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PERSONALITY DIFFERENCES BETWEEN
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ADOLESCENT FEMALE CIGARETTE SMOKERS AND NONSMOKERS

A Thesis

by

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September 1985

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PERSONALITY DIFFERENCES BETWEEN
ADOLESCENT FEMALE CIGARETTE SMOKERS AND NONSMOKERS

A Thesis

by

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Submitted to the Graduate School
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PERSONALITY DIFFERENCES BETWEEN ADOLESCENT FEMALE
CIGARETTE SMOKERS AND NONSMOKERS. (September 1985)

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One hundred and twenty-two adolescent female cigarette smokers and nonsmokers were given the Schubert Smoking scale and the MacAndrew Addiction scale to determine if these measurements could successfully discriminate between the two groups. To gather more descriptive information on these women's smoking behaviors, sections from the Smoker's Self-Test were given to smokers who currently smoked 10 or more cigarettes a day. Analysis of variance procedures compared smokers to nonsmokers and high school age subjects to college age subjects. Chi-square analyses determined significance levels for those subjects scoring at, above, or below the MacAndrew Addiction cutoff score of 24. Results revealed that both the MacAndrew Addiction scale and the Schubert Smoking scale could differentiate smokers from nonsmokers at the .01 level of significance. The results of the Smoker's

Self-Test categorized the smokers according to what aspects they found most attractive about smoking. The most predominant category among this sample appeared to conflict with the results of the MacAndrew Addiction scale. This outcome definitely indicated that more research needs to be done to examine why young women are choosing this dangerous health practice.

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DEDICATION PAGE

With love and honor

this thesis is

dedicated to

Ralph Clinton Carswell

Georgann Alexander Carswell

and

Robert Craig Patterson

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INTRODUCTION

The controversy over the use of tobacco and its subsequent health hazards dates back to 1603 when King James I issued "A Counterblaste to Tobacco." In his essay, he described smoking as "a custome loathesome to the Eye, hateful to the Nose, harmful to the Braine, dangerous to the Lungs, and in the black stinking Fumes thereof, nearest resembling the horrible Stygian smoke of the Pit that is bottomless" (Eysenck, 1965, p. 20). At this same time, some European physicians argued that smoking was harmless, even therapeutic in some cases (Eysenck).

Despite years of reputable research by medical science, the controversy concerning other possible causes for lung ailments continues (Eysenck, 1965). Today the subject of smoking has been addressed not only by physicians and research scientists, but also by businessmen and politicians. Business has become involved in the issue because of recent studies done by industrial psychologists. These studies found that employees who smoke cost companies more than employees who do not smoke. Costs were defined in terms of insurance

premiums, absenteeism, property damage, medical leaves, and wasted time during the workday (Casio, 1982). With the advent of antismoking groups and the increasing concern about the rights of the nonsmoker, the continuing concern for the issue seems assured (GASP Legal Fund, 1984).

C. Everett Koop, M.D., the United States Surgeon General, is advocating for a "smoke-free society by the year 2000" (DeSapio, 1984, p. 6). Koop's goal will not be easily attained due to several factors. First, there are millions of dollars and thousands of workers involved in the tobacco industry making the economic ramifications alone enormous. Secondly, the United States accounts for 53 million smokers (Loeb, Ernster, Warner, Abbots, & Laszlo, 1984). Lastly, on a philosophical note, smoking has been around for centuries. Smoking may indeed be one of those human vices that cannot be successfully banned. Prohibition did not eradicate alcohol use nor will it eradicate tobacco. In sum, research needs to focus upon such questions as who smokes, how can we prevent someone from starting, and how we can help someone to quit.

Presently, the most perplexing research question concerning smoking is the unexplained recent increase in young teenage female smokers. While other populations of smokers have decreased, this group is growing

in numbers (DeSapio, 1984). Data from 1979 showed that more females 17 to 18 years old were smoking than males their same age. Specifically, the rate among females was 26.2% and the rate for males was 19.3% (Loeb et al., 1984). According to a 1984 position paper from Cancer Research, no accounting of this trend has been done since 1979. The correlation between age, number of cigarettes smoked, and ability to quit makes these adolescents even more crucial to study. The younger person who smokes risks becoming a heavier smoker and thus makes cessation more difficult (Loeb et al.).

For women in particular, the health hazards of smoking are becoming more and more evident. In February, 1985, the American Cancer Society estimated that lung cancer would kill more women than any other type of cancer. This disease is predicted to claim the lives of over 38,000 women in 1985. According to Dr. Robert McKenna, the president of the American Cancer Society, cigarette smoking is a factor in three-fourths of the cases. The prognosis for the majority of victims is that they will not live five years beyond diagnosis ("Lung Cancer," 1985).

Another factor that adds more confusion to this issue of women smokers is the increased dangers of smoking to those women who use oral contraceptives. According to a Searle and Company's 1983 brochure, What You

Should Know About Oral Contraceptives, women who smoke and use oral contraceptives increase their chance of heart attack by five times as compared to women who take the pill and do not smoke. The staggering question is why are these women choosing to smoke when the information on the serious health hazards of smoking is so clear, so widespread.

In 1980, Roberts conducted a study to determine what beliefs adolescent women had about cigarette smoking. Initially, a sample of teenagers were given a questionnaire intended to generate information about what these women held uppermost in mind about smoking. The questions were:

1. What do you think are the advantages of smoking?
2. What do you think are the disadvantages of smoking?

From the specifics gathered from these questions, a sample of 18 and 19 year old women rated how likely they considered a consequence to be. Remarkably, smokers rated the items, "Being harmful to my health, increasing my chances of getting cancer, having breathing problems, and increasing my dependency on cigarettes" as only "slightly likely" to occur (Roberts, 1980, p. 557). Nonsmokers rated these outcomes as more likely to occur. Another interesting result of this

study was that heart disease, emphysema, and bronchitis were never mentioned as concerns for smokers (Roberts).

