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PHYSIQUE AND PERSONALITY DIFFERENCES
BETWEEN MALE COLLEGE CIGARETTE
SMOKERS AND NON-SMOKERS

Thesis for the Degree of M. A.
MICHIGAN STATE UNIVERSITY

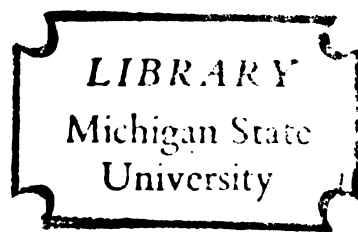
Dean W. Plath

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PHYSIQUE AND PERSONALITY DIFFERENCES
BETWEEN MALE COLLEGE CIGARETTE SMOKERS AND NON-SMOKERS

by

Dean W. Flath

A THESIS

Submitted to the College of Science and Arts
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The general purpose of this study was to determine if college male cigarette smokers differ from non-smokers in certain measures of physique and personality. Four hypotheses were derived and tested; these hypotheses predicted that cigarette smokers differ from non-smokers with respect to 1) physique, 2) personal characteristics, 3) personality traits, and 4) college grades. Subjects utilized were 446 undergraduate students at Michigan State University.

The relationship of physique to smoking was studied by classifying subjects by somatotype and smoking amount. The results indicated that the ectomorph group smoked significantly more than the mesomorph group.

Data relevant to personal characteristics were gathered by questionnaire. The results of statistical tests indicated a strong positive relationship between smoking and drinking, and no relationship between smoking and parental influence, gum chewing, and visits to the University Health Center.

Personality differences between non-smokers and heavy smokers were tested by comparing mean scores of each group on an inventory of 22 personality traits. Seven significant differences were obtained. With respect to non-smokers, heavy smokers scored high in sexuality and

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ABSTRACT

liberalism, and low in sensory awareness, warmth, organization, ambition, and scientific values. A new inventory was derived which discriminated significantly between non-smokers and heavy smokers.

Mean grade point averages for a group of non-smokers and heavy smokers were obtained and compared. No significant difference was found.

A comparison of the results with other studies was made, and implications of the results for further research were discussed, with particular emphasis on the causes of smoking, and the relationship of smoking to lung cancer.

Approved

Henry Clay Smith

Date

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D.W.P.

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INTRODUCTION

The general purpose of the present study was to determine whether or not male college cigarette smokers differed from non-smokers in certain measures of physique and personality characteristics. The question is of some importance because it bears upon an expensive, widespread habit, and because of the increasing number of studies which suggest an association of one kind or another between this habit and the incidence of lung cancer. It was hoped that the study might shed new light on the reasons for smoking itself, and might serve to clarify, or suggest a new approach to, the cigarette smoking-lung cancer hypothesis.

The Extent of Smoking

Statistical studies have verified that cigarette smoking is on the increase in the United States. A report issued by the U. S. Department of Agriculture Marketing Service (17) indicated that the number of cigarettes manufactured in the United States has risen from 55,022.8 million in 1922 to an estimated figure of 442,363.4 million in 1957. The cigarette consumption per capita in the United States, 15 years or older, has risen from 747 in 1920 to an estimated 3,449 in 1957.

The U. S. Public Health Service, after an extensive survey of smoking patterns in the United States in 1955 (4),

estimated that 49 per cent of the male population, 18 years of age or older, are regular cigarette smokers. The survey also revealed that American men are acquiring the smoking habit at a progressively earlier age. For example, of those men surveyed in the age group 55-64, the median age at which smoking began was 19.3 years. For the age group 25-34, the median age was 17.9 years.

The Cigarette Theory of Lung Cancer

Within the past fifteen years, attention has been focused on the rapid increase in lung cancer, particularly in the so-called industrial nations. More important for this study are the research projects here and abroad which have suggested that the causes of lung cancer might be dependent upon some external factor in the environment. Northrup (11) acknowledged two convincing arguments in support of this environmental agent theory. First, he cited the sudden appearance of thousands of cases of lung cancer annually within a single generation, as compared with the negligible recorded incidence of the disease prior to the twentieth century. Second, he pointed out that lung cancer has been reported to be much higher in certain occupations, and in heavily industrialized areas. By contrast, the lung cancer rate appears to be minimal in the rural areas.

The cigarette theory of lung cancer rests upon similar arguments, and the press and periodicals in this country have presented great numbers of articles linking

cigarette smoking with lung cancer. Yet a review of the more scientifically oriented literature revealed that most research workers are extremely reluctant to accept the cigarette-lung cancer hypothesis.

Potential Weaknesses of the Theory

Russ (12) reviewed many of the studies made in the area, all of which indicated that there were more smokers in the lung cancer group than in the control groups. He cautioned, however, that one cannot conclude that smoking is the cause of the disease. It may be, he suggested as one alternative, that people take to smoking more readily if they are of that general physiological type (if there is such a thing) which contracts cancer of the lung. — ,

Hammond and Horn (5), in a study of smoking in relation to death rates, found that the death rate of cigarette smokers was far higher than the death rate of men who had never smoked cigarettes. Yet, the deaths ascribed to cancer accounted for only one-quarter of the excess deaths among cigarette smokers, while deaths ascribed to coronary artery disease accounted for over one-half of the excess. Thus, although the death rate of cigarette smokers was higher than non-smokers, the disease causing the excess deaths was much more likely to have been coronary artery disease than lung cancer.

Northrup (11) suggested other factors worthy of consideration in this area. For example, he pointed out

that improved methods of diagnosis might account for much of the difference between lung cancer statistics today and thirty years ago, and that clinicians have frequently confused lung cancer with tuberculosis. (He noted with interest that as reports of death from lung cancer have gone up, reports of death from tuberculosis have gone down). He indicated further that the incidence of lung cancer in the various states is directly proportional to the diagnostic medical resources of the communities within the states.

Psychological Factors in Cancer

Other research workers have explored the possibility of psychological factors operating in the development of cancer, as opposed to external factors such as cigarette smoking. Blumberg (1) undertook a study which investigated the possible relevance of certain personality variables to the rate of growth in neoplastic diseases. His sample of cancer patients was divided into "fast" and "slow" groups in relation to the expectancy for each patient's type of cancer. The MMPI was administered to each patient, and highly significant differences were obtained between the fast and slow cases. The fast growing cases were described as having more defensiveness, a higher anxiety level, and less ability to reduce tension through motor discharge than the slow group.

Meerloo (10) studied the psychological implications of malignant growth and suggested that stress, mental shock,

or mal-adaptation may be causative factors in cancer.

Tromp (2) acknowledged the strong relationship between cigarette smoking and lung cancer, but refused to list smoking as a cause. He stated that psychological stresses among heavy smokers may be a more direct cause of cancer.

