Drug Addiction

Drug addiction is a state of periodic or chronic intoxication produced by the repeated consumption of a drug (natural or synthetic). Its characteristics include:

1) An overpowering desire or need (compulsion) to continue taking the drug and to obtain it by any means;
2) A tendency to increase the dose;
3) A psychic (psychological) and generally a physical dependence on the effects of the drug;
4) Detrimental effect on the individual and on society.

Drug Habituation

Drug habituation (habit) is a condition resulting from the repeated consumption of a drug. Its characteristics include:

1) A desire (but not a compulsion) to continue taking the drug for the sense of improved well-being which it engenders;
2) Little or no tendency to increase the dose;
3) Some degree of psychic dependence on the effect of the drug, but absence of physical dependence and hence of an abstinence syndrome;
4) Detrimental effects, if any, primarily on the individual.

Tobacco Habit Characterized as Habituation

Psychogenic dependence is the common denominator of all drug habits and the primary drive which leads to initiation and relapse to chronic drug use or abuse (25). Although a pharmacologic drive is necessary it does not need to be a strong one or to produce profound subjective effects in order that habituation to the use of the crude material becomes a pattern of life. Besides tobacco, the use of caffeine in coffee, tea, and cocoa is the best example in the American culture. Another example, the chewing of the betel morsel, exists on a world scale comparable to tobacco and involves several hundred million individuals of both sexes and of all races, classes, and religions (17). The morsel contains arecoline from the areca nut, an ingredient of the mixture. It is a very mild stimulant of the nervous system which is ordinarily no more detectable than nicotine subjectively. The morsel is chewed from morning to night, from infancy to death, and creates a craving more powerful than that for tobacco. As with tobacco, oral gratification plays an important role in this habit.

Thus, correctly designating the chronic use of tobacco as habituation rather than addiction carries with it no implication that the habit may be broken easily. It does, however, carry an implication concerning the basic nature of the user and this distinction should be a clear one. It is generally accepted among psychiatrists that addiction to potent drugs is based upon serious personality defects from underlying psychologic or psychiatric disorders which may become manifest in other ways if the drugs are removed (32).

Even the most energetic and emotional campaigner against smoking and nicotine could find little support for the view that all those who use tobacco,

coffee, tea, and cocoa are in need of mental care even though it may at some time in the future be shown that smokers and non-smokers have different psychologic characteristics.

Relationship of Smoking to Use of Addicting Drugs

Undoubtedly, the smoking habit becomes compulsive in some heavy smokers but the drive to compulsion appears to be solely psychogenic since physical dependence does not develop to nicotine or to other constituents of tobacco nor does tobacco, either during its use or following withdrawal, create psychotoxic effects which lead to antisocial behavior. Compulsion exists in many grades, from the habit pattern of the cigarette smoker who subconsciously reaches into his pocket for a cigarette and may even light his lighter before he realizes that he is already holding a lighted cigarette in his lips, to the heroin addict who becomes involved in crime, sometimes in murder, in his search for drugs to satisfy his addiction. Clearly there is a significant difference, not only in the personality involved but also in the effects upon the user and his relationship to society.

Proof of physical dependence requires demonstration of a characteristic and reproducible abstinence syndrome upon withdrawal of a drug or chemical which occurs spontaneously, inevitably, and is not under control of the subject. Neither nicotine nor tobacco comply with any of these requirements (26). In fact, many heavy smokers may cease abruptly and, while retaining the desire to smoke, experience no significant symptoms or signs on withdrawal. On the other hand, it is well established that many symptoms and a few signs which may be observed objectively by others may occur following cessation of smoking, but no characteristic abstinence syndrome occurs (16, p. 539). Rather, a gamut of mild symptoms and signs is experienced and observed as in any emotional disturbance secondary to deprivation of a desired object or habitual experience. These may be manifest in some persons as an increased nervous excitability, such as restlessness, insomnia, anxiety, tremor, palpitation, and in others by diminished excitability, such as drowsiness, amnesia, impaired concentration and judgment, and diminished pulse. The onset and duration of these withdrawal symptoms are reported by different authors in terms of days (20), weeks (30), or months (12, 28), obviously an inconsistency if one attempts to relate these to nicotine deprivation. In contrast to drugs of addiction, withdrawal from tobacco never constitutes a threat to life. These facts indicate clearly the absence of physical dependence.