Other research has examined different aspects surrounding cigarette smoking among adolescent women in an effort to develop a better understanding of the various possible factors responsible for the increase.

Silverstein, Feld, and Kozlowski (1980) hypothesized that the advent of lower nicotine cigarettes was responsible for the rise in adolescent female smokers. Their study substantiated that females appear to be more sensitive physiologically to nicotine and under more peer pressure to smoke. In order to solve the physical versus psychological discomfort, these researchers believe that these females switched to a lower nicotine brand of cigarettes to avoid the side effect of nausea and maintain peer acceptance. From a survey of over 1,000 students, that represented 52% of the school population, data were collected that showed that more females than males had switched to a lower nicotine brand since they began smoking. Silverstein et al. made the point that if lower nicotine brand cigarettes were not available, the negative physical reaction to nicotine might be enough to deter women from smoking.

Probably the oldest point of view on adolescent smoking is the idea that teenagers smoke to rebel against authority. A longitudinal study by Stewart and

Livson (1966) followed two groups until the subjects were approximately 30 years old. Using school grades, conduct reports, and independent ratings as rebelliousness indicators, the researchers could look at latency age behaviors as well as adolescent behaviors. The results of this study showed smokers regardless of sex, as being more rebellious throughout their lives than nonsmokers. Stewart and Livson gave the groups adult personality inventories that indicated that the rebelliousness trait was apparent even in adulthood. Data from both the California Personality Inventory and the Minnesota Multiphasic Personality Inventory (used in an update when the subjects were 36 years old) revealed smokers as characteristically more rebellious than nonsmokers (Stewart & Livson). Specifically, this work gives some credence to the link between rebellion and smoking. More importantly, however, the implications of their findings were that personality characteristics could possibly be used to compare smokers to nonsmokers. This kind of research could bring scientists closer to some personality correlates of smoking, thus providing information for prevention, education, and treatment.

Using personality characteristics as a key to understanding smoking behaviors was not a new approach at this time. Schubert (1959) used the Minnesota Multiphasic Personality Inventory (MMPI) to discern such

differences between smokers and nonsmokers. College freshmen and sophomores were classified as either smokers, nonsmokers, or reformed smokers. The following statements were implemented in categorizing the groups:

1. I have never smoked cigarettes. (Nonsmokers)
2. Do you smoke cigarettes now? (Smoker)
3. I used to smoke, but stopped more than six months ago. (Reformed Smoker)

The results revealed the Social Introversion Scale (Si), the Lie Scale (L), the Hypomanic Scale (Ma), and the Psychopathic Deviate Scale (Pd) of the MMPI to be sensitive in distinguishing smokers from nonsmokers. Reformed smokers were not included in the final data. Smokers scored higher on the Ma and Pd scales than nonsmokers and significantly lower than nonsmokers on the Si and L scales. Schubert (1959) took these data one step further to develop a smoking scale. By cross validation and item analysis procedures, 50 items were kept. Scores from this 50 item scale separated another sample of smokers and nonsmokers at the .001 confidence level.

The MMPI research that has focused primarily on the personality differences between smokers and nonsmokers has yielded some similarities in character among smokers. A study by Evans, Borgatta, and Bohrnstedt (1967) replicated Schubert's (1959) results with the

Ma, Pd, Si, and L scales. The MMPI has also been used to explore personality characteristics relating to whether or not someone can quit smoking (Resnikoff, Schauble, & Woody, 1968; Dudley, Aickin, & Martin, 1977).

Leon, Kolotkin, and Korgeski (1979) used the MMPI to look at smoking in terms of addiction potential or as a substance abuse issue. Using the MacAndrew Addiction scale (MAC), they hypothesized that smokers would score significantly different than nonsmokers. What resulted was the male smokers did score at the addiction potential levels but females did not. One explanation for these results could be that the subjects were drawn from classes on quitting smoking and that the average age of female smokers was 32. According to Leon et al.:

It appears from the present findings as well as those of other investigators that an elevated score on the MacAndrew Scale can be interpreted as an indication of an addiction problem or addiction proneness. However, not all persons with a substance abuse pattern have an elevated score on this measure. (p. 401)

What would be interesting to study is how well the MAC works in differentiating among smokers and non-smokers within the adolescent population. In 1983, Wolfson and Erbaugh obtained significant results in using the MAC to differentiate among adolescent substance abusers. According to these researchers, "it may be possible to use the MAC to identify adolescents who

are at high risk for becoming chemically dependent in later years" (Wolfson & Erbaugh, p. 630).

Given the contributions of these previous studies and the present data on adolescent women who smoke, this thesis proposes to focus on the usefulness of three particular testing instruments in offering information about personality and smoking behaviors. The rationale for this research stems from the belief that if there are valid measurements that will discriminate between the personality characteristics of these adolescent smokers and nonsmokers, then this information can be adapted for prevention, education, and treatment plans.

In 1959, Schubert's smoking scale discriminated between male and female college smokers and nonsmokers at the .001 level. Results from an adolescent female smoking population might be interesting to compare with Schubert's findings because sex differences were not controlled for in Schubert's study. More recently, Schubert's scale was used in a study by Barefoot, Smith, Dahlstrom, and Williams (1985) to ascertain if certain MMPI scales could predict initiation and cessation of smoking. These researchers used the MMPI scores of a class of physicians who graduated 25 years ago. According to Barefoot et al., "The L, Pd, and Schubert Smoking scales successfully discriminated those who had never

become smokers from those who had. Stepwise logistic regression chose the Schubert scale as the best correlate of initiation" (p. 2). These results make re-searching the Schubert's scale abilities among the adolescent female population all the more intriguing.

