

A report is presented on the analysis of data obtained from responses of twelfth grade students to a self-administered questionnaire on smoking and health. Findings are discussed.

# The Influence of Obvious Anonymity on the Response of School Children to a Questionnaire About Smoking

## Introduction

The effect of cigarette smoking on health has been considered in a great number of articles in many scientific journals in the past ten years. Reviewing the facts accumulated in this vast number of studies and publications, the United States Public Health Service in 1964, issued a report of the Advisory Committee to the Surgeon General entitled *Smoking and Health*.<sup>1</sup> The second report and its revisions<sup>2,3</sup> in 1968 and 1969 strengthen the conclusions of the earlier one, that is, that the widespread habit of cigarette smoking is, indeed, associated with higher morbidity and mortality rates from a number of diseases such as lung cancer and cancers of other organs, obstructive bronchopulmonary diseases, and cardiovascular diseases.

While many questions concerning cigarette smoking and the risk to health remain unanswered, it has become apparent that the danger of health problems arising as a result of smoking is greater for those who start smoking at young ages.<sup>4</sup> For this reason, and because it has been estimated that if the smoking habits of our population are not changed, one million children now living in the United States will die prematurely of lung cancer alone,<sup>5</sup> a number of studies have sought to analyze the smoking habits and attitudes of school children.

Techniques of investigation must keep pace with health problems being studied. A simple and inexpensive technique of data collection such as the self-administered questionnaire can be of considerable value in studying certain problems. Both in the United States and in several foreign countries, information concerning young people and their smoking habits and attitudes has been obtained in response to a written questionnaire. However, investigators have not attempted to compare *how* people respond to the questionnaire. That is, they have not considered whether there is a difference in the responses when the students realize that they may be linked to their own responses as opposed to the case when they know their answers will remain anonymous. In certain of the smoking studies, students were identified by name, as well as by age and sex.<sup>6-15</sup> In others, the respondents were identified by age and sex but did not put their names on the questionnaire; in some of these, the researcher actually put great effort into advising the students that the information obtained would be entirely confidential and that they could not be

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identified with their individual responses.<sup>16-27</sup> In still further studies, the author has not clarified in the published data whether the students may be linked by names to their replies on the questionnaire.<sup>28-34</sup> A number of well-written and well-accepted studies fall into the latter category.

This paper attempts to study the relationship of responses to a standard self-administered questionnaire between two randomly selected groups of twelfth grade boys and girls eligible for the study by virtue of their current enrollment in required health education classes in the Seattle Public Schools, one group of which responded to the questionnaire anonymously, the other of which was required to identify themselves by signing their names to the questionnaire. Since it is known that many social and psychological factors influence individual smoking behavior, this study seeks to determine the predictability of responses to the identified versus the anonymous questionnaire.

## Methods

Seattle, Washington has a population of 591,000. The public schools, on October 1, 1968 had an enrollment of 93,451 students, which is 86.55% of the total school enrollment in the city of Seattle. Private and parochial schools bring the total enrollment in the city to 107,978. In October, 1968, 6,567 students were registered in the twelfth grade in the public schools. Boys and girls in the study group were distributed through twelve high schools, drawing from families living in the full range of socioeconomic strata.

Health education is a required daily class for one semester of the senior year in all Seattle public schools. Approximately half of the students take the course the first semester, and half the second. At the time of the test, i.e., during the second semester, the health education class rosters reflected a total of 2,816 students. Ages of students in the study ranged from 15 through 20 years, with 95.32% of the youngsters in the 17-18-year-old group.

For use in the study, a questionnaire was developed which requested information from boys and girls regarding their age, sex, cigarette usage, and attitudes toward smoking and health. The parents' current smoking habit and their attitudes toward the youngster's smoking were a part of the investigation.

For the purposes of this study, a current smoker is one who describes himself as smoking cigarettes on a regular basis regardless of the amount or the frequency. A former smoker is the student who states that he smoked regularly at one time but no longer smokes. A nonsmoker is the student who has not smoked regularly and has never tried more than several cigarettes in his lifetime. Smokers of a few cigarettes are those who have used a few cigarettes from time to time, but have never smoked regularly. Former smokers are those who smoked in the past but no longer do so.

Students who put their names on the paper were designated the "signed" group, those who put only age and sex but no name were the "unsigned" group, and those who received the signed forms but failed to put their names on them were designated the "no name" group. Throughout the remainder of the study the titles signed, unsigned, and no name shall be used to indicate the categories of response of male and female students.

