke Now		Row Total
	Yes	No	
0	11	18	29
1	28	23	51
2 } 3 } 4 }	9 } 5 } 2 }	11 } 1 } 1 }	29
	16	13	
Total	55 50.5	54 49.5	109

$$\chi^2 = 2.48$$

$$p = .2513$$

Table 35 shows a significant relationship existing between the number of older brothers who smoke and the present smoking habits of the persons questioned. Under further analysis, with the breakdown of table 35 into separate male-female responses we find that in table 36, the male responses are still significant while in table 37, the female responses are no longer significant.

It is interesting to note from the separate male responses in table 36, the high proportion of individuals who stated that they no longer smoke who also have no older brothers smoking. In sharp contrast is the rapid increase in proportions of those who stated they still smoke, as the number of older brothers who smoke increase.

The number of older sisters who smoke as compared to the present smoking habits of those questioned was studied to see if any significant relationship exists.

Table 38

Comparison Between The Number of Older Sisters Who Smoke  
and Whether The Respondent Presently Smokes

Number of Older Sisters Who Smoke	Smoke Now		Row Total
	Yes	No	
0	21	66	87
1	46	30	76
2	21	12	33
3	5	7	16
4	1	0	
5	1	2	
Total	95 44.8	117 55.2	212

$$\chi^2 = 27.36$$

$$p = .0001$$

Table 39

Comparison Between The Number of Older Sisters Who Smoke  
and Whether The Male Respondent Presently Smokes

Number of Older Sisters Who Smoke	Male Smoke Now		Row Total
	Yes	No	
0	7	37	44
1	25	18	43
2	8	7	20
3	1	1	
4	1	0	
5	1	1	
Total	43 40.2	64 59.8	107

$$\chi^2 = 18.38$$

$$p = .0017$$

Table 40

Comparison Between The Number of Older Sisters Who Smoke and Whether The Female Respondent Presently Smokes

Number of Older Sisters Who Smoke	Female Smoke Now		Row Total
	Yes	No	
0	14	29	43
1	21	12	33
2	13	5	29
3	4	6	
4	0	0	
5	0	1	
Total	52 49.5	53 50.5	105

$$\chi^2 = 8.54$$

$$p = .0132$$

Significant relationships were found to exist in all three of the above tables. As was the case in the preceding tables, certain trends can be seen in these tables.

In all three of the above tables, a larger number of respondents having no older sisters who smoked, stated that they themselves no longer smoked. Also as the number of older sisters who smoked started to increase, so did the number of respondents who said they smoked, and at a drastic rate.

#### Peer Group Affect on Smoking Habit

This part deals with what some people consider as one of the more important aspects of continued teenage smoking, that being the number of friends of an individual who smoke.

The variables examined here will be the respondents present smoking habits versus the number of their five best friends who smoke. The following results were obtained:

Table 41

Comparison Between The Number of a Person's  
Five Best Friends Who Smoke and That  
Person's Present Smoking Habits

Number of Your Five Best Friends Who Smoke	Smoke Now		Row Total
	Yes	No	
0	7	73	80
1	7	47	54
2	13	48	61
3	26	29	55
4	40	14	54
5	76	14	90
Total	169 42.9	225 57.1	394

$$\chi^2 = 154.72$$

$$p = .0001$$

Table 42

Comparison Between the Number of a Person's  
Five Best Friends Who Smoke and That  
Male Person's Present Smoking Habits

Number of Your Five Best Friends Who Smoke	Male Smoke Now		Row Total
	Yes	No	
0	4	46	95
1	2	24	
2	3	25	
3	14	18	32
4	18	9	37
5	32	7	39
Total	73 36.1	129 63.9	202

$$\chi^2 = 81.37$$

$$p = .0001$$

Table 43

Comparison Between The Number of a Person's  
Five Best Friends Who Smoke and That  
Female Person's Present Smoking Habits

Number of Your Five Best Friends Who Smoke	Female Smoke Now		Row Total
	Yes	No	
0 } 1 } 2 3 4 5	3 } 5 } 8	37 } 23 } 50	58
	10	23	33
	12	11	23
	22	5	27
	44	7	51
Total	96 50.0	96 50.0	192

$$\chi^2 = 73.13$$

$$p = .0001$$

All three tables were found to have a significant relationship existing within them, and the following trends were found:

- in all three of the above tables the highest number of quitters were found in the category where none of their five best friends smoked.
- in all three of the above tables as the number of best friends who smoke increases, so does the number of respondents who smoke now. This leaves the highest number of smokers at category five, where all five of their best friends smoke. This is also the category where the lowest number of quitters were found.
- of minor significance, but noteworthy, was

category three. This category became a transition zone, where the majority becomes the minority. In categories zero, one and two, the majority of respondents were non-smokers, but at, or after category three, the reverse was true.