Possible Significance of These Studies

The arguments presented above serve to highlight the potential weaknesses of those reports which posit smoking as a causative agent in lung cancer. These weaknesses would become even more significant if it could be shown that cigarette smokers differ from non-smokers in certain aspects of physique and personality. Were such differences found, they would suggest the possibility that it is these differences in physique and personality that are causative agents in both the smoking habit and lung cancer. That is, it might then be hypothesized that smoking is a corollary of lung cancer, rather than a cause of it, with both of these phenomena originating, in part at least, from certain physical and psychological factors within the individual.

Hypotheses

With this in mind, four hypotheses, each dealing with a potential difference between smokers and non-smokers, were formulated and tested in the present study. These hypotheses are presented below, together with summaries of the studies which furnished the basis for each hypothesis.

Hypothesis I. Male college cigarette smokers differ from non-smokers in relation to certain measures of physique.

The work of Sheldon furnished the basis for this hypothesis. In his extensive studies of physique and temperament, Sheldon (13, 14) derived three varieties of physique, each with related indices of temperament. With reference to the use or effect of tobacco smoking, he suggested from his observations that the endomorphic-viscero-tonic person would be the most likely of the three types to engage in tobacco smoking. Sheldon reported that the habit of constant dependence upon tobacco is very common among these persons, and that the use of tobacco appears to agree with them.

The ectomorphic-cerebrotonic person, on the other hand, would be least likely to engage in smoking. Sheldon observed that these persons often show a marked sensitivity to tobacco, and that the cerebrotonic constitution cannot stand up to regular smoking.

Hypothesis II. Male college cigarette smokers differ from non-smokers in relation to the smoking habits of their parents, and to certain other personal characteristics.

Specifically, it was hypothesized that the parents of college smokers engage in smoking more than the parents of non-smokers; that college smokers would engage more

frequently in gum-chewing, and drinking of alcoholic beverages; that college smokers would utilize the services of the University Health Center more than non-smokers.

This hypothesis was drawn from the work of Earp and McArthur, Waldron, and Dickenson. Earp (3), in a study of male college students, concluded that the smoking habits of the father are positively related to the smoking habits of the son. McArthur, et al. (9) hypothesized that starting to smoke is largely brought about by the person's social environment--as this suggestion is in accord with Earp's conclusion, the first part of Hypothesis II was formulated accordingly.

McArthur, et al. (9) also obtained data which suggested that smoking is correlated with the psychoanalytic concept of orality. In this vein, they obtained positive correlations between smoking and the following: drinking, preference for sugary foods, and a gain in weight. With this suggestion as a basis, the second part of Hypothesis II was formulated.

Although no articles were noted which dealt with susceptibility to minor diseases of smokers as compared with non-smokers, many have assumed smokers to be more susceptible to common colds and other minor ailments than non-smokers. Hence, it was attempted to verify this assumption in the study.

Hypothesis III. Male college smokers differ from non-smokers in relation to certain measures of personality.

The article by McArthur, Waldron, and Dickenson (9) is most pertinent to this hypothesis. The authors surveyed a sample of Harvard University alumni in relation to psychological aspects of smoking, and suggested the following as characteristics of the non-smoker: he appears to be a product of a particular American sub-culture, often of lower-middle class origins, and upwardly mobile; he often is pious and "Inner-Directed;" he has introjected the morals of his youth; he is serious in nature and perhaps an introvert; he approves of scientific values rather than business values, and is often himself a scientist or an engineer. Vallance (18), in a study using the Hull Postural Movement Recorder, found smokers somewhat less positively suggestible than non-smokers. Lawton and Phillips (8) found smokers to exceed non-smokers in various indices related to the presence of nervous traits. Collectively, these articles were felt by the author to justify the formulation of Hypothesis III for further testing.

Hypothesis IV. Male college cigarette smokers differ from non-smokers in relation to college grade point averages.

Earp (3), in his study of students at Antioch College, found an "indisputable" association between the smoking habit and inferior scholarship. This finding struck the author as rather curious, for in his own

limited experience as an instructor, he has failed to observe any such tendency. Accordingly, it was decided to verify this finding in the present study.

METHOD

The data used in this study were collected by the use of written questionnaires distributed to the subjects, with the exception of the grade-point averages which were obtained from the Registrar's office of the University. In general, the subjects were divided into two or more groups, depending upon the variable involved; mean differences between the groups were tested for significance using conventional statistical techniques.

Subjects

The subjects for this study consisted of a total of 446 students at Michigan State University, enrolled in an undergraduate psychology course entitled, "The Psychology of Business and Personnel." As the vast majority of the subjects were males, no females were used throughout the study. The male subjects ranged in age from 19 to 32 years, and in classification from sophomores to seniors. The samples were taken from the above course during the Fall, Winter and Spring quarters of the academic year 1957-1958, and from the Fall and Winter quarters, 1958-1959. The size of each of these samples is indicated in Table I below.

TABLE I
SIZE OF THE SAMPLES USED IN THE STUDY

Sample Number	N
one	171
two	166
three	109

Measurement of Smoking

As used in this study, "smoking" refers only to cigarette smoking; those subjects who indicated they smoked a pipe, cigars, or used snuff were not included in the samples. The number of cigarettes smoked by each subject was determined by the use of a five-choice item included in a questionnaire administered to all subjects. This item read as follows:

Please indicate the number of cigarettes you smoke per day.

- (1) never smoke cigarettes
- (2) 1/4 pack or less per day
- (3) more than 1/4 pack, less than 1 pack per day
- (4) 1 pack to 2 packs per day
- (5) more than 2 packs per day

In several of the tests undertaken, it was necessary to divide the subjects into various groups, defined for purposes of this study as follows:

"non-smokers"	those subjects who indicated that they did not smoke at all.
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"moderate smokers"	those subjects who indicated that they smoked more than 1/4 pack, and less than 1 pack per day.
"heavy smokers"	those subjects who indicated that they smoked 1 pack or more per day.
"smokers"	a combination of moderate and heavy smokers.

Physique

Data relevant to the first hypothesis was obtained by classifying subjects into three groups according to physique, dichotomizing each group into non-smokers and smokers, and testing for differences between the groups by chi-square.

Subjects used were drawn from the second and third samples. Somatotypes were determined, using the methods advocated by Sheldon (15) and Smith (16) as a guide, which involve computing the index of each subject's height divided by the cube root of his weight. This index was then referred to in a condensed table of somatotypes (Appendix A) corresponding to a given height/weight index. Where several somatotypes were possible under a given index, selection was made on the basis of the subject's estimation of his physique, obtained by the subject's response to a five-choice item appended to a questionnaire (Appendix B).

Subjects were then classified into three groups: predominantly mesomorph (N = 69); predominantly endomorph (N = 25); and predominantly ectomorph (N = 51). To be

thus classified, the subject's number indicating his dominant type must have been 5 or higher. For example, a somatotype of 6-3-1 would be classified as endomorph and included in the study; a somatotype of 4-3-3 would not be included. The study was then carried on as indicated in the first paragraph of this section.