This view is supported further by consideration of the diversity of methods which are reported (16, pp. 540–546) to be successful in treatment of smoking withdrawal. Most methods have been based strictly on symptomatic treatment; for those who are depressed, stimulants such as caffeine, theobromine, and metrazol; and for those who are excited, sedatives, barbiturates, and the like. Hansel (11) treated his patients by stimulating them in the daytime with 10 to 15 mg of dextroamphetamine and putting them to sleep at night with a sedative. At least this treatment has the advantage that it does not interfere with the usual patterns of diurnal and nocturnal behavior.

In contrast to addicting drugs, the tendency to continue to increase the dose of tobacco is definitely self-limiting because of the appearance of nicotine toxicity. Undoubtedly there is a considerable variation among individuals in inherited capabilities to tolerate nicotine. In some individuals this may completely deprive them of the pleasure of using tobacco (30). Although some tolerance is also acquired with repeated use, this is not sufficient to permit the nervous system to be exposed to ever-increasing nicotine concentrations as is the case with addicting drugs. This in itself may militate against the development of the adaptive changes in nerve cells which create physical dependence.

It is a well-known fact among smokers and other users of tobacco that certain toxic effects such as nausea and vomiting, which accompany the initial use of tobacco, disappear with repeated use. This tolerance is only relative and excessive use may at any time initiate these signs and symptoms even in the heavy smoker or other user (6).

Acquired tolerance may take two forms:

(a) A low grade tissue tolerance in mucous and pulmonary membranes to the irritants in tobacco or tobacco smoke (8). This probably involves adaptive changes in cell membranes, similar to those which occur with other local irritants, and a reduction in sensory nervous input permitting more prolonged exposure to those irritants without unpleasant subjective manifestations.

(b) Specific organ tolerance to nicotine which is also relatively low grade and comparatively short-lived. This tolerance, which may permit the administraton of nicotine in quantities several times larger than those which would induce toxic signs and symptoms initially (13), varies with age (17), sex (30), and duration of exposure. Differences in metabolic disposition are not enough to account for tolerance (7, 29, 31). Animal studies indicate considerable tolerance to small but little if any to convulsant or lethal doses (2, 4).

Another form of adaptation to tobacco which is psychologic in origin is also common to many other drug habits. It might better be termed toleration than tolerance; the user "puts up with" symptoms of irritation and nicotine toxicity which are unacceptable to the novice. Many smokers accept persistent cough, bouts of nausea, and other unpleasant manifestations of irritation and toxicity.

Much controversy concerns the relationship of smoking to other drug habits especially to those agents which are addicting like alcohol, the opiates, and others. Since the motivating factor in the habitual use of drugs of any type is the desire to change the status quo in order to achieve pleasure, to relieve monotony, to abolish tension or grief, etc., it is not unusual that many individuals in search of such gratification will habitually rely on several substances. Attempts to establish cause and effect relationships among the several habits have not been meaningful. A more plausible explanation is that the personality characteristics which lead to the search for change may find mild expression in smoking, coffee and moderate alcohol drinking, and in an exaggerated form by abusing the narcotic and stimulant drugs of addiction.

Measures for Cure of Tobacco Habit

Measures directed at the cure of the tobacco habit have been designed principally to modify or abolish the psychogenic, sensory, or pharmacologic drives (16, pp. 540–546).

In the psychotherapeutic area these include psychoanalytic technics, hypnotism, antismoking campaigns based upon fear of health consequences, religion, group psychotherapy (similar to Alcoholics Anonymous), and tranquilizing or stimulant drugs.

Modification of tobacco taste by astringent mouthwashes (silver nitrate and copper sulfate), bitters (quinine, quassia), local anesthetics (benzocaine lozenges), substitution of other tastes (essential oils and flavors), and production of a dry mouth (atropine or stramonium) are all measures which have been aimed at diminishing the sensory drives.

Administration of oral lobeline, a substance from Indian tobacco, with weak nicotine-like actions as a nicotine substitute has had rather extensive trial (5, 21, 36), and commercial preparations are available. Carefully controlled studies have failed to establish the value of lobeline (1, 18, 24).