### Educational Plans and a Person's Smoking Habits

Could there be any relationship between a person's educational goals and his present smoking habits?

A comparison was made between the variables, whether a person smoked now, and their educational goals. From the tables below, a significant relationship was found to exist for all three examples.

Table 44

Comparison Between a Person's Educational Goals and That Person's Present Smoking Habits

Educational Plans	Smoke Now		Row Total
	Yes	No	
High School	107	92	199
University	62	133	195
Total	169 42.9	225 57.1	394

$$\chi^2 = 18.53$$

$$p = .0001$$

Table 45

Comparison Between a Male Person's Educational Goals  
and That Male Person's Present Smoking Habits

Educational Plans	Male Smoke Now		Row Total
	Yes	No	
High School	42	48	90
University	31	81	112
Total	73 36.1	129 63.9	202

$$\chi^2 = 6.99$$

$$p = .0082$$

Table 46

Comparison Between a Female Person's Educational Goals  
and That Female Person's Present Smoking Habits

Educational Plans	Female Smoke Now		Row Total
	Yes	No	
High School	65	44	109
University	31	52	83
Total	96 50.0	96 50.0	192

$$\chi^2 = 8.49$$

$$p = .0036$$

The tables indicate that the person who has aspirations of going on to college or university is more frequently a non-smoker, whereas of those who are only going as far as high school a slim majority overall tend to be smokers.

Participation Level and a Person's Smoking Habits

Facts of a person's participation in various areas, such as recreational activities, outdoor activities, school activities, and school teams, were gathered and compared with the respondent's smoking habits in the hope of discovering some unique patterns of spare-time pleasure. Unfortunately such was not the case. The four activity variables above were compared to the respondent's present smoking habits and no significant relationship was found to exist in any of the cases.

To give an example, because to give more would just be repetitive, the comparison between the number of outdoor activities versus the male respondent's present smoking habits is given:

Table 47

Comparison Between The Number of Outdoor Activities That a Male Participates In and That Male's Present Smoking Habits

Number of Outdoor Activities	Male Smoke Now		Row Total
	Yes	No	
0 } 1 }	4 } 6 } 10	2 } 24 } 26	36
2	7	16	23
3	17	29	46
4	10	23	33
5	14	17	31
6 } 7 }	9 } 6 } 15	14 } 4 } 18	33
Total	73 36.1	129 63.9	202

$$\chi^2 = 4.18$$

$$p = .1731$$

Even though no significant relationship was found to exist between a male's smoking habits and his participation in outdoor activities, it is interesting to note that three or four outdoor activities are the more common levels of participation for the males in this study.

Effect of Early Age Smoking on a Person's Later Smoking Habits

The next area of concern is the effect of early age smoking on the eventual smoking habits of an individual. Whether they still smoke and the age at which they first began are the variables to be considered.

The tables below exhibit the information found from this study in separated male/female responses.

Table 48

Comparison Between The Age At Which a Male First tried Smoking and That Male's Present Smoking Habits

Age First Smoked	Male Smoke Now		Row Total	
	Yes	No		
5 } 6 } 7 } 8 }	1 } 2 } 6 } 4 }	7 } 2 } 13 } 7 }	42	
9	11	12		23
10	6	26		32
11	8	9		17
12	8	20	28	
13	12	15	27	
14	8	6	14	
15 } 16 }	5 } 2 }	8 } 4 }	12	
Total	73 36.1	129 63.9	202	

$$X^2 = 11.1$$

$$p = .2867$$

Table 49

Comparison Between The Age At Which A Female First Tried Smoking and That Female's Present Smoking Habits