Personal Characteristics

The data relevant to the second hypothesis concerned the smoking habits of the parents of the subjects, the extent to which the subjects drank alcoholic beverages and used chewing gum, and the number of visits made to the University Health Center by the subjects. All of this information was obtained by questionnaire administered to each subject. (Appendix B).

Analysis of smoking and its relation to these variables was done by chi-square. The subjects were divided into three groups: non-smokers ($N = 68$), moderate smokers ($N = 84$), and heavy smokers ($N = 48$). The relationship between these three groups and each of the variables indicated was then tested for significance.

Personality

The general procedure employed relevant to Hypothesis III was to obtain two groups of subjects, non-smokers and heavy smokers, which were then compared with each other on measures of personality.

The subjects used in this test were drawn from the

first sample. From this sample all but non-smokers and heavy smokers were withdrawn; subjects on whom complete information was not available were eliminated. Of the remaining subjects, 50 were drawn from each category by utilization of a table of random numbers (19).

The measures of personality used consisted of twenty-two scales of personality traits developed by Dr. H. C. Smith, hereafter referred to as the H.C.S. Inventory. Each scale consisted of 30 True-False statements, with the exception of the Breadth of Interest scale which included 60 statements. The names given the 22 traits are listed below. A brief description of each of these traits may be found in Appendix C.

- | | |
|----------------------|-----------------------|
| 1. Activity | 12. Artistic Values |
| 2. Sensory Awareness | 13. Scientific Values |
| 3. Sexuality | 14. Religious Values |
| 4. Emotionality | 15. Liberalism |
| 5. Optimism | 16. Ambition |
| 6. Expressiveness | 17. Organization |
| 7. Thinking | 18. Emotional Control |
| 8. Interests | 19. Gregariousness |
| 9. Self-Confidence | 20. Warmth |
| 10. Self-Insight | 21. Dominance |
| 11. Economic Values | 22. Conformity |

Data pertinent to the derivation, consistency, stability, and factor loadings of the scales were presented in an unpublished master's thesis by Hershey (6) and need not be reviewed here.

Mean scores were computed for both the non-smoker and the heavy smoker groups on each of the 22 traits of

personality, and the differences between the means were tested for significance by use of the t test.

A cross-validation of the above tests for differences was undertaken by repeating the procedure above with the second sample. Because of the smaller number of subjects with complete data, an N of 36 was used for each group.

Grade-Point Averages

A limited test of differences between college grade-point averages of non-smokers and heavy smokers was attempted. Subjects (N = 25 each group) were selected at random from the second sample groups of non-smokers and heavy smokers. The all college grade-point average was obtained for each subject in the two groups from the Registrar's Office of the University. A mean grade-point average for each group was then computed, and the mean difference tested for significance.

RESULTS

The results of the tests of the hypotheses are presented below, in order of their original presentation. In certain cases, these findings suggested the need for further research and exploration, which was undertaken. The results of this work are included in the pertinent sections.

Differences in Physique

Hypothesis I stated that male college cigarette smokers differ from non-smokers in certain measures of physique. As a test of the hypothesis, a chi-square table was drawn, including the three somatotypes divided into non-smoker and smoker groups. Calculation of the chi-square yielded a value which was significant at the .01 level of confidence.

To explore the differences further, the mean amount of cigarette smoking for each of the three somatotype groups was determined, and differences between these means were tested for significance by the t test. The means and values of t between the means are presented in Table II.

TABLE II
SOMATOTYPE MEANS OF SMOKING
AND TESTS OF MEAN DIFFERENCES

Somatotype	Smoking Mean	Groups Compared	t
Mesomorphs (N = 69)	2.20	Mesomorphs-Endomorphs	.16
Endomorphs (N = 25)	2.36	Endomorphs-Ectomorphs	1.48
Ectomorphs (N = 51)	2.82	Ectomorphs-Mesomorphs	2.83*

*P = .01

The findings summarized in Table II indicated that the ectomorph group smoked more than the endomorph group, and significantly more than the mesomorph group. These findings were at variance with Sheldon (14), who characterized ectomorphs as highly sensitive to tobacco, and least likely of the three somatotypes to engage in smoking.

Additional findings of differences in physique

In view of the above, three additional attempts to explore possible relationships between physique and smoking were made. Subjects used were drawn from samples two and three combined. In the first attempt, 50 pairs of subjects were drawn, each pair matched for height, and differing in weight by at least 20 pounds. The pairs were split, thus forming two groups, designated "thin" and "heavy." A 2x5 chi-square table was drawn, comparing the two groups and the amount of smoking in each group.

In the second attempt, 50 pair of subjects were drawn, each pair matched for weight (five pounds difference

or less), and differing in height by at least three inches. The pairs were split, thus forming two groups designated "short" and "tall." A chi-square table similar to the above, was drawn and computed.

The results of these two attempts to explore possible relationships between physique and smoking were not statistically significant. They were, however, suggestive. A better understanding of the comparisons might be obtained by studying the data as expressed in a table of percentages.

TABLE III
NON-SMOKERS AND SMOKERS
CLASSIFIED AS "THIN-HEAVY" AND "SHORT-TALL"

Group	Control for Height		Control for Weight	
	Thin	Heavy	Short	Tall
Non-smokers	28%	42%	36%	26%
Smokers	72%	58%	64%	74%
Total	100%	100%	100%	100%

It is seen that these results, although not significant statistically, support the earlier findings that the ectomorph group, which may be characterized as tall and thin, smoked more than the other groups.

The third attempt to explore relationships between physique and smoking stemmed from the author's concern over the possibility of "subjectiveness" influencing the calculations of the somatotypes. It will be recalled that, in certain cases, it was necessary to resort to the subject's

estimate of his physique to determine the somatotype. Accordingly, this third attempt was restricted to more objective data.

Subjects were ranked by the "height/cube root of weight" index, and the extremes at both ends of the distribution selected to make up two groups: "low" index ($N = 50$), which included those subjects heavy in relation to their height, and "high" index ($N = 50$), which included those subjects "thin" in relation to their height. Each group was then dichotomized by smoking amount into the sub-groups "non-smokers" and "smokers." The data were then tested for significance by chi-square. The results indicated that the "high" index group contained considerably more smokers than the "low" index group. The chi-square value proved significant at the .01 level.

In summary, four different tests were made of Hypothesis I, which stated that cigarette smokers differ from non-smokers in respect to physique. Two of the tests were suggestive, and the remaining two proved statistically significant at the .01 level. It was concluded that the data supported the hypothesis.

Differences in Personal Characteristics

Hypothesis II stated that male college cigarette smokers differ from non-smokers in relation to the smoking habits of their parents, and certain personal characteristics, which included the use of chewing gum, drinking of

alcoholic beverages, and visits to the University Health Center. The results of the tests of significance between these variables and smoking amount were, with the exception of drinking, insignificant. A brief statement concerning the findings relative to each variable is given below.