Of the methods cited above, those which deal with the psychogenic drives have been the more successful since ultimate realization of the goal involves the firm mental resolve of the individual to stop smoking. There is no acceptable evidence that this goal can be achieved solely by modifying sensory drives or using tobacco substitutes.

Summary

The habitual use of tobacco is related primarily to psychological and social drives, reinforced and perpetuated by the pharmacological actions of nicotine on the central nervous system, the latter being interpreted subjectively either as stimulant or tranquilizing dependent upon the individual response. Nicotine-free tobacco or other plant materials do not satisfy the needs of those who acquire the tobacco habit.

The tobacco habit should be characterized as an *habituation* rather than an *addiction*, in conformity with accepted World Health Organization definitions, since once established there is little tendency to increase the dose; psychic but not physical dependence is developed; and the detrimental effects are primarily on the individual rather than society. No characteristic abstinence syndrome is developed upon withdrawal.

Acquired tolerance, even though comparatively low grade, is important in overcoming nausea and other mild signs of nicotine toxicity and is a factor in continued use of tobacco.

Discontinuation of smoking, although possessing the difficulties attendant upon extinction of any conditioned reflex, is accomplished best by reinforcing factors which interrupt the psychogenic drives. Nicotine substitutes or supplementary medications have not been proven to be of major benefit in breaking the habit.

BENEFICIAL EFFECTS OF TOBACCO

Evaluation of the effects of smoking on health would lack perspective if no consideration was given to the possible benefits to be derived from the occasional or habitual use of tobacco. A large list of possible physical benefits can be compiled from a fairly large literature, much of which is based upon anecdote or clinical impression.

Even in those circumstances where a substantial body of fact and experience supports the attribute, the purported benefits are comparatively inconsequential in a medical sense. Examples are: (a) maintenance of good intestinal tone and bowel habits (23), and (b) an anti-obesity effect upon reduced hunger and a possible elevation in blood sugar (3). Insofar as these are supported by fact they represent tangible assets and cannot be totally dismissed. On the other hand, it would be difficult to support the position that these attributes would carry much weight in counter-balancing a significant health hazard.

But it is not an easy matter to reach a simple and reasonable conclusion concerning the mental health aspects of smoking. The purported benefits on mental health are so intangible and elusive, so intricately woven into the whole fabric of human behavior, so subject to moral interpretation and censure, so difficult of medical evaluation and so controversial in nature that few scientific groups have attempted to study the subject.

The drive to use tobacco being fundamentally psychogenic in origin has the same basis as other drug habits and in a large fraction of the American population appears to satisfy the total need of the individual for a psychological crutch.

An attempted evaluation of smoking on mental health becomes more realistic if one is willing to confront the question, ridiculous as it may seem, What would satisfy the psychological needs of the 70,000,000 Americans who smoked in 1963 if they were suddenly deprived of tobacco? Clearly there is no definitive answer to this question but it may be illuminated by analogy with the past.

Historically, man has always found and used substances with actual or presumed psychopharmacologic effects ranging in activity from the innocuous ginseng root to the most violent poisons. In China, traditions and custom endowed the ginseng root with remarkable health-giving properties. The strength of this belief was so strong and the supply so short that the root often became a medium of exchange. The value of the root increased in direct proportion to its similarity in appearance to the human figure.

The remarkable aspect of this situation is that the ginseng root is historically the world's most renowned placebo, since science has failed to establish that it contains any active pharmacologic principle.

It would be redundant to recount here all of the potent substances at the other end of the scale. It will suffice to note that this human drive is so universal and may be so powerful that man has always been willing to risk and accept the most unpleasant symptoms and signs—hallucinations and delusions, ataxia and paralysis, violent vomiting and convulsions, poverty and malnutrition, destructive organic lesions, and even death.

If the thesis is accepted that the fundamental nature of man will not change significantly in the foreseeable future, it is then safe to predict that man will continue to utilize pharmacologic aids in his search for contentment. In the best interests of the public health this should be accomplished with substances which carry minimal hazard to the individual and for society as a whole. In relating this principle to tobacco it may be reemphasized that the hazard, serious as it may be, relates mainly to the individual, whereas the indiscriminate use of more potent pharmacologic agents without medical supervision creates a gamut of social problems which currently constitutes a major concern of government as indicated by the recent (1962) White House Conference on Narcotic and Drug Abuse (32).