Age First Smoked	Female Smoke Now		Row Total
	Yes	No	
5 } 6 } 7 } 8 }	2 } 0 } 0 } 4 }	1 } 1 } 3 } 0 }	11
9	13	6	
10	11	5	
11	7	14	
12	17	16	33
13	21	21	42
14	11	17	28
15 } 16 }	6 } 3 }	7 } 6 }	22
Total	95 50.0	97 50.0	

$$\chi^2 = 19.277$$

$$p = .05$$

Table 48, the table for the male responses, shows that no significant relationship exists between the two variables, but a relationship was found to exist between these variables in the female table, table 49.

The following points are noted from table 49:

- the age of ten for females, in this study, seems to be some what of a critical age. The meaning of which is best explained in the remaining points.
- smoking at an early age, (five to ten years), in this study, most often led to continued smoking in later years.

- those who started smoking later usually showed a better chance of dropping the habit and being classified as quitters.

#### Company for the First Cigarette

It was deemed important for this study to try and find out who the person was with when they first tried smoking. Various questions were placed in the questionnaire to deal with this problem.

The results obtained are contained in Table 50. It should be remembered that a person could be, and in some instances, was with a mixed age group when he or she first tried smoking and thus could be placed in one or more of the categories below:

Table 50

#### Company for the First Cigarette

	Male	Female
Peer Friends	131	130
Alone	18	19
Older Friends	58	54
Younger Friends	14	12
Parents	8	3
Older Brother	14	6
Older Sister	7	14

It is not hard to determine from the data generated by this study who the majority of the respondents were with when they first tried smoking. They were with their peer friends, meaning friends their own age level.

Also showing considerable strength was the group who first smoked with older friends. Surprisingly, showing lower results was the group who first smoked alone.

Information was also obtained from this study on the company, if any, a person who presently smokes prefers to keep when he or she is indulging in the smoking habit.

The two questions asked were:

1. How often do you smoke alone? and
2. How often do you smoke with friends?

The results obtained from this study are:

Table 51

Preferred Company for Smoking		
	Smoke Alone	Smoke With Friends
Never	12	0
Some of the time	100	58
Most of the time	55	82
Always	2	29
Total	169	169

For this study, the generated data seems to indicate a marked preference for smoking to occur more frequently in groups rather than the individual smoking alone.

### Discussion

The discussion of the results found from this study takes place under the subheading of the various variables deemed important:

Parental factors. A comparison of mother's and father's places of birth with their offspring's declaration of having smoked or never having smoked was significant.

Where the parent's birthplace was the United Kingdom or Canada, these respondents were found to have a higher probability of having tried smoking at some time, than were those surveyed whose parents were from the United States, other European, or other countries (not listed).

The parents or parent with whom a female was living was also found to have a significant relationship in this study to that girl's smoking habits. For a girl living with a single parent (her mother), it was found in this study that she, by far, was more likely to be a smoker than a non-smoker. Of those living with both parents, the majority were non-smokers. These results tend to agree with the finding of such authors as Horn (1959), Morison (1961) and Williams (1973).

Parent's Smoking Habits. A relationship was found to exist between a mother's smoking habits and whether or not her daughter had ever smoked. Of those females questioned who stated that their mother's smoked, 88.2% of these girls had tried smoking, while only 69.2% of those girls who had mothers who didn't smoke, had tried smoking.

Significant relationships were also to be found between a mother's smoking habits and her offspring's present smoking habit, with the mother-daughter combination showing a higher relationship than the mother-son.

In the majority of the cases, when the mother smoked, the daughter was more likely to smoke; when the mother did not smoke the daughter usually didn't.

When the father's smoking habits were compared to their son's present smoking habits, the relationship that existed was found to be significant. Worth mentioning is the situation where the father does not smoke. It was found in this study that the majority of the boys (76%) followed the lead of their fathers and did not smoke.

Studies by Barrett (1962), Bewley (1974) and Salber (1961) showed the same kind of positive relationship existing between the smoking habits of one parent and the smoking habits of their same sex children, as exists in this study.

Older brother's and sister's smoking habits. The number of older brother's who smoke and their younger sister's smoking habits, were found to be related in this study. As the number of older brother's who smoked increased, so did the likelihood that the younger sister would take up the smoking habit.