Smoking Habits of the Parents

The findings relative to this variable, although not significant, were of interest in that they suggested a relationship opposite to that expected. Table IV summarizes the data in terms of percentages. These findings conflicted with those of Earp (3), who found a positive relationship between smoking habits of father and son.

TABLE IV
RELATIONSHIP BETWEEN PARENTAL
AND STUDENT SMOKING (N = 200)

Parental Smoking	Student Smoking			Total
	Non- Smokers	Moderate Smokers	Heavy Smokers	
Neither Parent	30%	43%	27%	100%
Either Parent	34%	39%	27%	100%
Both Parents	39%	45%	16%	100%

Use of Chewing Gum

The results of the test for a relationship between use of gum and smoking (N = 200) were completely insignificant. The data suggested a zero relationship: of those

subjects who were non-smokers, 40 per cent did not use chewing gum; of those subjects who were heavy smokers, 40 per cent did not use gum.

Drinking Alcoholic Beverages

Analysis of the data suggested a very strong positive relationship between smoking and drinking. The chi-square test relevant to this variable yielded a figure significant at the .001 level. Table V summarizes the data in terms of percentages.

TABLE V
RELATIONSHIP BETWEEN DRINKING AND SMOKING
(N = 200)

Drinking	Student Smoking			Total
	Non-Smokers	Moderate Smokers	Heavy Smokers	
Non-drinkers	73%	20%	7%	100%
Moderate drinkers	33%	46%	21%	100%
Heavy drinkers	21%	37%	42%	100%

Visits to the Health Center

The data (N = 200) yielded results which suggested a zero relationship between smoking and susceptibility to minor diseases, as measured by visits to the Health Center. For example, of the non-smokers, 66 per cent reported no visits to the Health Center the previous quarter; of the heavy smokers, 73 per cent reported no visits the previous quarter.

In conclusion, the data relevant to the second hypothesis indicated the following: substantiation of the existence of a strong positive relationship between smoking and drinking; rejection of a relationship between smoking and parental influence, gum chewing, and susceptibility to minor diseases.

Differences in Personality

Hypothesis III stated that male college cigarette smokers differ from non-smokers in relation to certain measures of personality. The results of the tests of mean differences between non-smokers and heavy smokers are summarized in Table VI, which ranks the trait differences by descending values of t .

It is seen that heavy smokers differed significantly from non-smokers on seven of the 22 traits: the smokers were higher in sexuality and liberalism--lower in sensory awareness, warmth, organization, ambition, and scientific values. A cross-validation of these seven traits was undertaken, limited by a smaller number ($N = 36$ each group). Although none of the differences proved statistically significant, all differences were in the same direction as on the original test, with the exception of ambition.

The Smoking Scale

If there are personality differences between smokers and non-smokers, one should be able to derive a personality inventory on which the two groups should score differently.

TABLE VI
MEAN DIFFERENCES OF HEAVY SMOKERS (N = 50)
AND NON-SMOKERS (N = 50) ON THE H.C.S. INVENTORY

Personality Trait	Mean Heavy Smokers	Mean Non- Smokers	Mean Difference	t
Sexuality	18.34	14.74	3.60	4.00**
Sensory Awareness	16.56	13.94	-2.38	3.39**
Liberalism	19.92	17.18	2.74	2.74**
Warmth	13.94	16.54	-2.60	2.74**
Organization	12.62	15.28	-2.66	2.48*
Ambition	12.68	14.78	-2.10	2.27*
Scientific Values	12.02	14.60	-2.58	2.08*
Self-Confidence	15.08	12.56	2.52	1.95
Religious Values	13.20	15.90	-2.70	1.63
Conformity	14.18	15.66	-1.48	1.53
Self-Insight	16.82	16.02	0.80	1.47
Breadth of Interests	27.50	29.40	-1.90	1.16
Emotional Control	16.30	15.02	1.28	1.01
Thinking	14.32	15.24	-0.92	.95
Dominance	18.34	17.30	1.04	.92
Expressiveness	17.36	16.28	1.08	.78
Economic Values	16.56	17.14	-0.58	.69
Optimism	18.24	18.90	-0.66	.60
Emotionality	14.74	15.46	-0.72	.51
Activity	18.74	18.44	0.30	.35
Gregariousness	15.62	15.86	-0.24	.20
Artistic Values	13.80	13.62	0.18	.10

** P = .01

* P = .05

(For norms of the H.C.S. Inventory, see Appendix D).

If successful, such a scale would serve as further validation of the original findings. Accordingly, a smoking scale, hereafter referred to as the SK Scale, was derived by selecting those statements on the H.C.S. Inventory which best discriminated between heavy smokers and non-smokers.

Selection of statements was made on the basis of an item-count comparison between the two groups in the first sample, on each of the 690 statements. Phi coefficients were then computed, converted to chi-square values, and referred to a chi-square table (19) for significance. The statements were then ranked by order of significance, and the top 75 statements selected for incorporation into the SK Scale. The level of significance for the statements ranged from .001 to .25.

Thus derived, the SK Scale was administered to the second sample. It was scored in terms of the heavy smokers' response.

Validation of the SK Scale was determined by analysis of variance of the scores. Three group means were used: non-smokers ($N = 30$); moderate smokers ($N = 30$); and heavy smokers ($N = 30$). The analysis yielded an F ratio which was significant at the .01 level. The analysis was tested for homogeneity of variance, with results that were not significant.

Table VII summarizes the mean scores of the three groups, and t tests of differences between these means.

TABLE VII
SK SCALE MEANS, AND TESTS OF MEAN DIFFERENCES

Group	Mean Score	Groups Compared	t
Non-Smokers	35.5	Non-Smokers <u>vs.</u> Heavy Smokers	2.94*
Moderate Smokers	39.5	Non-Smokers <u>vs.</u> Moderate Smokers	2.54*
Heavy Smokers	40.1	Moderate Smokers <u>vs.</u> Heavy Smokers	.40

*P = .05, raised to studentized range.

Revision of the SK Scale

A revision of the SK Scale was undertaken in an attempt to derive a shorter, more valid scale. The original scale was shortened by eliminating those items on which the response obtained was a reversal of the predicted response. Of the remaining items, 36 were selected on the basis of their discriminatory ability, and incorporated into a new scale, hereafter referred to as the SK Scale, Revised (Appendix E).

The SK Scale, Revised, was then administered to the third sample of students. The mean scores of the three groups were as follows:

non-smokers	(N = 21)	18.1
moderate smokers	(N = 23)	19.1
heavy smokers	(N = 12)	19.7

Tests for differences between these means, while consistent with the findings of the original scale, were not

statistically significant. It should be noted, in this respect, that the size of the sample was much smaller.