Summary

Medical perspective requires recognition of significant beneficial effects of smoking primarily in the area of mental health.

These benefits originate in a psychogenic search for contentment and are measureable only in terms of individual behavior. Since no means of quantitating these benefits is apparent the Committee finds no basis for a judgment which would weigh benefits versus hazards of smoking as it may apply to the general population.

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Chapter 14

Psycho-Social Aspects of Smoking

Contents

Chapter 14

INTRODUCTION

The smoking habit has been found to be linked with several demographic variables (such as age, sex, socioeconomic level, etc.), with a number of general behavioral patterns (such as degree and kind of participation in a variety of social activities), with psychological characteristics (such as intelligence, school achievement, etc.), and with certain personality variables (such as intro- and extroversion, gregariousness, feelings of inferiority, need for status, etc.).

A brief general discussion will be followed by a review of empirical evidence linking demographic characteristics with smoking. Certain psychological-personality variables will then be considered, followed by a review of what is known about the beginning of the smoking habit and about its discontinuation. Finally, general conclusions will be drawn about the present state of knowledge.

The term "smoking," unless otherwise specified, refers throughout to cigarette smoking only, because almost all research in the area has dealt only with cigarette smoking.

DEMOGRAPHIC FACTORS

A clear and authoritative demographic description of smokers is not readily available from any one study on the subject. The considerable differences in the characteristics of the smoking population as reported by various studies can probably be explained by one or more of the following factors:

1. Samples were drawn from populations differing in geographical location and in a number of other population characteristics.
2. Data in the several studies were collected during different years between the 1930's and 1962. Therefore, some differences in reported data could be due to time trends.
3. Methods of gathering information differed among the studies.
4. Data were analyzed and/or grouped in different ways.

Nonetheless certain trends seem to be well established.

AGE

As far as is known from actual data, few children smoke before the age of 12, probably less than five percent of the boys and less than one percent of the girls. From age 12 on, however, there is a fairly regular increase in the prevalence of smoking. At the 12th grade level, between 40 to 55

percent of children have been found to be smokers. By age 25, estimates of smoking prevalence run as high as 60 percent of men and 36 percent of women. There is a further increase up to 35 and 40 years after which a drop is observed. In the 65 and over age group, prevalence of smoking is only approximately 20 percent among men and four percent among women.

These distributions are based on cross-sectional rather than longitudinal data and may be subject to considerable change over the years as each generation of smokers carries its own smoking pattern into higher age brackets. It is also conceivable that increased public attention to possible hazards of smoking within the last few years has led to some decrease in the number of smokers, a decrease not evenly distributed among the several age groups. Since these statistics were collected several years ago, they may not reflect current age distributions. More recent but limited data suggest that there has been an increment in smoking prevalence at all age levels since the early fifties (7, 13, 23, 26, 31).

Horn (11) estimates that 10 percent of later smokers "develop the habit with some degree of regularity" before their teens and 65 percent during their high school years. It seems, then, that the years from the early teens to the ages of 18–20 are significant years in exposing people to their first smoking experiences.

Smoking By Socioeconomic Level

Empirically, socioeconomic level is usually determined by means of one or several separate and measurable variables such as income, education, occupation and type of residence.

Despite the use of different determinants of class status, there is rather consistent evidence that smoking patterns are related to socioeconomic level in that the lower or working classes contain both more smokers and earlier starters. This has been found in America as well as in England (3, 4, 10, 22, 27).

As to separate class-linked variables, *income* does not seem to be related in a consistent manner to prevalence of smoking either in England (39) or in the U.S.A. (26). There does appear to be some tendency toward fewer male smokers among those with a yearly income below $2,000 (as of 1956) and, in the older groups only, with an annual income over $5,000. On the other hand, income does relate positively to the quantity of cigarettes consumed.