A comparison between the number of older brothers who smoked versus the present smoking habits of their younger brothers also produced a significant relationship.

The rapid shift in the smoking habits of those surveyed is interesting to note. It was found in this study that when an individual answered that none of their older brothers smoked they themselves were usually found to be non-smokers. As the number of older brothers who smoked increased, so did

the likelihood that the person being questioned was a smoker.

The question as to whether the number of older sisters who smoked had an effect on the present smoking habits of their younger brothers and sisters was determined to be significant in this study. Similar trends were found for these two variables as were found in the preceding set of variables concerning the number of older brothers who smoke. As the number of older sisters who smoke increases, so does the likelihood that their younger brothers and sisters will be smokers.

The relationship that was found to exist in this study between the smoking habits of older brothers and sisters and their younger brothers and sisters was similar in nature to Salber's (1963) study.

Peer group affect on smoking habit. A significant relationship was found to exist between the number of a person's five best friends who smoke and that person's present smoking habits.

The highest number of people who chose to quit smoking once they had tried it, occurs in this study when none of a person's best friends are smokers. As the number of best friends who smoke increases, so does the likelihood that the respondent will still smoke. Studies by Foss (1973) and Palmer (1970) tend to back up this view of the effect of peer pressures on an individual's smoking habits.

Educational plans and a person's smoking habits. Comparing the educational plans of a person, and that person's smoking habits indicated that a relationship existed between these

two variables. Those respondents who indicated that they wanted to enter university were usually found to be non-smokers, whereas those who stated that high school was as far, educationally, as they wanted to go, tended to be smokers.

Affect of early age smoking on a person's later smoking habits. When the age at which a person first smoked was compared to that person's present smoking habit, a significant relationship was found to exist. This study indicated that the person who had first tried smoking at an early age (five to ten years) usually continued smoking as compared to the individual who was to first try smoking in later years (after ten).

From the variables that were investigated by this study the following were found to have a significant relationship existing between them and the smoking habits of those questioned:

- females initial choice of smoking or not smoking related to:

1. father's birthplace
2. mother's birthplace
3. mother's smoking habits
4. number of older brothers who smoke

- males initial choice of smoking or not smoking related to:

1. father's birthplace
2. mother's birthplace

- females choice of continuing to smoke or quitting related to:

1. parent(s) living with (mother only), (father only), (both)
2. mother's smoking habits
3. number of older sisters who smoke
4. number of five best friends who smoke
5. age first smoked

- males choice of continuing to smoke or quitting related to:

1. Mother's smoking habits
2. father's smoking habits
3. number of older brothers who smoke
4. number of older sisters who smoke
5. number of five best friends who smoke

## CHAPTER 5

## SUMMARY

The purpose of this study is to determine which of the selected factors have a significant relationship with teenage smoking habits. The factors involved are: peer group pressures; smoking habits of parents; older siblings who smoke; and, selected social factors.

The subproblems that were involved were:

1. To determine the degree to which a teenager's smoking habits are related to their parents smoking habits.
2. To determine if there may exist different reasons why males chose to smoke as opposed to why females do.
3. To determine which of the selected factors have the greatest effect on teenage students, that would lead them to smoke.

The research instrument selected for use was a questionnaire which was specifically designed and constructed to meet the requirement of this study.

The questionnaire itself attempts to gain the following information:

- (a) parental nationality, occupation, and smoking habits;
- (b) such social factors as the number of older brothers and sisters in the family and their smoking habits;
- (c) smoking habits of the individuals being questioned as well as academic and activity interests; and

- (d) the history of the first sampling of smoking as well as other contributing factors to the continuing or quitting of the habit.

The subjects used for this questionnaire were drawn from the Board of Education for the City of Hamilton in Ontario. The subjects, males and females, ranged in age from 13 to 20 and from grades 9 through 12.

The schools used were randomly selected after stratification of all schools in the city into three categories; lower, middle and upper social class area schools as determined by Statistics Canada (1971). Then two schools from each category were chosen.

The pilot study was conducted in late November and early December 1976, with the main study running from January to February 1977 and involving 500 students (respondents).