Assignment of students to the signed and unsigned categories was standardized by the method which follows. During the early weeks of the second semester, the population of students enrolled in health education classes was obtained from each school. The students were assigned by class periods, in a balanced fashion to assure approximately equal numbers for each school, to either the signed or the unsigned group by means of a random digits table. Thereby, possible bias in the selection of the two groups was eliminated. The necessary number of questionnaires for each class were placed in a manila envelope marked in the right upper corner with the name of the school, the teacher, and the class period. The outside of the manila envelope did not disclose whether the enclosed questionnaires were the signed or the unsigned type. The manila envelopes for all classes were delivered by the examiner to the head health education teacher in all twelve Seattle high schools. The head teacher then distributed to each health education teacher in that school the forms as preassigned on the envelope. Verbal and written instructions were given to the head teacher at the time of delivery of the manila envelopes. The head teacher was advised that it was extremely important to the study that the questionnaires be distributed as scheduled. Forms were passed out and collected within a week's time. Any absentees who could not be picked up in that length of time, therefore, were not included.

## Results

The completed questionnaires were collected from 2,370 boys and girls in the twelve Seattle high schools. This represented 83.45% of the questionnaires, with absenteeism due to extended illness, early dismissals, or dropping from school with names still remaining on the class registers accounting for the 16.55% who did not respond.

**Table 1—Current Smokers by School, Sex, and Categories of Response**

Schools	Current Smokers							
	Boys				Girls			
	Signed		Unsigned		Signed		Unsigned	
No.	No.	%	No.	%	No.	%	No.	%
1	19	35.19	25	35.21	17	27.87	15	26.79
2	11	39.29	11	52.38	4	14.29	5	20.83
3	13	26.00	13	31.71	9	19.57	11	21.57
4	10	28.57	30	88.24*	11	17.46	6	26.09
5	14	28.57	19	31.15	12	20.69	10	15.63
6	19	29.23	7	10.77	15	32.61	11	21.57
7	15	24.19	28	41.18	26	43.33	15	25.86†
8	24	45.28	19	43.18	7	16.66	12	28.57
9	8	44.44	14	50.00	8	25.00	10	32.26
10	16	32.00	18	32.73	11	17.74	15	20.00
11	30	39.47	24	36.92	18	31.03	22	37.29
12	7	26.92	15	42.86	10	30.30	15	41.67
Total	186	32.86	223	37.93	148	25.13	147	25.79

\*Chi square = 25.78, d.f. = 1,  
p .001

†Chi square = 4.313, d.f. = 1,  
p .05

Calculated without School 4 = 34.84%

The number of boys in the study totaled 1,169, of whom 566 were signed, 588 unsigned, and 15 no name; the number of girls in the study was 1,181, with 589 signed, 570 unsigned, and 22 no name. In all schools together, the number of boys responding to the signed questionnaire ranged from 38.30% to 57.14% of the total population for that sex, and the number of girls from 42.99% to 73.26% of the total. The unsigned boys ranged from 42.86% to 57.38% of the total and the unsigned girls from 26.74% to 54.74%. Variation from the planned 50% of each category resulted from absenteeism within classrooms in the various school buildings rather than refusal of individuals to participate. The no name students comprised only 37 boys and girls of all the 1,155 students in the signed category. Since this small number (3.2% of the signed category or 1.6% of the total students) showed no consistent pattern in the distribution of smoking habits, in the interest of clarity, other than to list their current smoking behavior, they have been omitted from further analysis of data.

Smoking habits of students according to sex and identification or anonymity by name of respondent are shown in Table I.

In a number of schools there were wide differences between the sexes and the signed and the unsigned classification of students who stated that they were smokers, the greatest difference being at School #4, where only 10 out of 35 (28.6%) signed boys and 30 of 34 unsigned boys (88.2%) said they were current smokers. The overall city-wide percentages of smokers were 32.9% of the signed boys and 37.9% of the unsigned. Calculated without School #4, the unsigned group fell to midway between the two, i.e., 34.8%. Among the girls, citywide, there was little difference between the signed smokers at 25.1% and the unsigned at 25.8%. The widest difference for girls was at School #7, where 43.3% of the signed girls said they smoked and only

25.9% of the unsigned. For the girls, seven of the twelve schools showed more smoking in the unsigned than the signed group, three showed less smoking in the unsigned (Schools #5, #6, & #7), and two showed almost the same smoking behavior in both groups (Schools #1 & #3). The number of boys admitting to being current smokers also was larger in the unsigned than in the signed group in seven schools. Four schools showed very similar behavior in the two categories (Schools #1, #8, #10 & #11), and one, School #6, showed less smoking in the unsigned group, with 10.8% saying they smoked while 29.2% of the signed said they smoked.