As mentioned before, the work of Wolfson and Erbaugh (1984) and Leon et al. (1979) substantiate re-searching the MacAndrew Addiction scale as a possible discriminator among smokers and nonsmokers. Furthermore, the MAC could be valuable in evaluating how serious a substance abuse issue smoking is among these young women by estimating their potential for addiction.

Lastly, the Smoker's Self-Test created by Horn and based upon a smoking theory by Tomkins will be used because of its unique ability to classify a smoker into specific categories (Christen & Cooper, 1980). These categories describe the particular attraction the smoker has to the habit. This type of information should indicate more clearly some of the underlying reasons these young women are choosing to smoke (Christen & Cooper). The weakness of this particular test lies in the fact it is not structured so to be suitable for traditional statistical analysis. Nevertheless, the Smoker's Self-Test has been used for research purposes in the past (Froehling, 1972). For the intents of this thesis, the results will be used as descriptive information.

As a final comparison, this thesis will measure the test score differences between high school age subjects and college age subjects. According to Cancer Research, the specific age range associated with the increase in smoking is 17 to 18 years old (Loeb et al., 1984). Perhaps some environmental or age related factors are influencing this particular population to smoke. In essence, however, a comparison might show which age group is more vulnerable to this habit at the present time.

The goal of this study overall is to generate more information to contribute to the smoking literature and to stimulate new ideas to address this serious health practice. The following null hypotheses will be statistically evaluated:

1. There are no significant differences between the scores of adolescent female smokers and nonsmokers on the Schubert Smoking scale.
2. There are no significant differences between the scores of adolescent female smokers and nonsmokers on the MacAndrew Addiction scale.
3. There are no significant differences between the scores of female high school age subjects and female college age subjects on the Schubert scale.

4. There are no significant differences between the scores of female high school age subjects and female college age subjects on the MacAndrew Addiction scale.

METHOD

Subjects

Subjects were recruited by various means including random volunteers who stopped at a testing booth at an area shopping mall and summer school students from local high schools and colleges. In total, 157 women between the ages of 15 and 22 were tested. The majority of these subjects came from the shopping mall. After the research criteria were met, the subject pool totaled 122. Following the classifications Schubert used in 1959, subjects indicated which of the following categories most closely resembled their relationship to cigarette smoking:

1. I have never smoked cigarettes.
2. Do you smoke cigarettes now?
3. I used to smoke, but stopped more than six months ago.

A nonsmoker for the purposes of this study was someone who (a) had never smoked cigarettes before, or (b) had only tried a cigarette on a dare or experimented episodically out of curiosity. A smoker was defined as someone who smoked 10 cigarettes or more a day.

Reformed smokers were not included in the final data. As an incentive to participate, all subjects were informed that they were eligible for a \$100.00 cash drawing that would be held that summer. Due to the length of the questionnaire, the subjects were informed that participating would take approximately 20 minutes of their time. No identifying information was obtained on the testing materials themselves to assure anonymity for each subject. Subjects wrote their name, address, and telephone number on a separate index card to be used in the drawing. All standards set forth by the Ethical Principles of Psychologists in terms of research with humans were met (American Psychological Association, 1981).

Materials

Each subject received a packet containing a computer scored answer sheet, the Schubert and MacAndrew questionnaire and the Smoker's Self-Test (see Appendix A). On the outside of the packet, Schubert's (1959) three classifying statements were written and the subject marked which one applied to her.

Schubert's scale (1959) originally was composed of 50 items. However, the present listing of Schubert's scale in An MMPI Handbook, Volume II, Research Applications (Dahlstrom, Welsh, & Dahlstrom, 1975) lists 44 items. The latter form was used in this thesis. Each

item on the Schubert scale is a statement that the subject answers as either true or false. The examiner stressed in the instructions that the subjects were to answer in their own opinion as the statement applied to them. Thirty-four statements are scored in the direction of true and 10 in the direction of false. One point is scored for each statement answered in the designated direction. The statements cover such topics as sex, honesty, childhood behaviors, religious beliefs, occupational preferences, and independence (Dahlstrom, et al.).

The MacAndrew Addiction scale is composed of 51 items. Like Schubert's (1959) scale the items are true or false statements. Thirty-eight statements are scored true and 13 false. The instructions and scoring for MAC are identical to those for Schubert since both scales were derived from the MMPI (Dahlstrom et al., 1975). With this in common, the examiner combined the two scales into one questionnaire of 95 statements. These scales had only two overlapping items. From past research, a cutoff score of 24 determines if the subject is of an addicted nature (Leon et al., 1979; Wolfson & Erbaugh, 1984; MacAndrew, 1965). The MacAndrew statements ask about self-esteem, orientation to reality, childhood misbehaviors, gambling, health, and religion (Dahlstrom et al.).

The Smoker's Self-Test as adapted by Christen and Cooper (1980) has several sections that are designated to help the smoker become more aware of the particular reasons he or she smokes. The test also helps outline probable cessation approaches that would be most effective for a specific "type" of smoker. For the purposes of this research, only two sections of the Smoker's Self-Test were used. One questionnaire has the smoker rate 18 statements dealing with smoking behaviors. The smoker rates the smoking behaviors as occurring always, frequently, occasionally, seldom, or never. Each of these frequencies has a corresponding point value ranging from five to one. The values of certain statements are added together to total a score for each of the six smoker categories. Any score of 11 or more is considered high (Christen & Cooper).