The students chosen in this study marked their responses directly on the questionnaire itself. Therefore it was necessary later to transfer their responses on to data processing cards. Once the information had been transferred from the questionnaire to the data cards, a computer was used for tabulation and further analysis of the information.

In the analysis of the data, Chi square tests of independence using contingency tables, at the 5% level of significance, were used. This allows different variables to be compared with each other, to see if there is any relationship between them.

Various null hypothesis were tested under the following factors: parental influence, parental smoking habits, older

siblings smoking habits; peer group smoking habits; educational plans; activity participation level; and, affect of early smoking on later smoking habits.

### Conclusions

The following is a listing of the variables that this study indicated had a significant relationship with a young person's smoking habits:

- |   |  |
|---|--|
| <ul style="list-style-type: none"> <li>- females initial choice of smoking or not smoking related to:</li> <li>1. father's birthplace</li> <li>2. mother's birthplace</li> <li>3. mother's smoking habits</li> <li>4. number of older brothers who smoke</li> </ul>   | <ul style="list-style-type: none"> <li>- males initial choice of smoking or not smoking related to:</li> <li>1. father's birthplace</li> <li>2. mother's birthplace</li> </ul>   |
| <ul style="list-style-type: none"> <li>- females choice of continuing to smoke or quitting related to:</li> <li>1. parent(s) living with (mother only) (father only) (both)</li> <li>2. mother's smoking habits</li> <li>3. number of older sisters who smoke</li> <li>4. number of five best friends who smoke</li> <li>5. age first smoked</li> </ul> | <ul style="list-style-type: none"> <li>- males choice of continuing to smoke or quitting related to:</li> <li>1. mother's smoking habits</li> <li>2. father's smoking habits</li> <li>3. number of older brothers who smoke</li> <li>4. number of older sisters who smoke</li> <li>5. number of five best friends who smoke</li> </ul> |

A teenager's present smoking habits were found to be related to their same-sex parent's smoking habits, with the

mothers' smoking habits having a stronger influence on their daughters' rather than their sons', and the fathers' smoking habits having a significant effect on their sons' and not their daughters'.

From the list above, it can be seen that there exists differences between the variables found in this study that were significantly related to the male's and female's initial choice of smoking. What was found that was similar, was, that both males and females most likely shared that first cigarette experience with a group of peer friends.

In conclusion, it can not be said that one variable and one variable alone had the greatest effect on a teenager's smoking habit. What is put forward is the idea of a combined effect as well as a cumulative effect.

A combined effect means that an individual faces the influence of a number of smoking related variables. For example, a young male may be faced with a father who smokes as well as a number of older brothers who smoke. This younger male is subjected to the combined effect of both these variables.

The cumulative effect comes in, when it is determined how many and how extensively an individual is subjected to the smoking related variables, found significant in this study. For example, it is more likely that a male whose father smokes, most of whose older brothers and sisters smoke and the majority of his best friends smoke, is himself a smoker as opposed to a boy who faces the above variables but to a lesser extent and the word lesser is of major importance here.

Taking into account these two theories, the combined and the cumulative affect, a definite need is presented for additional research and study.

### Recommendations

1. Further research and study into the areas found significant in this study.
2. Changes, if necessary, in the school health curriculums to take into account the additional variables found significant in this study rather than just trying to effect young peoples' smoking habits via the health consequences of smoking.
3. Development of teaching units for the main sections in this study.
4. An increase in public awareness, especially in parents, of the related effects of their smoking habits.
5. After reviewing the literature it was found that the vast majority of the research work done into smoking habits was conducted outside of Canada, specifically in the United States. This Canadian study, now complete, has seen striking similarities and trends between the United States and Canadian data. A suggestion to be considered is that facts found on smoking behaviour in the United States could be generalized to Canada, with caution.