In the following table from Salber's work,<sup>8</sup> we have attempted to show comparable estimates for student smokers in various studies. We have added Ravenholt's 1965 Seattle study<sup>7</sup> and the current one. Definitions of current smokers vary, so that the relationships are only roughly comparable.

Area	Definition	Per cent Current Smokers	
		Boys	Girls
Portland (Horn)	1 or more cig./wk.	29.9	16.6*
Winnipeg (Morison)	1 or more cig./wk.	44.7	28.2*
Newton (Salber)	Student's statement	42.6	40.7**
Seattle 1965 (Ravenholt)	Student's statement	28.3	19.4***
Seattle 1969 (Harlin)	Student's statement	35.0	25.0***
		*	10-12th grade
		**	7-12th grade
		***	12th grade

Boys who had never smoked were almost identical in numbers for the signed and the unsigned categories when totaled for the entire city, i.e., 16%. The same pertained for girls at 27%. However, there was considerable variation in responses between and within schools (Table 2).

**Table 2--Students Who Never Smoked by School, Sex, and Category of Response**

Schools	Never Smoked							
	Boys				Girls			
	Signed		Unsigned		Signed		Unsigned	
No.	No.	%	No.	%	No.	%	No.	%
1	9	16.66	5	7.04	20	32.79	13	23.21
2	4	14.29	5	23.80	4	14.29	12	50.00
3	15	30.00	11	26.83	8	17.39	14	27.45
4	2	5.71	9	26.47	8	12.70	5	21.74
5	13	26.53	9	14.75	14	24.14	26	40.63
6	8	12.31	10	15.38	11	23.91	13	25.49
7	8	12.90	7	10.29	13	21.67	17	29.31
8	5	9.43	4	9.09	18	42.86	4	9.52
9	3	16.67	6	21.43	10	31.25	8	25.81
10	5	10.00	7	12.73	18	29.03	27	36.00
11	9	11.84	13	20.00	21	36.21	10	16.95
12	7	26.92	6	17.14	12	36.36	6	16.67
Total	88	15.55	92	15.65	157	26.66	155	27.19

Curiously, for several schools, the percentage of boys and girls who said they had never smoked was higher for the signed group, and yet for other schools, the unsigned group contained greater numbers.

An analysis was made of the ages at which high school seniors who had been regular smokers quit smoking. In the signed category, 71 males and 55 females who had been regular smokers gave up smoking while still in school. In the unsigned group, 78 boys and 51 girls said they had discontinued. Most of the former high school smokers quit between the ages of 15 and 18, although some who admitted to having been regular smokers had quit by age 12. Some students did not give the age at which they discontinued the habit. One boy and one girl quit at age 19. No clearcut age pattern evolved between the signed and the unsigned categories of former smokers. In boys, the greatest differences were shown between discontinued smokers in the signed and the unsigned categories at ages 17 and 18, although more unsigned (22 boys) than signed (16 boys) quit at age 17, and more signed (15 boys) than unsigned (10 boys) quit at age 18. In girls, the 17-year-olds had the largest number of quitters and the largest difference between signed (at 24 girls) and unsigned (at 14 girls). Again, the differences appear to be random. It is possible that the greater number of discontinued male smokers in both categories reflects: 1) the larger number of previously smoking boys from which to obtain those quitting and 2) that girls have taken up smoking later than boys and, therefore, have had a shorter period of time in which to experiment and then to quit.

The majority of boys in our study began smoking cigarettes at age 12 or after, while the majority of girls started at age 13 or after. Although very small numbers of boys and girls started a regular cigarette smoking habit during or before their seventh year of age, and few after their eighteenth year of age, the greatest number adopted the practice at age 15 or 16 in both the signed and the unsigned groups. An interesting fact, and one of importance to health educators, is that a comparison of current smokers with those who have given up the habit reveals that those currently smoking contain a greater number of boys and girls who began their smoking habit at the younger ages. Hammond's studies showed that death rates are higher among current cigarette smokers starting at a young age than those starting later in life. Even between ages 15-19 as opposed to under 15 demonstrated a difference.<sup>3,5</sup> In our study, of current male smokers, 57 of the signed group and 79 of the unsigned group began smoking at age 13 or under. Of the formerly smoking males, 44 of the signed and 38 of the unsigned started under age 13. The pattern is similar for girls, in which 36 of the signed current smokers and 32 of the unsigned current smokers began at age 13 or under, while only 20 of the signed and 11 of the unsigned began by age 13 in the current nonsmoking group.