Briefly, the categories are the Stimulation smoker; the Handling smoker; the Pleasurable Feeling smoker; the Reducing Tension, Anxiety, Anger type; the Craving and Psychological Addiction type; and the Habitual type. Most of these categories are self-explanatory, however, the Stimulation, Handling, and Habitual types need to be defined. The Stimulation smoker uses cigarettes as a motivator. Cigarettes to this type of smoker are comparable to coffee to many people first thing in the morning. The Handling smoker enjoys primarily toying

with the cigarette in his or her hand. Finally, the Habitual smoker is often unaware that he or she is smoking. For example, this person may light a cigarette while not realizing there is one already burning in the ashtray (Christen & Cooper, 1980).

The second section is a smoking data sheet that deals with how much the smoker smokes, when the smoker started to smoke, and when the smoker has ever tried to quit. This information is strictly descriptive and is not scored (Christen & Cooper, 1980).

Procedure

Each subject was told that the purpose of this research was to examine the personality characteristics of women smokers and nonsmokers between the ages of 15 and 22. The examiner informed each subject about the chance to win \$100.00 and approximately when the drawing would be held. Because of the length of the questionnaires, subjects were also told that participating would take about 20 minutes of their time.

After consenting to answer the questionnaires, the examiner asked the subject which category on the outside of the packet most closely resembled her relationship to smoking. After marking the appropriate category, the examiner asked how old the subject was and whether she was in high school or college. The

examiner then coded the packet with a "HS" or a "C" to separate the age groups.

The subject was then read the following instructions: "This inventory consists of numbered statements. Read each statement and decide whether it is true as applied to you or false as applied to you" (Booklet for the Minnesota Multiphasic Personality Inventory, Hathaway & McKinley, 1943).

When it was clear the subject understood these directions and the illustrations of how to fill out the computer scored answer sheet correctly, the subject began. If the subject was a current smoker, the examiner went over the written instructions for the Smoker's Self-Test sections. Only current smokers were given this additional questionnaire.

After the subject completed the test, the examiner coded the subject's birthdate on the computer sheet. The subject then took an index card and filled out her name, address, and telephone number for the drawing. The index cards were kept separate from the testing materials.

Statistical Analyses

Analysis of variance procedures examined the differences between the general class of smokers and non-smokers and high school age versus college age subjects on both the Schubert and MAC scales. An additional

analysis of variance evaluation was done to compare the four specific subgroups of high school age smokers and nonsmokers and college age smokers and nonsmokers. Analysis of variance was chosen as a statistical evaluation because of its ability to test for interaction effects and because it is a more powerful statistical measurement.

A chi-square analysis was done to determine the percentages of smokers versus nonsmokers who scored at, above, or below the MAC cutoff score. The same procedure determined the percentages of high school age smokers versus college age smokers who scored at, above, or below the MAC cutoff score.

Means and appropriate standard deviation scores were computed for the four subgroups. Means were also computed from the self-reported data of the Smoker's Self-Test to indicate the averages for age of initiation, number of cigarettes smoked per day, and number of years one had smoked for both high school and college age smokers.

RESULTS

All four null hypotheses were rejected in this research at the .05 significance level, thus supporting the premises of this thesis.

Hypothesis I stated there were no significant differences between the scores of adolescent female smokers and nonsmokers on the Schubert scale. Analysis of variance results showed that this scale could successfully discriminate between the two groups ($p < .01$). See Table 1.

Hypothesis II stated there were no significant differences between the scores of adolescent female smokers and nonsmokers on the MacAndrew Addiction scale (MAC). Analysis of variance results rejected this hypothesis ($p < .01$). See Table 2.

Hypothesis III stated there were no significant differences between the scores of female high school age subjects and female college age subjects on the Schubert scale. Hypothesis IV stated there were no significant differences between female high school age subjects and female college age subjects on the MAC scale. Both of these hypotheses were rejected at the

Table 1

Analysis of Variance Results of the Schubert Smoking ScaleComparing *Smoking Status and *Education Class

Source	SS	df	MS	F	S
Smoking Status	743.248	1	743.248	21.156	$p < .01$
Education Class	223.871	1	223.871	6.372	$p < .05$
Smoking Status X Education Class	0.462	1	0.462	0.013	0.909 (n.s.)
Residual	4145.496	118	35.131		

*Smoking Status = Smoker of Nonsmoker

*Education Class = High School Age or College Age

Table 2

Analysis of Variance Results of the MacAndrew Addiction ScaleComparing Smoking Status to Education Class

Source	SS	df	MS	F	S
Smoking Status	399.196	1	399.196	22.861	$p < .01$
Education Class	111.478	1	111.478	6.384	$p < .05$
Smoking Status X Education Class	3.521	1	3.521	0.202	0.654 (n.s.)
Residual	2060.463	118	17.462		

.05 significance level. No interaction effects were detected in either the Schubert or MAC comparisons (see Tables 1 and 2).

Analysis of variance evaluations of the four subgroups of high school age smokers and nonsmokers and college age smokers and nonsmokers showed significant differences between the groups at the .01 significance level on both the Schubert and MAC scales (see Tables 3 and 4). The ANOVA F value for the between group difference on the Schubert scale was 8.940. The ANOVA F value for the between group difference on the MAC scale was 9.492.

Mean and standard deviation scores for the four subgroups on the Schubert scale were computed to allow for comparison. The high school age smokers group had a mean of 26.51 with a standard deviation score of 5.06. The college age smokers group had a mean of 23.93 and a standard deviation of 6.65. The high school age nonsmokers group had a mean of 21.69 with a standard deviation of 6.32 while college age nonsmokers had a mean score of 18.86 with a standard deviation of 5.45 (see Table 5).