## BIBLIOGRAPHY

- American Cancer Society, Chicago Unit, "Survey on Student Smoking Habits in The Chicago Public Schools, 1968", American Journal of Public Health 65:923-38, Sept. 1975.
- Aronow, W. S., "Effect of Cigarette Smoking and of Carbon Monoxide on Coronary Heart Disease", Chest 70 (4) 514-18, Oct. 1976.
- Baer, D. J. and Katkin, J. M. Jr., "Limitation of Smoking by Sons and Daughters Who Smoke and Smoking Behaviour of Parents", Journal of Genetic Psychology 118 (Second Half):293-6, June 1971.
- Barrett, K. A., "High School Students' Smoking Habits", Canadian Journal of Public Health 53, No. 12, p. 500-6, Dec. 1962.
- Bergen, B. J., "Some Evidence for a Peer Group Hypothesis About Adolescent Smoking", Health Education Journal, 21:113, Feb. 1973.
- Best, W. E., "A Canadian Study of Mortality in Relation to Smoking Habits, A Preliminary Report", Canadian Journal of Public Health 52:99-106, 1961
- Bewley, B. R., "Factors Associated With The Starting of Cigarette Smoking by Primary School Children", British Journal of Preventive and Social Medicine, 28(1):37-44, 1974.
- Borland, B. L., "Relative Effects of Low Socio-Economic Status, Parental Smoking and Poor Scholastic Performance on Smoking Among High School Students", Social Science Medical 9(1):27-30, January, 1975.
- Boss, E. R. and Rose, C. L., "Age and Interpersonal Factors in Smoking Cessation", Journal of Health and Social Behaviour 14(4):381-7, Dec. 1973.
- Bothwell, P. W., "The Epidemiology of Cigarette Smoking in Rural School Children", Medical Officer 102:125-32, Sept. 1959.
- Boyle, C. M., "Some Factors Affecting the Smoking Habits of a Group of Teenagers", Lancet 2(581):1287-9, Dec. 14, 1968.
- Bynner, J. M., "Behavioural Research Into Children's Smoking: Some Implications for Anti-Smoking Strategy", Royal Society of Health Journal 90, 159-163, May-June, 1970.
- Cartwright, E., "Distribution and Development of Smoking Habits", Lancet 2:725-27, Oct. 31, 1959.
- Coleman, J., "The Adolescent Society", Basic Book Inc., New York, 1965.

- Cresswell, M., "University of Illinois Anti-Smoking Education Study", Illinois Journal of Education 60, 27-37, March 1971.
- Davis, R. L., "Status of Smoking Education Research", Journal of School Health, 38, No. 6, p. 323, June 1968.
- Dimond, S. J., "Smoking Habits of Delinquent Boys," British Journal of Preventative and Social Medicine, I, No. 18, p. 52-54, January 1964.
- Dische, S., "Cigarette Smoking and Cancer of Bladder and Lung", British Medical Journal 2(6045), p. 1174-5, Nov. 13, 1976.
- Doll, R., "Mortality in Relation to Smoking: 20 Years Observation on Male British Doctors", British Medical Journal 2(6051) p. 1525-36, Dec. 25, 1976.
- Ferguson, G. A., Statistical Analysis in Psychology and Education, McGraw-Hill Book Company, 1971.
- Fielding, B., "The Smoke Filled Trap", National Education Journal 53, No. 7, p. 18-20, Oct. 1964.
- Foss, R., "Personality, Social Influence and Cigarette Smoking", Journal of Health and Social Behaviour, Sept. 14, 1973.
- Hammond, E. C., "The Effects of Smoking", Science America 207:3-15, 1962.
- Hardyck, C. D., and Petrinovich, L. F., Introduction to Statistics for the Behavioural Sciences, W. B. Saunders Company, 1969.
- Hochbaum, G. M., "Psychosocial Aspects of Smoking with Special Reference to Cessation", American Journal of Public Health 55 692-97, May 1975.
- Horn, D., "Cigarette Smoking Among High School Students", American Journal of Public Health, 49:1497-1511 (Nov.) 1959.
- Horn, D., "Current Smoking Among Teenagers", Public Health Report 83:458-60, 1968.
- Horowitz, M. J., "Psychological Aspects of Education Related to Smoking", Journal of School Health, p. 284, June 1966.
- Jenson, L. and Thompson, J., "Report of 1965 Smoking Survey", Journal of School Health, 34(8) p. 371, Oct. 1965.
- Kahn, E. B. and Edwards, C. N., "Smoking and Youth: Contributions to the Study of Smoking Behaviour in High School Students", Journal of School Health 40(10):561-2, Dec. 1970.