Occupation

Almost as many different ways of classifying and grouping occupations have been used as there are studies dealing with this variable, making comparisons extremely difficult. Moreover, most groupings are not very meaningful since they used broad and comprehensive job classifications which obscure some of the most important occupational characteristics. For example, the category "professional" encompasses (as do other categories) a tremendous range of occupations. These vary widely among

themselves with respect to many characteristics that may be significantly associated with smoking habits. For these and other reasons it is not surprising that data reported on the relationship between occupation and cigarette smoking are anything but easy to interpret. Nonetheless, if occupation is used merely as a class-index, these data are in accord with those obtained in reference to other socioeconomic indices: whitecollar, professional, managerial and technical occupations contain fewer smokers than craftsmen, salespersons, and laborers.

Unemployed have been found to be somewhat more likely to smoke than employed (23).

According to Lilienfeld (19), smokers change jobs significantly more often than non-smokers. Specific data as to reasons for such changes are not given, however, making this variable difficult to interpret. Repeated job changes may be indicative of neurotic traits as the author proposes, but they may also be due to other reasons which create psychological pressures to which smoking is one possible response.

Education

The relationship between smoking and education is unclear. Lilienfeld (19) failed to find educational differences between smokers and non-smokers in his 1956 probability sample of adults in Buffalo, New York. Matarazzo and Saslow (23) also concluded that educational attainment, in terms of highest grade completed, does not differentiate smokers from non-smokers. Hammond (8), on the other hand, reported a curvilinear relation among men between 45 and 79 years of age. Smokers were under-represented among those who never attended high school and among college graduates, and over-represented in all the categories between.

Because of the strong relationship between education and occupation, the trends found in regard to occupation may reflect those found in regard to education: those occupations normally associated with high education show, by and large, a smaller prevalence of smokers.

Sex

Fewer women smoke than men and their smoking is almost entirely restricted to cigarettes. However, the proportion of women smokers has increased faster than that of men smokers in recent years. Horn (11) reports that a recent American Cancer Society survey showed an increase since their 1955 survey of five percent (from 31 to 36 percent). Salber and Worcester (28) suggest on the basis of a sample of senior students at Newton, Mass., high schools that "women, particularly Jewish women, may soon overtake men in the number who smoke."

Race

The proportion of smokers is roughly the same among whites and nonwhites (7) and relations of smoking to sex and age also were comparable

in the two groups. But many more heavy smokers (more than one pack per day) were found among whites, as compared with non-whites, in the case of both men and women. Since, as was reported earlier, income was found to relate to amount, though not to prevalence, of smoking, this racial difference could reflect economic differences between whites and non-whites.

Marital Status

Smoking (of any kind) is most prevalent among the divorced and widowed and least among those who have never been married, except that among persons over 45, never-marrieds are as likely to be smokers as the married (7).

Religion

There is evidence of lower smoking rates within some religious sects which condemn smoking (16) and among persons who hold devout religious beliefs. For example, less smoking was found among Harvard students who were religious and whose parents were devout; and non-smokers seem more inclined to attend church than smokers (3, 22, 37). Both Horn (11) and Straits and Sechrest (37) report over-representation of smokers among Catholics, a church in which more tolerance is shown towards smoking than among some Protestant churches.

As in all such correlational studies it is impossible to say whether there is a direct causal link between religion and abstention, or whether some other factors account both for the religious convictions and the abstention from smoking.

Rural Versus Urban

There are proportionally fewer smokers in rural than in urban areas, but the smallest percentage of smokers is within the rural farm population. The rural non-farm population is more like the urban population with only slightly fewer smokers than in the latter. No relationship of smoking to size of community has been established. No convincing interpretation can be offered in view of the lack of additional data.

Summary of Demographic Factors

No single comprehensive theory to explain smoking is suggested by these demographic data taken by themselves. In fact, the only known attempt at formulating a theory which is, at least partly, related to or based on such data revolves around a hypothesis relating smoking, or not-smoking, to introjected culture standards linked to social class norms in our society (21, 22).

Nonetheless, there are many, though not always clear, relationships between smoking and a variety of social and economic variables. Taken al-

together, there emerges the picture of smoking as a behavior that has over many years become tied closely to many of the complexities of our present society. There can be no doubt that smoking as a habit is determined in some measure by a variety of such social forces as are reflected in demographic data of the kind reviewed above. But it will be some time before the specific interrelations can be disentangled.