The MAC mean and standard deviation scores were similar to those of Schubert's scale. The high school age smokers mean equaled 25.86 with a standard deviation of 4.31. This group had the highest mean on both

Table 3

Analysis of Variance Results for High School Age Smokers and Nonsmokers and College Age Smokers and Nonsmokers on the Schubert Smoking Scale

Source	SS	df	MS	F	S
Between Groups	942.2129	3	314.0708	8.940	$p < .01$
Within Groups	4145.5339	118	35.1316		
Total	5087.7460	121			

Table 4

Analysis of Variance Results for High School Age Smokers and Nonsmokers and College Age Smokers and Nonsmokers on the MacAndrew Addiction Scale

Source	SS	df	MS	F	S
Between Groups	501.0724	3	167.0241	9.492	$p < .01$
Within Groups	2076.4692	118	17.5972		
Total	2577.5415	121			

Table 5

Means and Standard Deviations for High School and College Age Smokers and Nonsmokers on the Schubert Smoking Scale

	High School Age			College Age		
	<u>N</u>	Mean	Standard Deviation	<u>N</u>	Mean	Standard Deviation
Smoker	(29)	26.51	5.06	(30)	23.93	6.65
Nonsmoker	(33)	21.69	6.32	(30)	18.86	5.45

the Schubert and MAC scales. The college age smokers mean was 24.30 with a standard deviation of 4.37. The high school age nonsmokers had a mean of 22.57 with a standard deviation of 4.47. The mean score of college age nonsmokers was 20.33 with a standard deviation of 3.50 (see Table 6).

A chi-square analysis determined that approximately 70% of those subjects who scored at or above the MAC cutoff score of 24 were smokers. Approximately 71% of those subjects scoring below the cutoff score were nonsmokers. The corrected chi-square value was 18.82 with one degree of freedom. These results are significant at $p < .01$ (see Table 7). Comparing high school age smokers and college age smokers who scored at or above the cutoff score revealed no significant differences (see Table 3).

Each category of the Smoker's Self-Test rating questionnaire was evaluated individually by adding the number of people who scored 11 or more within the category. This process was carried out to determine which smoker "type" was most frequent among the smoking sample. Table 9 shows in descending order the number of smokers that scored 11 or more within each category. A smoker could score 11 or more in different categories, thus explaining a total of 98 scores. The Habit, Handling, and Stimulation categories accounted for the

Table 6

Means and Standard Deviations for High School and College Age Smokers and Nonsmokers on the MacAndrew Addiction Scale

	High School Age			College Age		
	<u>N</u>	Mean	Standard Deviation	<u>N</u>	Mean	Standard Deviation
Smoker	(29)	25.86	4.31	(30)	24.30	4.37
Nonsmoker	(33)	22.57	4.47	(30)	20.33	3.50

Table 7

Chi-Square Table Showing Those Smokers Versus Nonsmokers Scoring At, Above, or Below the MacAndrew Cutoff Score of 24 and Their Row Percentages

	Smoker		Nonsmoker		Row Totals	
Scored > 24	N	41	N	18	N	59
	%	(69.5%)	%	(30.5%)	%	(48.4%)
Scored < 24	N	18	N	45	N	63
	%	(28.6%)	%	(71.4%)	%	(51.6%)

Corrected Chi-square = 18.82262 with 1 Degree of Freedom.

Significance = $p < .01$.

Table 8

Chi-Square Table Showing Those High School Age Versus College Age Smokers Scoring At, Above, or Below the MacAndrew Cutoff Score of 24 and Their Row Percentages

	High School Age	College Age	Row Totals
Scored > 24	22	19	41
	(53.7%)	(46.3%)	(69.5%)
Scored < 24	7	11	18
	(38.9%)	(61.1%)	(30.5%)

Corrected Chi-square = 0.58078 with 1 Degree of Freedom.

Significance = 0.4460 (n.s.).

Table 9

*Smoker's Self-Test and the Corresponding Numbers of Smokers Who Scored Eleven or More Within That Category

Six Smoker "Type" Categories	Number of Smokers Scoring ≥ 11
Habit	38
Handling	29
Stimulation	23
Craving and Psychological Addiction	7
Pleasurable Feeling	1
Reducing Tension, Anxiety, & Anger	0

*Smoker's Self-Test (Christen & Cooper, 1980)

majority of scores of 11 or more among this particular smoking sample. The Reducing Tension, Anxiety, and Anger category had no subjects that made the cutoff score. The closest score to 11 in this category was 10 and only two people scored 10.

From the smoking history questionnaire, means were calculated for age of initiation, number of cigarettes smoked, and the number of years one had smoked. The typical college age smoker from this sample began smoking at approximately 16 years of age, had smoked for four years and smoked between 14.6 and 15.1 cigarettes a day. Some subjects gave a range of how many cigarettes they smoked per day, so both the low and high end of their range was computed. From the self-reported data, the majority of these women smoked either light or ultra light brands of cigarettes and had tried before to quit smoking. Some had stopped for as long as two years while others only stopped for a week. The reasons these women had for quitting were varied. They gave such answers as "made me sick, it disgusts me, I'm killing myself, my boyfriend wanted me to, it smells bad, my throat was bleeding" and, of course, "it is bad for my health." Cold turkey, switching brands, cutting down, and using friends for support were all listed as approaches to quitting.

The average high school age smoker in this sample began smoking at approximately 14 years of age, had smoked for three years, and currently smoked between 16.1 and 18.2 cigarettes a day. Like their college age counterparts, the majority of these women smoked lower nicotine brand cigarettes and had tried to quit on one or more occasions. The reasons these adolescents cited for stopping included having breathing problems, feeling pressure to quit from parents, friends and boy-friends, and knowing that it was a bad health practice. These women had tried the same methods for quitting.