Evidence that cigarette smoking constitutes a health hazard has mounted in recent years, during which time evidence of the hazards has been freely available to the American teenager. Therefore, it is of interest to know whether boys and girls nearing the completion of high school are aware of the risk to health in smoking. To obtain

this information, the questionnaire asked students: "Do you believe that there is a relationship between cigarette smoking and lung cancer?" and "Do you believe that there is a relationship between cigarette smoking and general health?" To the question of relationship to lung cancer, smokers and nonsmokers alike responded similarly in many schools. When calculated for the entire city, variation was only from 95% of the unsigned males to 97% of the unsigned females. In several schools, 100% of the smokers and/or the nonsmokers were convinced of such a relationship. However, there were some groups, e.g. School #4 male signed group, in which only 70% of the students said they thought there was a relationship. School #4's girls and the unsigned boys, however, responded close to the all-city range of affirmative responses.

That there may be a relationship between cigarette smoking and general health also produced 100% affirmative responses in several schools, both in the smoking and non-smoking population. However, some categories responded "yes" as little as 60%, e.g., School #2's unsigned girl smokers. In general, response to this question by both the smokers and nonsmokers corresponded rather closely to Horn's 91% of students who said "yes" they did think that cigarette smoking is a hazard to health.<sup>3,6</sup>

Four variables were studied regarding the characteristics of the daily habit of the current twelfth grade smokers: 1) number of cigarettes smoked each day, 2) amount of inhalation, 3) length of cigarette butt discarded, and 4) type of cigarette used with reference to filter alone, not to the length of the cigarette.

The highest percentage of regularly smoking boys, both signed (40%) and unsigned (42%) smoked 11-20 cigarettes a day, while the greatest number of girls smoked one to ten cigarettes, i.e., 33% of both the signed and unsigned. Although School #4's unsigned male smokers were the largest group admitting to smoking cigarettes, fewer smokers smoked 11-20 cigarettes per day (30%) than was the city-wide mean for smokers (42%). Switzer's study in Berkeley was remarkably similar to the situation in Seattle, with more students smoking cigarettes in the low-income school, but smoking less cigarettes per day than those students attending school in the higher socioeconomic area.<sup>2,6</sup> All School #5's male signed smokers said they smoked 6-20 cigarettes a day, but their unsigned counterparts were evenly divided between smokers of 1-5, 6-10, and 11-20 cigarettes a day.

The majority of boys and girls in anonymous and identified groups estimated that they tended to inhale cigarette smoke moderately.

Potentially injurious tars and nicotine in cigarette smoke may be accumulated in greater amounts with decreasing length of the cigarette butt remaining after smoking. Therefore, it may be of interest to educators that over 60% of youth in all classifications in this study smoke their cigarettes down to a butt which is one quarter or less in length of the cigarette. Some students mentioned that they smoked down to the filter. City-wide, less than 6% of the students left one half or more of the cigarette unsmoked. No significant difference for length of cigarette smoked appeared between signed and unsigned respondents.

Male signed and unsigned smokers use predominantly filter cigarettes, more extensive use of the filtered type than was reported from either the Illinois study<sup>6</sup> or Horn's work.<sup>3,7</sup> There was no significant difference between the signed and the unsigned groups. A few smokers used both or either type of cigarette, and some students stated "we smoke whatever brand or type we can get from our friends."

Students were asked whether they felt that their mother and father approved of their current smoking habit or would approve if they should decide to smoke at a later date. There was marked variation in the responses between smokers and nonsmokers and between individual schools. The differences between schools appeared entirely random. It is significant that only half the number of smoking students, as opposed to nonsmoking students, felt that they would have their parents' approval to smoke. Analysis of data appears to demonstrate that both mothers and fathers appeared to approve less of their daughters' smoking than of their sons' smoking, the greatest difference in approval being for those who are currently nonsmokers, where only 9.83% of fathers would approve if their daughters desired to smoke and 17.15% would approve if their sons wished to smoke. Horn reports that 8% of high school smokers smoke despite parental prohibitions against it.<sup>3,7</sup>

Wide differences occurred in the smoking habits of parents for the signed and unsigned groups when compared by individual school. However, the number of smoking parents in each of the categories was very small, often being only one or two persons and seldom more than ten for an individual school; the differences in distribution appeared to be random. Our results showed that for the students in all the schools, when the signed boys smoked, 29.57% of the parents both smoked. The unsigned boys who smoked reported almost the same number of both parents smoking, i.e. 30.49%. When the signed girls smoked, 31.08% had both parents smoking; the unsigned girls had 26.53%.

A final variable studied was the number of cigarettes smoked by each student per day for each year from the onset of his smoking habit. Wide variation in the amount smoked was found at every age given, from seven through nineteen. It is interesting, however, that the mean number of cigarettes smoked per day is consistently the same for signed and unsigned boys and girls when plotted for the entire city. In general, in all the schools, girls smoked less cigarettes per day at every age than did the boys.