Since man is not a passive target of such forces but an active participant, no possible explanation can omit consideration of the way in which he reacts to and, in turn, creates such forces. in short, a consideration of personality factors.

PERSONALITY AND SMOKING

All research studies on the relation between smoking and personality select one or several. more or less distinct personality traits or characteristics for scrutiny. For example. they may try to test hypotheses on the interrelation between smoking and introversion. smoking and neuroticism. smoking and anxiety. etc. A few students have tried to describe personality syndromes by a synthesis of several such traits. At the present state of knowledge. however. it is more fruitful and more valid to speak not in terms of a "smoker personality," but rather in terms of discrete personality characteristics which may be found to be associated with smokers.

Certain difficulties are encountered in reconciling findings from the several studies. Sometimes authors use identical terms even though there is some doubt that they refer to the same concept. For example. the term "neuroticism" in one study may refer to a personality trait as measured by certain psychological tests. in another to a classification of observed so-called nervous behavior. When data from studies using the one are at variance with data from studies using the other. it is difficult to say whether these studies really are yielding contradictory findings. or whether differences in such data are due to the fact that they reflect different variables. In addition, psychological techniques for the assessment of personality are still of uncertain validity, some possibly of little or no value. For example. in a number of studies the investigators have made up *a priori* scales. tests or questionnaires without any reported attempts at establishing their reliability or validity.

Extroversion and Introversion

One of the best-designed studies (1, 6) was carried out in England using representative samples and objective techniques using questions previously developed by Eysenck and claimed by him to "have been found to be . . . reasonably valid measures of three personality traits, extroversion. neuroticism, and rigidity." (6). If one accepts the author's claim that the questionnaire really did measure these traits. a very significant relationship was found between extroversion and smoking. Heavy smokers were more extroverted than medium smokers; these were more extroverted than light smokers and

ex-smokers; and both non-smokers and pipe smokers were least extroverted. Two consecutive studies with different representative samples yielded the same results, and the association of smoking with extroversion was also supported by several other investigators, such as McArthur et al (22) and Schubert (34). Another study by Straits and Sechrest (37) using the Social Introversion Scale from the Minnesota Multiphasic Personality Inventory on a rather small and probably biased sample did not support this finding.

The general picture which emerges from Eysenck's study and from others is one of smokers tending to live faster and more intensely, and to be more socially outgoing.

Several studies, using behavioral rather than psychological test data, support this picture. Davis (4) describes young smokers as "more gregarious and socially advanced" than non-smokers. McArthur et al (22) report similar findings.

However, a compilation of actual participation of smokers and non-smokers, respectively, in a number of specific social activities as reported by several investigators (4, 13, 19, 30) yields conflicting data. Smokers are reported to participate more in such social activities as dancing, courtship, and fraternities—in line with what would be expected of extroverted individuals. As to participation in sports, findings in some studies favor the smoker, in others the non-smoker. Non-smokers were found by one investigator to show greater social participation in organizations and to hold more offices—activities more associated with extro- than with introversion. Smokers show greater interest in TV and movies, non-smokers in reading books. Studies and cultural activities are over-represented among non-smokers.

These conflicts in the data as collected do not necessarily reflect real conflicts, however. Some sports may be of a less gregarious or extroverted nature than others (for example, swimming or tennis as compared to football). Offices in college organizations also may range from president of a cultural club to class president. It is altogether possible that this range can accommodate introverted as well as extroverted students. Lumping together heterogeneous activities under one broad descriptive term, as done in so many studies on smokers' behavior, may obscure real relationships.

In any case, while the association between extroversion and smoking is fairly well supported by available evidence, less certainty exists as to the exact nature of this association. It is possible that extroversion is directly related to smoking as a habit pattern, that is, that smoking is an expression of this kind of personality, as most authors seem to imply. It is equally plausible that the extrovert, by virtue of his greater participation in various social activities, exposes himself more to social stimuli to pick up and re-enforce the smoking habit. He may also be more susceptible to social influence.

Neuroticism

Several studies, using a variety of methods, have investigated variables related more or less vaguely with what may be subsumed under the term neuroticism. Such variables include neuroticism as a personality trait in-

ferred from such varied indices as psychological tests, existence of anxiety states, "nervousness," somatic symptoms, unusual restlessness in terms of job and residence, and others.