Physique and Scores on the Smoking Scales

At this point, a method of cross-validating the scales was apparent. It is recalled that, in the section dealing with somatotypes, the mesomorphs smoked the least, followed by the endomorphs and the ectomorphs. Accordingly, if the smoking scales were valid, the mean scores for the somatotype groups on the smoking scales should also fall in the same rank order. Table VIII summarizes the comparisons indicated. The predicted rank order prevailed in all three measures.

TABLE VIII
SOMATOTYPE GROUP, AMOUNT OF SMOKING,
AND SCORES ON THE SMOKING SCALES

Somatotype	Mean Smoking	Mean Score SK Scale	Mean Score SK Scale, Rev.
Mesomorphs	2.2 (N = 69)	37.9 (N = 46)	17.6 (N = 23)
Endomorphs	2.4 (N = 25)	39.0 (N = 11)	18.4 (N = 14)
Ectomorphs	2.8 (N = 51)	39.3 (N = 34)	20.0 (N = 17)

In summary, data have been presented which revealed significant differences between heavy smokers and non-smokers on seven traits of personality. A cross-validation study yielded results in a similar direction, with one exception. A personality inventory was derived which

differentiated smokers from non-smokers at a level which was statistically significant. It was concluded that the data supported the hypothesis.

Differences in Grade-Point Averages

Hypothesis IV stated that male college cigarette smokers differ from non-smokers in relation to college grade-point averages. Grade-point averages at Michigan State University are calculated on the following basis: A equals four points, B equals three, C equals two, D equals one, and F equals zero. On this basis, the mean grade-point average for each group was determined with the following results:

Non-smokers	(N = 25)	2.49
Heavy smokers	(N = 25)	2.56

The test for a difference between these means was not significant; a zero relationship was suggested. On this basis, it was concluded that the data failed to support the hypothesis.

DISCUSSION

In this section, an attempt is made to integrate the findings of this study by devising a composite picture of both the smoker and non-smoker groups. In addition, the results obtained are compared with other studies, and implications of the results for further research are discussed. Weaknesses of the present study are indicated.

A Composite View of the Two Groups

As contrasted to the non-smoking subjects, the smoking subjects in the present study were most likely to possess the following distinguishing characteristics: tall, ectomorphic physiques which were thin in relation to body height; personality traits that were high in sexuality and liberalism, and low in sensory awareness, warmth, organization, ambition, and scientific values. They were much more likely than non-smokers to drink alcoholic beverages.

The non-smokers were more likely to have mesomorphic physiques, and personality traits that were high in sensory awareness, warmth, organization, ambition, and scientific values, and low in sexuality and liberalism. They were, as a group, less likely to drink alcoholic beverages.

Comparison of Results with Other Studies

Differences in Physique

In relation to physique, the findings that the ectomorph group smoked significantly more than the mesomorph group were contrary to those of Sheldon (14). It is recalled that he characterized ectomorphs as sensitive to tobacco, and least likely of the three somatotypes to engage in smoking. Sheldon would undoubtedly criticize the clumsiness of the author's method of classifying the somatotypes, and justly so; nevertheless, the author verified his original findings by using the more objective measure of height/cube root of weight ratio. Other attempts to verify the original finding were also supportive.

Differences in Personal Characteristics

The findings relative to parental influences failed to support Earp (3), who obtained a positive relationship between smoking habits of father and son. The data, if anything, suggested a negative relationship. Partial support for this suggestion of a negative relationship was found in Hollingshead's study of American youth (7). This author noted that law and the mores denied students the right to enjoy pleasures derived from smoking, drinking and gambling. Yet, he felt, the mystery with which the adults surrounded these areas of behavior acted as a stimulus for the young people to experience the supposed thrill of pleasures which their elders denied them.

The suggestion of McArthur, et al. (9), of a positive relationship between smoking and "orality" received little support from the data. Gum chewing, a possible oral characteristic, was found to be unrelated to smoking. Drinking, however, was found to be highly related positively to smoking, which supported indirectly the McArthur, et al. (9) finding that non-smokers were often non-drinkers. The data failed to support any suggestion of a relationship between smoking and health as measured by the number of visits to the University Health Center.

Differences in Personality

With respect to personality differences between smokers and non-smokers, the data generally supported the McArthur, et al. (9) findings that the non-smokers were more upwardly mobile and pious, and approved of scientific values. In the present study, non-smokers were significantly more ambitious (upwardly mobile), and more scientifically oriented. They were also found to hold higher religious values (piety) but not at a significant level. The data did not support the McArthur, et al. (9) findings that non-smokers held low economic values, and were introverts.

Vallance (18) found smokers less positively suggestable than non-smokers, a finding which is consistent with the somewhat greater self-confidence and dominance which characterized smokers in the present study. Lawton and Phillips (8) found smokers to possess more traits of

nervousness. However, there was no evidence consistent with this finding in the present study: the smokers had somewhat better emotional control and had no higher activity level than the non-smokers.

Finally, the data did not support Earp's conclusion (3) that smokers were inferior scholastically to non-smokers. In the present study, no relationship was found between these two variables.

Implications of the Results for Further Research

The overall goal of the study was to determine if there are measurable differences in physique and personality between cigarette smokers and non-smokers. The findings of the study, viewed as a whole, strongly suggest that there are such differences. What are the implications of such findings?

Causes of Smoking

If smokers, indeed, differ from non-smokers in relation to physique, the possibility exists that these differences might account, in part at least, for susceptibility to the smoking habit itself. Were this true, a relatively untouched area of research into the causes of smoking might be developed. The findings of the study concerning physique differences should be subjected to extensive cross-validation, using more refined methods of measurement. Such validation studies should not be restricted

to college samples, but should include samples more representative of the population.

The implications discussed above are also pertinent to the findings of the study relative to differences in personality. If personality differences are, in fact, present, they too are a potential cause of smoking, and should be exploited in further research. Areas of consideration, in addition to validation studies, might include a study of the needs which are satisfied by cigarette smoking. Specifically, what are these needs? Are they held in common by the smoking population, or do they vary in nature from one person to another?

Smoking has been shown to be strongly related to drinking, the latter commonly held to be a reaction to frustration and stress. This suggests that smoking also may be a reaction to frustration and stress.

Smoking and Lung Cancer

The general question of the stress hypothesis is of considerable importance, not only in relation to the causes of smoking, but also in relation to the cigarette smoking-lung cancer hypothesis. Studies reviewed previously have emphasized the possibility of stress as a causative agent **in cancer**. The present study has shown personality differences between smokers and non-smokers. If stress, or more likely, inadequate adjustment of smokers to stress, could be shown to be included among the differences, then

the hypothesis that stress is a causative factor in both smoking and cancer would appear most plausible, and worthy of extensive investigation. Most clearly of all, the relationship between physique and smoking suggests the need for a comparable study of the relationship between physique and lung cancer. If non-smoking lung cancer victims were found to be predominantly ectomorphic, then such findings would strongly suggest that constitutional factors determine both lung cancer and smoking.