## Discussion

Since many self-administered questionnaire studies concerning smoking habits and behavior have been done by many different investigators, this research was undertaken in order to evaluate *how* young people respond to a questionnaire. It is well-known that conscious factors may influence individual replies given in a survey. Since smoking is a habit of social and psychological as well as medical import, it is significant to evaluate whether results appear to be more in line with actual behavior when the anonymous

questionnaire form is used than when the student is identified by name.

Evidence accumulated in this study suggests that, except in unusual circumstances, Seattle Public School twelfth graders answer questions regarding smoking the same way whether or not they know that they may be associated with their replies. How closely the response reflects the real smoking behavior in these students is impossible to ascertain from this study.

Because of the differences shown in the current smoking habits between the unsigned and the signed categories in several of the schools, it was important to determine whether the difference in rates was significant for all boys in the study. We wanted to know if there was a greater differential between the signed and the unsigned categories of boys in heavy smoking groups when all of the data were combined. In order to answer this question, twelve two by two tables were set up. A combined analysis of the twelve trials was made, using the method described by Cochran.<sup>38</sup> It was found that no significant differences in the reported frequency of smoking existed between the schools when the respondents to the questionnaire signed their papers than when they did not. This does not eliminate the possibility, however, that there are real differences between the

two categories in individual schools, related to certain social, cultural, and psychological factors.

### Summary

This report is based on the analysis of data obtained by studying the responses of 2350 twelfth grade students from the Seattle Public Schools who answered questions about smoking and health on a standard self-administered questionnaire. Since the smoking habits and attitudes of high school youngsters has been studied by the questionnaire method by many researchers, and no effort has been made in the past to determine how boys and girls respond to the questionnaire, the primary objective of this paper was to compare the frequency of responses to certain variables when a randomly selected population answered in such a way that their name could be linked to their answers as opposed to when they could not be linked. Variables looked at included: current smoking habit, age began smoking, age quit smoking, belief in the relationship of smoking and lung cancer and smoking and general health, whether mother and father smoke, and whether mother and father approve of their children's smoking habit. Responses are summarized in the tables following for several of the variables (Tables 3a-7b).

**Table 3a—Length of Cigarette Butt Remaining After Smoking, for Males, by School and Category of Response**

Schools No.	Per cent of Smokers									
	Three-quarters		One-half		One-third		One-quarter		No Answer	
	Signed	Unsigned	Signed	Unsigned	Signed	Unsigned	Signed	Unsigned	Signed	Unsigned
1	5.26	12.00	5.26	8.00	21.05	12.00	68.42	68.00	0.00	0.00
2	9.09	9.09	0.00	0.00	27.27	0.00	54.54	81.81	9.09	9.09
3	23.07	7.69	15.38	7.69	30.76	30.76	23.07	53.84	7.69	0.00
4	0.00	10.34	20.00	0.00	0.00	20.68	80.00	68.96	0.00	0.00
5	7.14	5.26	0.00	5.26	35.71	31.57	57.14	57.89	0.00	0.00
6	5.26	0.00	0.00	0.00	31.57	28.57	63.15	57.41	0.00	14.28
7	13.33	3.57	6.66	10.71	0.00	14.28	80.00	71.42	0.00	0.00
8	4.16	0.00	0.00	0.00	45.83	5.26	45.83	89.47	4.16	5.26
9	0.00	0.00	0.00	23.07	28.57	30.76	57.14	46.15	14.28	0.00
10	0.00	0.00	6.25	0.00	12.50	29.41	81.25	70.58	0.00	0.00
11	3.44	0.00	3.44	0.00	27.58	29.16	65.51	70.83	0.00	0.00
12	14.28	6.66	0.00	0.00	28.57	20.00	57.14	73.33	0.00	0.00
Mean	6.52	5.00	4.34	4.54	25.54	20.45	61.41	68.63	2.17	1.36