No particular method among these still active smokers was listed as any more successful than another approach in achieving successful cessation. The cold turkey method got very mixed reviews from smokers. Switching brands and cutting down seemed to improve their smoking habits.

During informal conversations between the smokers and the examiner, alcohol was cited by both age groups as a major contributor to their smoking habit. According to these women, consumption of alcohol increases their urge to smoke.

DISCUSSION

The first premise of this research hypothesized that even after 25 years, the Schubert Smoking scale could still differentiate smokers from nonsmokers within a new generation. The second premise hypothesized that the MacAndrew Addiction scale could be successful in differentiating smokers and nonsmokers plus estimate the extent of the smoker's addictive potential. Both of these hypotheses were supported by the results. Although these results are promising, one must recall that this research examined a sample from a restricted geographic location, a shopping mall. Perhaps the group of women recruited from this location represent a special population. Indeed, a larger subject pool with a more representative sample may yield different results.

The outcome of the Smoker's Self-Test categories within this sample was somewhat surprising given the results of the MacAndrew Addiction scale. Approximately 70% of those subjects scoring at or above the MAC cutoff score were smokers. Logically, one would hypothesize that there would be a large number of these

smokers scoring in the Craving and Psychological Addiction category of the Smoker's Self-Test. When the results were summed, the Craving category had only seven smokers whereas the Habitual smoker category came in first with 38 smokers scoring at least 11. As defined by Christen and Cooper (1980), "Habitual smokers light cigarettes without realizing it, but do not necessarily get much satisfaction from smoking them" (p. 9). There are some alternative hypotheses as to why the Habitual and Handling categories outscored the more "addictive" oriented categories.

Gritz (1984) argued that "peer pressure, adult role modeling, and prosmoking messages in advertising, with smoking potentially representing a desired set of personality characteristics" as the influencing components to smoking behaviors (p. 103). Stewart and Livson (1966) also hypothesized that peer pressure pushed adolescents into adopting cigarette smoking. If the inherent tobacco satisfaction is not the key to these women smoking, peer pressure and image identity could explain adopting and maintaining a smoking habit. Roberts (1980) illustrated the possibility of denial among these smokers in reference to how dangerous these women considered smoking to be to their health. Perhaps these women are denying how "addicted" they are to the smoking habit. The combinations of these hypotheses

offer some suggestions for the inconsistencies in the results of this research.

The implications of this research focus upon the vulnerability of this particular population of smokers. The extent of the problem can be illustrated by comparing the MAC means obtained in this study to those from a study by Wolfson and Erbaugh (1984) on adolescent substance abusers. The MAC mean for the high school age smoker in this research was 25.86 with a standard deviation of 4.31. The MAC mean score for a sample of 50 female adolescent substance abusers from a drug abuse facility equaled 26.20 with a standard deviation of 4.57 (Wolfson & Erbaugh, 1984). The score similarities may imply a common ground in terms of the extent of the substance abuse.

The usefulness of this study's results is that perhaps the Schubert and MAC scales could be valuable tools in prevention and education approaches aimed at this adolescent group.

The Smoker's Self-Test may offer aid in intervention techniques because the categories allow the smoker to examine what particular aspect of their habit is most rewarding. With this information, the smoker can look for substitutions for smoking (Christen & Cooper, 1980). With the strengths of these three instruments, perhaps a more comprehensive program developed for a

public school system could reach these adolescents more effectively.

For example, a program designed around the concept of "informed choice" rather than scare tactics may get these women to consider the habit more intelligently. Utilization of these measurements among groups would generate an awareness of their own vulnerability based upon their personality characteristics. Perhaps with more insightful information on themselves, these women can begin to formulate substitutions for smoking that will work for them.

The work of Barefoot, Smith, Dahlstrom, and Williams (1985) with the Schubert scale implies some future possibilities in using this scale as an indicator of initiation. Thus, this measurement could be a preventive as well as an educational tool. The MacAndrew Addiction scale could illustrate how pervasive the addiction is among the group, thus addressing the issue of denial.

More research needs to be focused upon these adolescent women to adequately address the reasons for the increase in their numbers among the smoking population. More studies on the relationship between peer pressure, advertising, and smoking in this group may offer some interesting results. A specific aspect that needs more investigation is the relationship between alcohol and

cigarette smoking. Both age groups of smokers cited alcohol as a factor in their smoking behavior. Since both of these practices have serious health consequences, there needs to be more information on how these two behaviors are interrelated and perceived by these age groups.

REFERENCES

REFERENCES

- American Psychological Association (1981). Ethic principles of psychologists. Washington, DC: Author.
- Barefoot, J. C., Smith, R. H., Dahlstrom, W. B., & Williams, R. B. (1985). MMPI predictors of smoking initiation and cessation in a sample of physicians. Manuscript submitted for publication.
- Cascio, W. F. (1982). Costing the effects of smoking at the work place. In J. B. McHugh (Ed.), Costing human resources: The financial impact of behavior in organizations (pp. 65-78). Boston, MA: Kent Publishing Company.
- Christen, A. G., & Cooper, K. H. (1980). Strategic withdrawal from cigarette smoking. CA-A Cancer Journal for Clinicians, 29(2), 96-106.
- Dahlstrom, W. G., Welsh, G. S., & Dahlstrom, L. E. (1975). An MMPI handbook, volume II, research applications. Minneapolis: University of Minnesota Press.
- DeSapio, J. (Ed.). (1984). New Harvard Institute to study smoking behavior and policy. Children and Teens in Crisis, 4(12), 6.
- Dudley, D. L., Aickin, M., & Martin, C. J. (1977). Cigarette smoking in a chest clinic population--psychophysiologic variables. The Journal of Psychosomatic Research, 21, 367-375.
- Evans, R. R., Borgatta, E. F., & Bohrnstedt, G. W. (1967). Smoking and MMPI scores among entering freshmen. The Journal of Social Psychology, 73, 137-141.
- Eysenck, H. J. (1965). Smoking health and personality. New York: Basic Books, Inc.