SUMMARY

The purpose of this study was to determine if there were differences in physique and personality between college male cigarette smokers and non-smokers. On the basis of previous studies, four hypotheses were derived and tested. These hypotheses predicted that cigarette smokers differ from non-smokers with respect to 1) physique, 2) certain personal characteristics 3) personality traits, and 4) college grades. The subjects utilized in the study were male undergraduate students at Michigan State University. A total of 446 subjects were used.

Differences in physique were studied by classifying subjects into three groups of somatotypes, dividing each somatotype into non-smoker and smoker sub-groups, and testing for differences. The results indicated that the ectomorph group smoked significantly more than the mesomorph group.

Data relative to personal characteristics were obtained by questionnaire. Subjects were divided into three groups: non-smokers, moderate smokers, and heavy smokers. The relationship between these three groups and each of the variables concerned was tested for significance. The results indicated a significant positive relationship between smoking and drinking, and no significant relationship .

between smoking and parental influence, gum chewing, and visits to the University Health Center.

The general procedure employed to study differences in personality was to obtain two groups of subjects, heavy smokers and non-smokers, from which estimates of 22 personality traits were obtained by use of the H.C. Smith Inventory. Mean differences were tested for significance. Heavy smokers differed significantly from non-smokers on seven of the 22 traits. With reference to these seven traits, heavy smokers scored high in sexuality and liberalism, and low in sensory awareness, warmth, organization, ambition, and scientific values. A new inventory, the SK Scale, was derived which significantly discriminated between non-smokers and heavy smokers.

Differences in grade point averages between a group of smokers and non-smokers were tested for significance. The results indicated no significant difference between the two groups.

A comparison of the results with other studies was made, and the implications of the results for further research were discussed, with particular emphasis on the causes of smoking, and the relationship of smoking to lung cancer.

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APPENDICES

APPENDIX A

TABLE I

39

INDEX OF HEIGHT OVER CUBE ROOT OF WEIGHT*

	Height in Inches															
INDEX	60"	61"	62"	63"	64"	65"	66"	67"	68"	69"	70"	71"	72"	73"	74"	
14.7	68	71	75	78	82	86	91	95	99	104	108	113	118	123	128	
14.6	69	73	77	80	84	88	92	97	101	106	110	115	120	125	130	
14.5	71	74	78	82	86	90	94	99	103	108	113	118	122	128	133	
14.4	73	76	80	84	88	92	96	101	105	110	115	120	125	130	136	
14.3	74	78	82	86	90	94	99	103	108	113	118	123	128	133	139	
14.2	76	80	83	88	92	96	101	105	110	115	120	125	130	136	141	
14.1	77	81	85	89	94	98	103	107	113	117	122	128	133	138	145	
14.0	79	83	87	91	95	100	104	110	115	120	125	130	136	142	147	
13.9	81	85	89	93	98	103	107	112	117	122	128	133	139	148	151	
13.8	82	86	91	95	100	104	109	115	120	125	130	137	142	148	154	
13.7	84	88	93	97	102	107	112	117	123	128	133	139	146	151	157	
13.6	86	90	94	99	104	110	114	120	125	130	137	142	148	155	161	
13.5	88	92	97	102	106	111	117	122	128	133	139	146	151	158	165	
13.4	90	94	100	104	110	114	120	125	131	137	142	149	155	162	168	
13.3	92	97	101	106	111	117	122	128	134	140	145	152	158	165	172	
13.2	94	99	104	109	114	119	125	131	137	142	149	156	163	170	177	
13.1	96	101	106	111	117	122	128	134	140	146	152	159	166	174	180	
13.0	97	103	109	114	119	125	131	137	144	149	156	163	170	178	184	
12.9	101	106	111	116	122	128	134	141	147	153	160	166	174	181	189	
12.8	103	109	113	119	125	131	139	144	151	157	164	171	178	185	193	
12.7	105	111	116	122	128	134	141	147	154	161	167	175	182	190	198	
12.6	108	113	119	125	131	137	144	151	157	165	172	179	187	195	202	
12.5	111	117	122	128	134	141	147	154	161	168	176	183	191	199	207	
12.4	113	119	125	131	137	144	151	157	165	172	179	187	196	204	213	
12.3	116	122	128	133	141	147	154	162	169	177	184	192	200	210	218	
12.2	119	125	131	137	145	151	158	165	174	181	189	197	205	214	224	
12.1	121	128	134	141	148	155	163	170	178	185	193	202	211	220	229	
12.0	125	131	138	145	152	159	166	174	182	190	198	207	216	226	235	
11.9	128	135	141	149	156	163	170	178	187	195	203	213	221	231	241	
11.8	131	138	145	152	159	167	175	183	191	199	209	218	227	237	247	
11.7	135	141	149	156	164	171	179	188	196	205	214	224	233	243	254	
11.6	138	146	152	160	168	176	184	193	201	211	220	229	238	250	260	
11.5	141	149	157	165	172	180	189	198	207	216	226	236	245	256	267	
11.4	146	153	161	168	178	185	194	203	212	221	231	242	252	263	273	
11.3	150	158	165	174	181	190	199	209	218	228	237	248	258	270	280	
11.2	154	162	170	178	187	195	204	214	225	234	244	255	266	277	289	

*NOTE: Follow down the proper height column to the proper weight. The correct index is then found in the left hand column.

TABLE II
Somatotypes corresponding to height-weight index*

INDEX	SOMATOTYPE	INDEX	SOMATOTYPE
14.7	117	12.9	442---533---353
14.6	127	12.8	352---522
14.5	127	12.7	352---532
14.5	217	12.6	361---513
14.3	126	12.5	171---623
14.2	216	12.4	542---361
14.1	226	12.3	632---271
14.0	236	12.2	632---271
13.9	225	12.1	461---631
13.8	325	12.0	631---551
13.7	335	11.9	631
13.6	335	11.8	721
13.5	334---244---154	11.7	721
13.4	334---254---424	11.6	721
13.3	514---434	11.5	721
13.2	343---444---433	11.4	731
13.1	443---354---524	11.3	711
13.0	353---534	11.2	711

NOTE: Pick somatotype opposite index corresponding to the component judged to be dominant.