Most studies support the contention that neuroticism, in this wide sense, is indeed associated with the smoking habit (16, 18, 19, 24, 25).

A few studies fail to demonstrate any relationship of smoking behavior with one or another of these neurotic characteristics. Straits and Sechrest (37) found no significant difference in anxiety as measured by Taylor's Manifest Anxiety Scale (in contrast to Matarazzo who did). Eysenck et al. (1), using a neuroticism-scale, did not find any significant relationship of neuroticism either to type or degree of smoking. He does suggest, however, that "inhaling may be more prevalent among the more neurotic and emotionally disturbed."

The state of our knowledge in respect to the smoking—neuroticism syndrome can be best summarized this way:

Despite the individual deficiencies of many of the studies, despite the great diversity in conceptualization and research methods used, and despite certain discrepancies in reported findings, the presence of some comparability between them and the relative consistency of findings lend support to the existence of a relationship between the smoking habit and a personality configuration that is vaguely described as "neurotic." However, there are no acceptable studies that help decide how this relationship arises, to what degree (if at all) neuroticism leads to the beginning and/or to the continuation of smoking, or to what degree if at all, it accounts for habituation and resistance to discontinuation.

Psychosomatic Manifestations

In a study by Matarazzo and Saslow (23), smokers report more psychosomatic symptoms than non-smokers in responses to the "Saslow Psychosomatic Screening Inventory." However, differences were significant in only one of three groups tested.

In the English study by Eysenck (1) heavy, medium and ex-smokers of cigarettes were found to have the largest number of psychosomatic disorders, non-smokers the least, light cigarette and pipe smokers being intermediate. None of these differences, however, were statistically significant.

There is no persuasive evidence that smoking and psychosomatic ailments are associated to any important degree.

Psychoanalytic Theory

Psychoanalysts have advanced the hypothesis that smoking, like thumbsucking, is a regressive oral activity related to the infant's pleasure at his mother's breast (36). It is claimed that male thumbsuckers are very likely to smoke and drink in later years. The frequently observed fact that those who stop smoking show increased food consumption, weight gains and use of chewing gum also supports the oral hypothesis. However, Kissen (15) argues that this could be explained in terms of purely physiological responses.

McArthur et al. (22) found a positive statistical relationship between the ability to stop smoking and the number of months of breast feeding. He also reports that thumb-sucking in childhood was more common among men who continued to smoke. The data provided are insufficient to assess these claims, but they do at least suggest that the oral hypothesis warrants further investigation.

Summary of Personality and Smoking

Some investigators have attempted to synthesize many of the differences in personality characteristics, as they have been found or suggested by a variety of studies, into a comprehensive "smoker personality." What emerges in each case is an artifact.

"While smokers do differ from non-smokers in a variety of characteristics, none of the studies has shown a single variable which is found exclusively in one group and is completely absent in the other" (23). Nor has any single variable been verified in a sufficiently large proportion of smokers and in sufficiently few non-smokers to consider it an "essential" aspect of smoking. "While this is true for *all* of the variables . . . it is especially true for the variables measuring personality characteristics . . . a clear-cut smoker's personality has not emerged from the results so far published in the literature" (23).

Nonetheless, there appear enough differences between smokers and non-smokers to warrant the assertion that there are indeed different psychological dynamics at work. However, in what ways these differ, and to what extent these differences are cause, or effect, or both, is not yet known.

TAKING UP SMOKING

All available knowledge points towards the years from the early teens to the age of 20 as a significant period during which a majority of later smokers began to develop the active habit. For this reason, many studies have focused on smoking among youths, almost exclusively selecting high school and college students as their subjects.

The trend to an inverse relationship between smoking and socioeconomic level is more pronounced when smoking among children is examined in the light of parents' socioeconomic status. For example, Salber and MacMahon (27) report significantly fewer smokers among Newton, Mass., public school students (grades 7 through 12) in the upper than in the lower socioeconomic levels. Horn et al. (13) found a significant inverse positive relationship between parents' education and children's smoking behavior in students in the Portland, Oregon, high school system, although this relationship diminishes with grade, becoming negligible by the senior year. Several other studies, with more narrowly selected samples, yielded similar results.