**Table 3b—Length of Cigarette Butt Remaining After Smoking, for Females, by School and Category of Response**

Schools No.	Per cent of Smokers									
	Three-quarters		One-half		One-third		One-quarter		No Answer	
	Signed	Unsigned	Signed	Unsigned	Signed	Unsigned	Signed	Unsigned	Signed	Unsigned
1	0.00	15.38	5.88	0.00	17.64	23.07	70.58	53.84	5.88	7.69
2	0.00	0.00	33.33	0.00	0.00	0.00	66.66	100.00	0.00	0.00
3	11.11	9.09	0.00	9.09	33.33	9.09	55.55	72.72	0.00	0.00
4	0.00	0.00	0.00	0.00	18.18	20.00	81.81	80.00	0.00	0.00
5	0.00	10.00	0.00	10.00	0.00	10.00	100.00	70.00	0.00	0.00
6	6.66	0.00	0.00	9.09	13.33	27.27	80.00	63.63	0.00	0.00
7	11.53	8.33	7.69	6.66	19.23	20.00	61.53	73.33	0.00	0.00
8	16.66	10.00	0.00	0.00	0.00	0.00	83.33	83.33	0.00	8.33
9	0.00	0.00	0.00	0.00	12.50	20.00	75.00	70.00	12.50	0.00
10	18.18	0.00	0.00	14.28	36.36	21.42	45.45	64.28	0.00	0.00
11	11.76	0.00	0.00	4.54	23.52	22.72	64.70	68.18	0.00	4.54
12	0.00	6.66	10.00	6.66	20.00	13.33	70.00	73.33	0.00	0.00
Mean	6.89	4.92	3.44	5.63	17.93	16.90	70.34	70.42	1.37	2.11

**Table 4a—Amount of Inhalation for Male Students by School and Category of Response**

Schools	Per cent Inhaling									
	Not at all		Slight		Moderate		Deeply		No answer	
	No.	Signed	Unsigned	Signed	Unsigned	Signed	Unsigned	Signed	Unsigned	Signed
1	0.00	0.00	5.26	4.00	42.10	72.00	52.63	24.00	0.00	0.00
2	0.00	0.00	0.00	0.00	54.54	36.36	36.36	63.63	9.09	0.00
3	0.00	7.69	15.38	0.00	76.92	69.23	7.69	23.07	0.00	0.00
4	0.00	3.33	40.00	13.33	60.00	50.00	0.00	33.33	0.00	0.00
5	0.00	0.00	0.00	5.26	64.28	84.21	35.71	10.52	0.00	0.00
6	0.00	0.00	0.00	0.00	68.42	100.00	31.57	0.00	0.00	0.00
7	0.00	7.14	20.00	7.14	73.33	67.85	6.66	17.85	0.00	0.00
8	0.00	0.00	4.16	0.00	66.66	73.68	29.16	26.31	0.00	0.00
9	0.00	7.14	0.00	14.28	75.00	71.42	25.00	7.14	0.00	0.00
10	0.00	5.55	0.00	11.11	87.50	55.55	12.50	22.22	0.00	5.55
11	3.33	0.00	13.33	4.16	66.66	83.33	16.66	12.50	0.00	0.00
12	0.00	0.00	14.28	0.00	71.42	73.33	14.28	26.66	0.00	0.00
Mean	0.53	2.69	8.60	5.82	66.66	68.60	23.65	22.42	0.53	0.44

**Table 4b—Amount of Inhalation for Female Students by School and Category of Response**

Schools	Per cent Inhaling									
	Not at all		Slight		Moderate		Deeply		No answer	
	No.	Signed	Unsigned	Signed	Unsigned	Signed	Unsigned	Signed	Unsigned	Signed
1	0.00	13.00	0.00	0.00	88.23	80.00	11.76	6.66	0.00	0.00
2	50.00	20.00	0.00	0.00	50.00	40.00	0.00	40.00	0.00	0.00
3	0.00	0.00	11.11	18.18	44.44	54.54	44.44	27.27	0.00	0.00
4	0.00	16.16	27.27	16.66	54.54	50.00	18.18	16.66	0.00	0.00
5	0.00	0.00	0.00	0.00	75.00	80.00	25.00	20.00	0.00	0.00
6	0.00	0.00	16.66	18.18	60.00	72.72	40.00	9.09	0.00	0.00
7	0.00	0.00	3.84	6.66	73.07	93.33	19.23	0.00	3.84	0.00
8	14.28	0.00	0.00	0.00	42.85	91.66	42.85	8.33	0.00	0.00
9	0.00	10.00	0.00	0.00	87.50	60.00	12.50	30.00	0.00	0.00
10	9.09	6.66	18.18	13.33	72.72	73.33	0.00	6.66	0.00	0.00
11	5.55	9.09	11.11	9.09	66.66	77.27	16.66	4.54	0.00	0.00
12	10.00	0.00	10.00	0.00	80.00	100.00	0.00	0.00	0.00	0.00
Mean	4.05	5.44	6.75	6.80	68.91	76.87	19.59	10.88	0.67	0.00

**Table 5a— Per cent of Male Students Smoking Given Amount of Cigarettes Per Day by School, and Category of Response**

(Categories Do Not Add Up to 100% Due to Failure of Some Boys and Girls to Respond to the Question and Because Some Students Smoked Less Than One Cigarette a Day.)