1. NAME

2. ADDRESS

3. CITY

4. STATE

5. ZIP

6. PHONE

7. FAX

8. E-MAIL

9. COMMENTS

10. DATE

11. TIME

12. BY

13. FOR

14. TO

15. FROM

16. SUBJECT

17. RE: REFERENCE

18. ACTION

19. STATUS

20. PRIORITY

21. DUE DATE

22. ASSIGNED TO

23. COMPLETED

24. COMMENTS

25. DATE

26. TIME

27. BY

28. FOR

29. TO

30. FROM

31. SUBJECT

32. RE: REFERENCE

33. ACTION

34. STATUS

35. PRIORITY

36. DUE DATE

37. ASSIGNED TO

38. COMPLETED

39. COMMENTS

40. DATE

41. TIME

42. BY

43. FOR

44. TO

45. FROM

46. SUBJECT

47. RE: REFERENCE

SK Scale

H. C. Smith
December, 1958Directions:

There are no right or wrong answers to the following statements. Indicate your answers on the separate sheet. If you think the statement is "true" or more true than false as far as you are concerned, mark "1" on the separate answer sheet. If you think the statement is "false" or more false than true as far as you are concerned, mark "2" on the separate answer sheet. Please try to answer all questions.

1. I avoid making people angry at considerable sacrifice of my own interests.
2. I sometimes have had dreams that I refused to talk about.
3. I very rarely tell jokes in which sex plays a major part.
4. I never engaged in petting during high school.
5. I am almost never embarrassed.
6. Cremation is as good a method for burial as any.
7. The Continental attitude towards mistresses is more sensible than ours.
8. It is bad for a married man to take another man's wife to the movies under any circumstances.
9. I am a nervous person.
10. I like to associate with athletic men.
11. I go my own way somewhat regardless of the opinions of others.
12. I believe that a "thing of beauty is a joy forever."
13. I seldom become sexually excited.
14. I always avoid getting into serious arguments.
15. I would like buying merchandise for a store.
16. I sometimes tell people frankly what I think of them.
17. I like to read scientific articles in popular magazines.
18. I can't say that I have ever been very amazed at anything.
19. If I were able, I would be interested in making a chemical analysis of a new toothpaste.
20. I have frequently refused to engage in petting and kissing when a member of the opposite sex wanted to.
21. I would enjoy conducting research on the causes of earthquakes.
22. I am very quick in all of my actions.
23. I have sometimes crossed the street to avoid meeting unpleasant acquaintances.
24. I have sometimes used threats of force to accomplish desirable goals.
25. Failures tend to have a rather depressive effect on me.
26. The Church has sometimes encouraged intolerance.
27. Religion should be mainly a matter of orientation to life on earth.
28. No purpose could exist in the world without the idea of God.

29. I talk with my friends about my personal reactions to people a good deal.
30. I enjoy much more than I fear a hazardous undertaking.
31. I sometimes worry over extremely humiliating experiences.
32. I like to make a very careful plan before starting to do anything.
33. I sometimes lack self-confidence when I have to compete against people who are at least as good as I am.
34. I am rather modest about sexual matters.
35. I am extremely systematic in caring for my personal property.
36. When I disagree with people, I tell them so.
37. I sometimes say things that I regret later.
38. Radical agitators should be allowed to speak publicly in certain parks and streets.
39. Personal criticism generally bothers me a little.
40. I think I understand myself extremely well.
41. Most of my spare money is used for pleasure.
42. My relations with other people are simple and uncomplicated.
43. I am a rather objective and matter-of-fact person.
44. I believe that the first goal of work is to make money.
45. I would enjoy being an athletic director.
46. I would very much enjoy the kind of work that a scientific research worker does.
47. I think the public schools should give more thought to promoting the study and performance of drama.
48. I like to perform laboratory experiments.
49. I talk a good deal about my personal experiences and my own ideas.
50. I generally prefer to keep my opinions and feelings to myself.
51. It is occasionally difficult for me to keep my mind on one thing for a long time.
52. I keep my workplace extremely neat and very orderly.
53. I can deal much better with actual situations than with ideas.
54. I feel that nothing in life is a substitute for the solving of great social problems.
55. I think that obtaining sexual satisfaction is not a very important thing in my life.
56. Trial by jury always will be the best way of securing justice.
57. In my first years of high school, I went out frequently with members of the opposite sex.
58. I would rather see a musical comedy than a documentary film.
59. I have some difficulty in concentrating my thoughts on one thing for long.
60. I feel much but speak little.
61. I would rather go out with attractive persons of the opposite sex than do almost anything else.
62. I act on the principle that a man's first duty is to adjust himself completely to his immediate environment.

63. I would rather listen to a story than tell one.
64. I generally criticize my acquaintances when I disapprove of their behavior.
65. I enjoy 'social problem movies.'
66. I enjoy entertaining others.
67. I like to spend a great deal of time reviewing in my mind the impressions that things have made on me.
68. I like abstract painting.
69. I enjoy people who are blunt in their speech.
70. My desires are occasionally at war with one another.
71. I have occasional headaches.
72. If a student in class discussion makes a statement that I think is erroneous, I frequently question it.
73. I would enjoy being a hotel keeper or manager.
74. I am a fairly impulsive person.
75. I enjoy talking at social gatherings more than listening.
76. Please indicate the extent to which you use chewing gum.
 - (1) never chew gum
 - (2) less than 1/4 package per day
 - (3) 1/4 package to 1/2 package per day
 - (4) 1/2 to 1 package per day
 - (5) more than 1 package per day
77. Please indicate the number of cigarettes you smoke per day.
 - (1) never smoke cigarettes
 - (2) 1/4 pack or less per day
 - (3) more than 1/4 pack, less than 1 pack per day
 - (4) 1 pack to 2 packs per day
 - (5) more than 2 packs per day
78. Please indicate the number of times you have visited Olin Memorial Health Center during the present quarter.
 - (1) no visits
 - (2) one visit
 - (3) two visits
 - (4) three visits
 - (5) four or more visits
79. Please indicate the extent to which you use alcoholic beverages.
 - (1) never drink
 - (2) drink rarely and lightly
 - (3) drink frequently but lightly
 - (4) drink frequent and sometimes heavily
 - (5) drink frequently and heavily

80. Please describe your general physique.

- (1) I am more fat than muscular.
- (2) My fat and muscle are about equal.
- (3) I am more muscular than fat.
- (4) I am about as muscular as thin.
- (5) Thin

81. Concerning the cigarette smoking habits of my parents.

- (1) Neither parent smokes cigarettes.
- (2) Only my father smokes
- (3) Only my mother smokes
- (4) Both parents smoke cigarettes

82. If you are a cigarette smoker, please indicate which type of cigarette you smoke. Non-smokers please leave blank.

- (1) Non-filtered regular
- (2) Non-filtered king-size
- (3) Filtered.