- Froehling, S. C. (1972). The relationship between smoking reduction techniques and types of smokers. Unpublished master's thesis, University of Miami, Coral Gables, FL.
- GASP Legal Fund (1984). Nonsmoking employees guide to preservation of unemployment insurance benefits. (Available from GASP Legal Fund, P. O. Box 1061, Berkeley, CA 94701.)
- Gritz, E. R. (1984). Cigarette smoking by adolescent females: Implications for health and behavior. Women and Health, 9, 103-115.
- Hathaway, S. R., & McKinley, C. J. (1943). Booklet for the Minnesota Multiphasic Personality Inventory. New York: The Psychological Corporation.
- Leon, G. R., Kolotkin, R., & Korgeski, G. (1979). MacAndrew Addiction scale and other MMPI characteristics associated with obesity, anorexia, and smoking behavior. Addictive Behaviors, 4, 401-407.
- Loeb, L. A., Ernster, V. L., Warner, K. E., Abbots, J., & Laszlo, J. (1984). Smoking and lung cancer: An overview. Cancer Research, 44(12), 5940-5958.
- Lung Cancer expected to kill more women than breast cancer. (1985, February). The Charlotte Observer, p. 3-A.
- MacAndrew, C. (1965). The differentiation of male alcoholic outpatients from non-alcoholic psychiatric patients by means of the MMPI. Quarterly Journal Studies on Alcohol, 26, 238-246.
- Miller, D. G. (Ed.). (1980). How to stop smoking: A preventive medium institute/strong clinic health action plan. New York: Holt, Rinehart and Winston.
- Resnikoff, A., Schauble, P. G., & Woody, R. H. (1968). Personality correlates of withdrawal from smoking. The Journal of Psychology, 68, 117-120.
- Roberts, S. (1980, December). Belief assessment as a component of curriculum planning: Cigarette smoking as an example. The Journal of School Health, 555-558.

- Schubert, D. S. P. (1959). Arousal seeking as a central factor in tobacco smoking among college students. International Journal of Social Psychiatry, 11(3) 221-225.
- Silverstein, B., Feld, S., & Kozlowski, L. T. (1980, December). The availability of low-nicotine cigarettes as a cause of cigarette smoking among teenage females. The Journal of Health and Social Behavior, 21, 383-388.
- Stewart, L., & Livson, N. (1966). Smoking and rebelliousness: A longitudinal study from childhood to maturity. The Journal of Consulting Psychology, 30(3), 225-229.
- What you should know about oral contraceptives.
(Available from Searle and Company, San Juan, PR 00936.)
- Wolfson, K. P., & Erbaugh, S. E. (1984). Adolescent responses to the MacAndrew Alcoholism scale. The Journal of Consulting and Clinical Psychology, 52(4), 625-630.

APPENDIX A

The Schubert Smoking Scale and
the MacAndrew Addiction Scale of
the Minnesota Multiphasic Personality Inventory

Schubert Smoking Scale

1. At times I have very much wanted to leave home.
2. At times I feel like swearing.
3. I have a cough most of the time.
4. During one period when I was a youngster I engaged in petty thievery.
5. I do not always tell the truth.
6. I am a good mixer.
7. I am very strongly attracted by members of my own sex.
8. I think most people would lie to get ahead.
9. I like to go to parties and other affairs where there is lots of loud fun.
10. Most people are honest chiefly through fear of being caught.
11. In school, I was sometimes sent to the principal for cutting up.
12. If I could get into a movie without paying and be sure I was not seen I would probably do it.
13. I commonly wonder what hidden reason another person may have for doing something nice for me.
14. When I was a child, I belonged to a crowd or gang that tried to stick together through thick and thin.
15. At times I feel like picking a fist fight with someone.
16. I resent having anyone take me in so cleverly that I have had to admit that it was one on me.
17. When I get bored I like to stir up some excitement.
18. I do not like everyone I know.
19. If I were a reporter I would very much like to report news of the theater.

20. I like to flirt.
21. I have used alcohol excessively.
22. I very much like hunting.
23. I like to talk about sex.
24. I have been quite independent and free from family rule.
25. I have periods of such great restlessness that I cannot sit long in a chair.
26. I have reasons for feeling jealous of one or more members of my family.
27. I don't blame anyone for trying to grab everything he can get in this world.
28. I do not blame a person for taking advantage of someone who lays himself open to it.
29. At times, I have been so entertained by the cleverness of a crook that I have hoped he would get by with it.
30. Once in a while I laugh at a dirty joke.
31. At times I have very much wanted to leave home.
32. I worry over money and business.
33. I cannot keep my mind on one thing.
34. I have more trouble concentrating than others seem to have.
35. I think I would like the work of a librarian.
36. I would like to be a florist.
37. I believe in the second coming of Christ.
38. I have never done anything dangerous for the thrill of it.
39. I like collecting flowers or growing house plants.
40. I have never indulged in any unusual sex practices.

41. I have never felt better in my life than I do now.
42. I liked school.
43. I am very religious (more than most people).
44. My daily life is full of things that keep me interested.