- Keeve, J. P., "Smoking Habits and Attitudes of 3057 Public School Students and Their Families (Newburgh, New York)", Journal of School Health 35(10):458-9, Dec. 1965.
- Kelson, S. R., Pullella, J. L., and Otterland, A., "The Growing Epidemic: A Survey of Smoking Habits and Attitudes Toward Smoking Among Students in Grades 7 Through 12 in Toledo and Lucas County (Ohio) Public Schools--1964 and 1971", American Journal of Public Health 65(9):923-38, Sept. 1975.
- Ladye, J. A., and Creswell, W. H. Jr., and Stone, D. B., "A Cohort Study of 1,205 Secondary School Smokers", Journal of School Health 42(1):47-52, Jan. 1972.
- Lampert, K. J., "The Effectiveness of Anti-Smoking Campaigns: Moralistic or Scientific Approach", Journal of School Health 36, Jan. 1966.
- Laughlin, T. J., "Socio-Psychological Aspects of Cigarette Smoking", Canadian Journal of Public Health 61(4):301-12, July-Aug. 1970.
- Lawton, A. P., "The Psychology of Adolescent Anti-Smoking Education:", Journal of School Health 33(Oct.) 333, 1963.
- Lebovits, B., "Smoking and Personality: A Methodological Analysis", Journal of Chronic Diseases 23(10):813-21, March 1971.
- Lemin, B., "Smoking in 14 Year-Old School Children", International Journal of Nursing Studies, 4, 301-7, 1967.
- Levitt, E. E., "A Multi-variate Study of Correlative Factors in Youthful Cigarette Smoking", Developmental Psychology, 2, 5-11, 1970.
- Levitt, E. E., "Reasons for Smoking and Not Smoking Given By School Children", Journal of School Health 41(2):101-5, Feb. 1971.
- Maclaine, A. G., "Smoking and Young People", Medical Journal of Australia, 2 (Sept.) 388-390, 1964.
- Mataraz, J. D., and Saslow, G., "Psychological and Related Characteristics of Smokers and Non-Smokers", The Psychological Bulletin, 57:493-513, Nov. 1960.
- Mausner, B. and Mischler, J. B., "Cigarette Smoking Among Junior High School Students", Journal of Special Education, 1 61-66, 1966.
- McKennell, A. C., "Smoking Motivation Factors", British Journal of Social and Clinical Psychology 9(1):8-22, Feb. 1970.
- Merki, D. J., "The Effects of Two Educational Methods and Message Themes on Rural Youths' Smoking Behaviour", Journal of School Health, p. 452, Sept. 1968.

- Morison, J. B., "Smoking Habits of Winnipeg School Children", Canadian Medical Association Journal 84 (May 6, 1970) 1006-7.
- Newman, I. M., "Adolescent Cigarette Smoking as Compensatory Behaviour", Journal of School Health 40(6):316-21, June 1970.
- Newman, I. M., "Ninth Grade Smokers--2 Years Later", Journal of School Health, November, 1971, p. 497.
- Newman, I. M., "Status Configurations and Cigarette Smoking in a Junior High School", Journal of School Health 40(1): 28-31, Jan. 1970.
- Palmer, A. B., "Some Variables Contributing to the Onset of Cigarette Smoking Among Junior High School Students", Social Science and Medicine, Volume 4, 359-66, 1970.
- Parnell, R. W., "Smoking and Cancer", Lancet 1, 963, 1951.
- Piper, G. W., Thomas, W., Wake, F. R., Matthews, V. L., "Smoking Habits of Grade 7 Children--A Comparative Study", Canadian Journal of Public Health 64(2):Supplementary: S36-42, March 1973.
- Salber, E. J., "Influence of Siblings on Student Smoking Patterns", Pediatrics, 31, No. 4, 570-572, April 1963.
- Salber, E. J., "Smoking Among School Age Children", American Journal of Public Health, 52:1018, June 1962.
- Salber, E. J., "Smoking Habits of High School Students Related to Intelligence and Achievement", Pediatrics, 29, No. 5, p. 780-7, May 1962.
- Salber, E. J. and MacMahon, J., "Cigarette Smoking Among High School Students Related to Social Class and Parental Smoking Habits", American Journal of Public Health 51 (Dec.) p. 1780, 1961.
- Sallak, V. J., "A Study of Smoking Practices of Selected Groups of Junior and Senior High School Students", Journal of School Health 31, No. 9, p. 313, Nov. 1961.
- Statistics Canada, "Population and Housing Characteristics by Census Tracts for Hamilton", Census Tract Bulletin, 1971.
- Steel, P. H., "Cigarette Smoking in School Children", Journal of the Medical Society of New Jersey, 63, 555-7, 1966.
- Stewart, L., and Livson, N., "Smoking and Rebelliousness: A Longitudinal Study from Childhood to Maturity", Journal of Consult. Psychology 30(3):225-9, June 1966.
- Streit, W. K., "Students Expressed Views on Smoking", Journal of School Health 37:151-152, 1967.