Schools	1-5 Cigarettes/d		6-10 Cigarettes/d		11-20 Cigarettes/d		>20 Cigarettes/d		
	No.	Signed	Unsigned	Signed	Unsigned	Signed	Unsigned	Signed	Unsigned
1	5.26	16.00	15.78	16.00	42.10	48.00	36.84	20.00	
2	27.27	27.27	36.36	18.18	36.36	45.45	0.00	9.09	
3	30.76	46.15	46.15	15.38	23.07	30.76	0.00	7.69	
4	30.00	23.33	40.00	30.00	20.00	30.00	10.00	13.33	
5	0.00	36.84	50.00	31.57	50.00	31.57	0.00	0.00	
6	10.52	14.28	26.31	14.28	47.36	71.42	15.78	0.00	
7	6.66	10.71	26.66	14.28	66.66	64.28	0.00	10.71	
8	16.66	10.52	16.66	31.57	50.00	47.36	16.66	10.52	
9	12.50	42.85	50.00	28.57	37.50	21.42	0.00	0.00	
10	50.00	27.77	18.75	22.22	25.00	33.33	6.25	11.11	
11	40.00	16.66	20.00	41.66	30.00	37.50	3.33	4.16	
12	28.57	13.33	14.28	20.00	57.14	46.66	0.00	20.00	
Mean									
Per cent	21.52	23.81	30.08	23.64	40.43	38.42	7.41	8.88	

**Table 5b—Per cent of Female Students Smoking Given Amount of Cigarettes Per Day by School, and Category of Response**

(Categories Do Not Add Up to 100% Due to Failure of Some Boys and Girls to Respond to the Question and Because Some Students Smoked Less than One Cigarette A Day).

Schools	1-5 Cigarettes/d		6-10 Cigarettes/d		11-20 Cigarettes/d		>20 Cigarettes/d		
	No.	Signed	Unsigned	Signed	Unsigned	Signed	Unsigned	Signed	Unsigned
1		11.76	20.00	47.05	26.66	35.29	40.00	5.88	0.00
2		25.00	0.00	50.00	0.00	0.00	40.00	0.00	40.00
3		33.33	45.45	33.33	27.27	33.33	18.18	0.00	9.09
4		54.54	33.33	27.27	33.33	9.09	16.66	9.09	0.00
5		25.00	40.00	41.66	40.00	16.66	20.00	16.66	0.00
6		33.33	27.27	20.00	54.54	46.66	18.18	0.00	0.00
7		30.76	46.66	23.07	20.00	42.30	33.33	3.84	0.00
8		0.00	33.33	57.14	33.33	14.28	33.33	14.28	0.00
9		37.50	20.00	25.00	20.00	25.00	40.00	12.50	20.00
10		50.00	46.66	9.09	26.66	0.00	20.00	9.09	0.00
11		40.00	50.00	33.33	22.72	16.66	27.27	11.11	0.00
12		28.57	46.66	30.00	40.00	20.00	13.33	0.00	0.00
Mean									
Per cent		34.70	34.11	33.08	28.71	21.61	26.70	6.87	5.76

**Table 6a—Boys Responding Affirmatively to Question of Believing That There is a Relationship Between Smoking and Lung Cancer by School, Smoking Habit, and Category of Response**

Schools	Smokers				Nonsmokers			
	Signed		Unsigned		Signed		Unsigned	
	No.	%	No.	%	No.	%	No.	%
1	19	100.00	23	92.00	33	100.00	33	100.00
2	10	90.91	9	81.82	15	88.24	16	94.12
3	11	84.62	13	100.00	35	94.59	33	100.00
4	7	70.00	26	86.67	24	96.00	26	78.79
5	13	92.86	18	94.74	33	94.29	37	94.87
6	19	100.00	7	100.00	46	97.87	37	97.37
7	13	86.67	26	92.86	42	89.36	28	90.32
8	21	87.50	19	100.00	28	96.55	23	100.00
9	7	87.50	14	100.00	9	90.00	18	100.00
10	15	93.75	17	94.44	33	97.06	41	93.18
11	25	83.33	22	91.67	46	00.00	33	97.06
12	6	85.71	13	86.67	19	100.00	17	94.44
Total	166	89.25	207	92.83	363	95.78	344	94.51

**Table 6b—Girls Responding Affirmatively to Question of Believing That There is a Relationship Between Smoking and Lung Cancer by School, Smoking Habit, and Category of Response**