MacAndrew Addiction Scale

45. I like to read newspaper articles on crime.
46. Evil spirits possess me at times.
47. I have a cough most of the time.
48. My soul sometimes leaves my body.
49. As a youngster I was suspended from school one or more times for cutting up.
50. I am a good mixer.
51. Everything is turning out just like the prophets of the Bible said it would.
52. I have not lived the right kind of life.
53. I think I would like the kind of work a forest ranger does.
54. I do many things which I regret afterwards (I regret things more or more often than others seem to).
55. I enjoy a race or game better when I bet on it.
56. In school I was sometimes sent to the principal for cutting up.
57. I know who is responsible for most of my troubles.
58. The sight of blood neither frightens me nor makes me sick.
59. I like to cook.
60. I have had periods in which I carried on activities without knowing later what I had been doing.
61. I frequently notice my hand shakes when I try to do something.
62. I have used alcohol excessively.
63. My parents have often objected to the kind of people I went around with.

64. I have been quite independent and free from family rule.
65. I have few or no pains.
66. I have had blank spells in which my activities were interrupted and I did not know what was going on around me.
67. I sweat very easily even on cool days.
68. If I were a reporter I would very much like to report sporting news.
69. I seem to make friends about as quickly as others do.
70. I deserve severe punishment for my sins.
71. I played hooky from school quite often as a youngster.
72. I have at times had to be rough with people who were rude or annoying.
73. I was fond of excitement when I was young (or in childhood).
74. I enjoy gambling for small stakes.
75. If I were in trouble with several friends who were equally to blame, I would rather take the whole blame than to give them away.
76. While in trains, busses, etc., I often talk to strangers.
77. Christ performed miracles such as changing water into wine.
78. I pray several times every week.
79. I readily become 100% sold on a good idea.
80. I have frequently worked under people who seem to have things arranged so that they get credit for good work but are able to pass off mistakes onto those under them.
81. I would like to wear expensive clothes.

82. The one to whom I was most attached and whom I most admired as a child was a woman (mother, sister, aunt, or other woman).
83. I am certainly lacking in self-confidence.
84. My table manners are not quite as good at home as when I am out in company.
85. I have never vomited blood or coughed up blood.
86. I used to keep a diary.
87. I liked school.
88. I am worried about sex matters.
89. I have often felt that strangers were looking at me critically.
90. I have never been in trouble with the law.
91. Many of my dreams are about sex matters.
92. I cannot keep my mind on one thing.
93. I have several times given up doing a thing because I thought too little of my ability.
94. I do not like to see women smoke.
95. I have used alcohol moderately (or not at all).

APPENDIX B

The Smoker's Self-Test Self-Assessment 3 and 4

SELF-ASSESSMENT 3

WHY DO YOU SMOKE?

This test is a compilation of statements made by people who were asked to describe their feelings about smoking cigarettes. How often have you felt the same way? Circle the number that most nearly corresponds with your beliefs.

	Always	Frequently	Occasionally	Seldom	Never
a. I smoke cigarettes to keep myself from slowing down.	5	4	3	2	1
b. Handling a cigarette is part of the enjoyment of smoking it.	5	4	3	2	1
c. Smoking cigarettes is pleasant and relaxing.	5	4	3	2	1
d. I light up a cigarette when I feel angry about something.	5	4	3	2	1
e. When I run out of cigarettes I find it almost unbearable until I can get more.	5	4	3	2	1
f. I smoke automatically without even being aware of it.	5	4	3	2	1
g. I smoke cigarettes to stimulate me, to perk myself up.	5	4	3	2	1
h. Part of the enjoyment of smoking a cigarette comes from the steps I take to light up.	5	4	3	2	1
i. I find cigarettes pleasurable.	5	4	3	2	1
j. When I feel upset, I light up a cigarette.	5	4	3	2	1
k. When I am not smoking, I am very much aware of the fact.	5	4	3	2	1

	Always	Frequently	Occasionally	Seldom	Never
l. I light up a cigarette without realizing I still have one burning in the ashtray.	5	4	3	2	1
m. I smoke cigarettes to give me a "lift."	5	4	3	2	1
n. When I smoke a cigarette, part of the enjoyment is watching the smoke as I exhale it.	5	4	3	2	1
o. I want a cigarette most when I am comfortable and relaxed.	5	4	3	2	1
p. When I feel "blue" or want to take my mind off cares and worries, I smoke a cigarette.	5	4	3	2	1
q. I get a real gnawing hunger for a cigarette when I haven't smoked for a while.	5	4	3	2	1
r. I have found a cigarette in my mouth and did not remember putting it there.	5	4	3	2	1

Test adapted from the Smoker's Self-Testing Kit.

SELF-ASSESSMENT 4

YOUR SMOKING HISTORY

Answer each of the following questions; for questions "h" and "i," answer in as much detail as you can. Once you have thought these questions through, you will have a clearer notion of how deeply ingrained your smoking habit is. (It is probably accurate to say that the deeper the habit, the more difficult it will be to break it; however, you can succeed no matter how deeply entrenched your habit is.)

- a. How old were you when you began to smoke? _____
- b. How many years have you smoked? _____
- c. How many cigarettes do you smoke per day? _____
- d. What brand of cigarette do you smoke? _____
- e. Where do you tend to smoke the most? Work? _____ Home? _____
Other? _____
- f. Have you ever stopped? _____
For how long? _____
How many times? _____
- g. How long ago was your last attempt at stopping? _____
- h. Why did you decide to stop at that time? _____
- i. How did you stop? (After each answer, write your recollections of the experience.)
Cold turkey? _____

Switched brands? _____

Cut down? _____

Test adapted from the Smoker's Self-Testing Kit.

VITA

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