Williams, A. F., "Personality and Other Characteristics Associated with Cigarette Smoking Among Young Teenagers", Journal of Health and Social Behaviour 14(4):374-80, Dec. 1973.

Wohlford, P., "Initiation of Cigarette Smoking: Is It Related to Parental Smoking Behaviour?", Journal of Consult. Clinical Psychology 34(2):148-51, April 1970.

Wohlford, P., and Giammona, S. T., "Personality and Social Variables Related to the Initiation of Smoking Cigarettes", Journal of School Health 39(8):544-52, Oct. 1969.

Woody, R. H., "Smoking: Psychosocial, Personality, and Behavioural Factors", Journal of School Health 49(8):427-34, Oct. 1970.

Yacenda, J. A., "Smoking Behaviour and Young People. The Need for New Directions.", Clinical Pediatrics (Phila.) 12(1):Supplementary:13A P, Jan. 1973.

Zagona, S. V., "An Analysis of Some Psycho-Social Variables Associated With Smoking Behaviour in a College Sample", Psychological Reports 17 (Dec.) 967-978, 1974.

APPENDIX



14. Are you aware that smoking can be dangerous to your health?      yes      no
15. In what recreational sports do you participate?  
 (a) basketball      (b) football      (c) tennis  
 (d) golf      (e) bowling      (f) skating  
 (g) swimming      (h) others      (i) none
16. In what outdoor activities do you participate?  
 (a) hunting      (b) camping      (c) fishing  
 (d) boating      (e) horseback riding      (f) cycling  
 (g) others      (h) none
17. What school activities do you engage in?  
 (a) clubs      (b) choir      (c) band/orchestra  
 (d) debate      (e) others      (f) none
18. To what school teams do you belong?  
 (a) football      (b) track      (c) basketball  
 (d) volleyball      (e) golf      (f) swimming  
 (g) wrestling      (h) cheerleading      (i) curling  
 (j) others      (k) none
19. Have you ever tried smoking?      yes      no

If yes to the above question, answer the rest of the questions, if no to the above, leave the rest of the questions blank.

20. How old were you when you first tried smoking? \_\_\_\_\_
21. How old were you when you started smoking regularly? (at least one cigarette per day). \_\_\_\_\_
22. Do you smoke now?      yes      no
23. Were you alone when you first smoked?      yes      no
24. Were you with friend(s) the same age as you when you first smoked?      yes      no

- |     |  |       |                     |                     |        |
|-----|--|-------|---------------------|---------------------|--------|
| 25. | Were you with older friend(s)<br>when you first smoked?      | yes   | no                  |                     |        |
| 26. | Were you with younger friend(s)<br>when you first smoked?    | yes   | no                  |                     |        |
| 27. | Were your friends smoking with<br>you when you first smoked? | yes   | no                  |                     |        |
| 28. | Were you with your parents when<br>you first smoked?         | yes   | no                  |                     |        |
| 29. | Were you with your older brother<br>when you first smoked?   | yes   | no                  |                     |        |
| 30. | Were you with your older sister<br>when you first smoked?    | yes   | no                  |                     |        |
| 31. | How often do you smoke<br>alone?                             | Never | Some of<br>the time | Most of<br>the time | Always |
| 32. | How often do you smoke<br>with friends?                      | Never | Some of<br>the time | Most of<br>the time | Always |