School	Smokers				Nonsmokers			
	Signed		Unsigned		Signed		Unsigned	
	No.	%	No.	%	No.	%	No.	%
1	14	82.35	15	100.00	53	98.15	37	90.24
2	3	75.00	4	80.00	16	94.12	19	100.00
3	7	77.78	11	100.00	31	96.88	39	97.50
4	10	90.91	5	83.33	22	95.65	17	100.00
5	12	100.00	9	90.00	48	97.96	53	98.15
6	14	93.33	11	100.00	48	97.96	40	97.56
7	24	92.31	15	100.00	42	100.00	43	100.00
8	7	100.00	11	91.67	36	97.30	28	93.33
9	7	87.50	9	90.00	20	100.00	20	95.24
10	11	100.00	14	93.33	41	93.18	60	100.00
11	15	83.33	18	81.82	43	91.49	35	94.59
12	10	100.00	13	86.67	24	100.00	20	95.24
Total	134	90.54	135	91.84	424	96.80	411	96.93

**Table 7a—Boys Responding Affirmatively to Question of Believing That There is a Relationship Between Smoking and General Health, by School, Smoking Habit, and Category of Response**

Schools	Smokers				Nonsmokers			
	Signed		Unsigned		Signed		Unsigned	
	No.	%	No.	%	No.	%	No.	%
1	17	89.47	23	92.00	32	96.97	35	97.22
2	10	90.91	11	100.00	14	82.35	17	100.00
3	9	69.23	13	100.00	36	97.30	31	93.94
4	8	80.00	29	96.67	21	84.00	29	87.88
5	14	100.00	18	94.74	34	97.14	39	100.00
6	18	94.74	7	100.00	47	100.00	37	97.37
7	14	93.33	27	96.43	44	93.62	30	96.77
8	23	95.83	18	94.74	28	96.55	23	100.00
9	7	87.50	13	92.86	10	100.00	18	100.00
10	15	93.75	17	94.44	34	100.00	42	95.45
11	26	86.67	22	91.67	44	95.65	31	91.18
12	6	100.00	14	93.33	19	100.00	17	94.44
Total	167	89.78	212	95.07	363	95.78	349	95.88

**Table 7b—Girls Responding Affirmatively to Question of Believing That There is a Relationship Between Smoking and General Health, by School, Smoking Habit, and Category of Response**

Schools	Smokers				Nonsmokers			
	Signed		Unsigned		Signed		Unsigned	
	No.	%	No.	%	No.	%	No.	%
1	15	88.24	13	86.67	51	94.44	38	92.68
2	4	100.00	3	60.00	17	100.00	19	100.00
3	7	77.77	11	100.00	31	96.88	38	95.00
4	9	81.82	5	83.33	21	91.30	16	94.12
5	12	100.00	10	100.00	48	97.96	52	96.30
6	13	86.67	11	100.00	49	100.00	40	97.56
7	23	88.46	14	93.33	40	95.24	42	97.67
8	7	100.00	11	91.67	37	100.00	30	100.00
9	7	87.50	10	100.00	19	95.00	21	100.00
10	10	90.91	13	86.67	41	93.18	60	100.00
11	16	88.88	19	86.36	43	91.49	34	91.89
12	9	90.00	15	100.00	23	95.83	19	90.48
Total	132	89.19	135	91.84	420	95.89	409	96.46

How closely the real smoking behavior of Seattle boys and girls is reflected in these answers is impossible to say. However, the method of survey described was planned to remove all possible bias in the responses. It is clear that when the data are analyzed for the twelve schools combined, there is no significant difference between signed and unsigned categories for boys or for girls in their responses to the variables included in the questionnaire. It appears that high school youngsters respond to questions about a socially acceptable habit such as smoking of cigarettes similarly, when they may be linked to their answers and when they may not be linked.

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### Treatment of Poisoning, Drug Overdose and Drug Abuse Program Scheduled

Treatment of acute intoxication and related problems of drug abuse and addiction are the subjects of a post graduate training program May 1 and 2, 1972 in Chicago.

Designed for the benefit of the emergency health care team, major emphasis is placed on the immediate needs of the poisoned and drug overdose patient.

Implementation of an organized systematic approach allows early effective treatment which can reduce substantially the morbidity and mortality due to acute poisoning. The program is especially appropriate for emergency department physicians, nurses and pharmacists. Additional aspects of treatment not readily accommodated from the rostrum in a two day program are covered in a syllabus of collected papers from previous training programs organized by the American Academy of Clinical Toxicology.

**REGISTRATION:** The program is open to all health care professionals. A registration fee of \$100.00 should be mailed to A.A.C.T., P.O. Box 2565, Houston, Texas 77001.

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