- - - - -

APPENDIX C

SUMMARY OF THE H.C.S. INVENTORY

-
- | | |
|--|--|
| 1. Activity
Inactive--Active | An attempt to determine the general activity level of the individual. |
| 2. Sensory Awareness
Unaware--Aware | The degree to which an individual is aware of his surroundings via his sense organs. |
| 3. Sexuality
Low--High | Interest in members of the opposite sex and activities pertaining thereto. |
| 4. Emotionality
Unemotional--
Emotional | The degree to which an individual becomes emotionally involved in situations and with others. |
| 5. Optimism
Optimism--
Pessimism | The general pattern of responses to situations; is it pessimistic or optimistic? |
| 6. Expressiveness
Inhibited--
Expressive | The relative amount of freedom or restraint the individual displays in expressing emotion. |
| 7. Thinking
Introverted--
Extroverted | The degree to which an individual is inward or outward oriented in his perception of the environment. |
| 8. Interests
Narrow--Broad | An attempt to measure an individual's self extension through determining the number of likes in such areas as occupations, school subjects, amusements, activities, and types of people. |
| 9. Self-Confidence
Low--High | How the individual evaluates his own worth, adequacy, and competence. |

- | | |
|--|--|
| 10. Self-Insight
Low--High | A measure scored on the basis of total number of unpleasant traits, which a person says describes him, plus total number of pleasant traits which he says does not describe him. |
| 11. Economic Values
Low--High | Whether the individual is primarily interested in what is useful; preoccupied with affairs of the business world. |
| 12. Artistic Values
Low--High | Measure of interest in form and harmony, beauty, and aesthetic activities. |
| 13. Scientific Values
Low--High | Relative degree of interest in scientific endeavors and scientific method. |
| 14. Religious Values
Low--High | Measure of the intensity and confidence of the individual's belief in God, in the supernatural, and in divine intervention. |
| 15. Liberalism
Conservative--
Liberal | Degree of liberalism and conservatism the individual displays in relation to a number of issues. |
| 16. Ambition
Unambitious--
Ambitious | Whether the individual desires to do things as rapidly and as well as possible; whether he makes intense, prolonged, and repeated efforts to accomplish difficult things; and whether he enjoys competition. |
| 17. Organization
Unorganized--
Organized | Attempts to measure some aspects of Cattell's "Positive vs. Immature Dependent Character," e.g. Consistently ordered vs. Relaxed; Conscientious vs. Undependable, etc. |

- | | |
|---|---|
| 18. Emotional Control
Uncontrolled--
Controlled | What are the individual's reactions to emotional emergencies and to frustrating situations. |
| 19. Gregariousness
Unsociable--
Sociable | Measures need for affiliation. Not to be confused with "sociability" which implies social skill, social values, interests in intimate friendships, etc. |
| 20. Warmth
Cold-Warm | The degree to which an individual likes, accepts, approves, feels close to, and wants to help others. |
| 21. Dominance
Submissive--
Dominant | Measures degree of dominance through items related to dominance feelings, behavior, and leadership. |
| 22. Conformity
Nonconformity--
Conformity | Attempts to differentiate conformists from non-conformists. |

SK Scale, Revised

H.C. Smith
Feb., 1959Directions:

There are no right or wrong answers to the following statements. Indicate your answers on the separate sheet. If you think the statement is "true" or more true than false as far as you are concerned, mark "1" on the answer sheet. If you think the statement is "false" or more false than true as far as you are concerned, mark "2" on the answer sheet. Please try to answer all questions.

-
1. I would rather see a musical comedy than a documentary film.
 2. I can't say that I have ever been very amazed at anything.
 3. I think I understand myself extremely well.
 4. No purpose could exist in the world without the idea of God.
 5. I have some difficulty in concentrating my thoughts on one thing for long.
 6. I talk a good deal about my personal experiences and my own ideas.
 7. Personal criticism generally bothers me a little.
 8. I keep my work-place extremely neat and very orderly.
 9. When I disagree with people, I tell them so.
 10. I am rather modest about sexual matters.
 11. I am a fairly impulsive person.
 12. My desires are occasionally at war with one another.
 13. I like to make a very careful plan before starting to do anything.
 14. I always avoid getting into serious arguments.
 15. I never engaged in petting during high school.
 16. I am extremely systematic in caring for my personal property.
 17. Most of my spare money is used for pleasure.
 18. Radical agitators should be allowed to speak publicly in certain parks and streets.
 19. I avoid making people angry at considerable sacrifice of my own interests.
 20. I generally criticize my acquaintances when I disapprove of their behavior.
 21. I talk with my friends about my personal reactions to people a good deal.

22. I believe that the first goal of work is to make money.
23. I am a nervous person.
24. The Continental attitude towards mistresses is more sensible than ours.
25. I very rarely tell jokes in which sex plays a major part.
26. I like to read scientific articles in popular magazines.
27. The Church has sometimes encouraged intolerance.
28. I generally prefer to keep my opinions and feelings to myself.
29. I feel that nothing in life is a substitute for the solving of great social problems.
30. I have occasional headaches.
31. Cremation is as good a method for burial as any.
32. I am very quick in all my actions.
33. I would like buying merchandise for a store.
34. I believe that "a thing of beauty is a joy forever".
35. I would enjoy being an athletic director.
36. My relations with other people are simple and uncomplicated.
37. Please indicate the extent to which you use chewing gum.
 - (1) never chew gum
 - (2) less than $\frac{1}{4}$ package a day
 - (3) $\frac{1}{4}$ package to $\frac{1}{2}$ package per day
 - (4) $\frac{1}{2}$ to 1 package per day.
 - (5) more than 1 package per day
38. Please indicate the number of cigarettes you smoke per day.
 - (1) never smoke cigarettes
 - (2) $\frac{1}{4}$ pack or less per day
 - (3) more than $\frac{1}{4}$ pack, less than 1 pack per day
 - (4) 1 pack to 2 packs per day
 - (5) more than 2 packs per day
39. Please indicate the number of times you have visited Olin Memorial Health Center during the present quarter.
 - (1) no visits
 - (2) one visit
 - (3) two visits
 - (4) three visits
 - (5) four or more visits

-3-

40. Please indicate the extent to which you use alcoholic beverages.
- (1) never drink
 - (2) drink rarely and lightly
 - (3) drink frequently but lightly
 - (4) drink frequently and sometimes heavily
 - (5) drink frequently and heavily
41. Please describe your general physique.
- (1) I am more fat than muscular
 - (2) my fat and muscle are about equal
 - (3) I am more muscular than fat
 - (4) I am about as muscular as thin
 - (5) Thin
42. Concerning the cigarette smoking habits of my parents:
- (1) Neither parent smokes cigarettes
 - (2) Only my father smokes
 - (3) only my mother smokes
 - (4) Both parents smoke cigarettes
43. If you are a cigarette smoker, please indicate which type of cigarette you smoke. Non-smokers please leave blank.
- (1) Non-filtered regular
 - (2) Non-filtered king-size
 - (3) Filtered
44. If you are a cigarette smoker, please indicate on the back of your answer sheet under what circumstance you most desire a cigarette. Non-smokers please leave blank.

Please ensure that you have given, on the top of your answer sheet, the following:

age
sex
marital status
height in inches
weight

- - - - -

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