Smoking patterns among children could be influenced by their parents' smoking patterns which, in turn, are affected by the latter's social class-linked characteristics. On the other hand, the social class level of children them-

selves is associated with a number of factors that could influence their behavior. For example, children from better homes may go to different schools, may show higher learning ability and motivation, may associate with different kinds of peers, may engage in different kinds of social activities, and so forth. All these factors could have a bearing on their smoking, independent of, or in addition to influences exerted by their parents. There can be little doubt that all of these observations must be considered in any attempt to answer the question of initiation of smoking.

Parents' Smoking Patterns

Horn et al. (13) found a strong association between parents' and children's smoking habits. There is a consistent increase in the number of high school smokers from their freshman to their senior years, regardless of sex or parental habits. But within each year there are significantly more smokers in families where both parents smoke than in families where neither parent smokes. Various combinations of smoking practices of father and mother respectively, also affect children's habits differentially. Horn's findings are supported by those of Salber and MacMahon (27) obtained from Newton, Mass., high school students.

This congruity between parents' and children's smoking habits has led some investigators to ascribe, explicitly or implicitly, simple and direct causal properties to parents' smoking behavior. It has even been asserted that the most effective way to diminish smoking radically among children would be to decrease smoking among their parents. However, such congruity could be due to several factors. Parents could exert direct and forceful influence on their children; the attitudes and practices of smoking parents could create a general atmosphere of permissiveness in the home; conflict between parents' exhortations and their actual behavior could influence children's perception of the pros and cons of smoking. Selection of social associates on the basis of similar attitudes and behavior norms may lead to a social life on the part of the parents involving other families (and their children) who smoke, thus providing additional social smoking stimuli for their own children. Then, there is the availability of cigarettes in a home where parents smoke which could facilitate the child's first steps towards smoking. Finally, the possibilities of similarity in personalities of parents and children cannot be ruled out.

Even in families where neither parent smokes there is a striking increase with age in smoking among children. Moreover, congruity between the two generations diminishes with each year from freshman to senior year. That this trend of diminishing congruity continues into college is suggested by the findings of Straits and Sechrest (37) who report from a sample of 125 male college students that smokers are not more frequently from families in which both parents smoke.

The most plausible (though not necessarily the only) interpretation is that, as children grow older, they themselves, as well as their relationship to the home, change. With approaching adulthood and its associated new social patterns, other influences supplant those of the parents. The children

spend increasing amounts of time away from their immediate families and their direct supervision and are increasingly exposed to other social influences. They begin to exert their independence more and more. In fact, as will be seen later, hypotheses to the effect that taking up smoking may be a symptom or an expression of striving for self-assertion have been advanced and have received some support from various investigations.

It is quite possible that parents' influence affects the age at which children start smoking much more than it affects the ultimate taking or not taking up of the habit.

With very few exceptions, the association between parents' and children's smoking behavior has been investigated only via inferences drawn from statistical relationships. The exceptions offer data that are mostly of doubtful validity (mainly because of unsophisticated techniques for eliciting self-reports by children or because of non-representative sampling) or are insufficient for the derivation of any even moderately firm conclusions. No study employing appropriate and intensive methods on adequate samples has been found which examined the nature of the psycho-social dynamics. Therefore, all interpretations of the association between parents' and children's smoking habits must remain on the level of hypotheses, no matter how suggestive the data may appear to be.

Intelligence and Achievement

Children's intelligence does not seem to be related to whether they take up smoking or not. Earp (5), Matarazzo et al (24), Kissen (15), and Matarazzo and Saslow (23) all failed to find significant correlations between intelligence measures and prevalence of smoking.

Salber et al (32) report that among boys from the Newton, Mass. public schools, non-smokers in every grade have "a higher mean IQ than discontinued smokers who, again, have higher mean IQ's than smokers . . . the trend in girls, though similar in direction, is less marked." However, no statistical tests are reported and an approximate check on the reported data by means of several t-tests does not support the authors' contention.

In the same study a high relationship was found between achievement scores obtained from school grades and non-smoking, and the authors conclude that "the difference in smoking habits results from differences in academic achievement rather than intelligence." Earp (5) found that more smokers than non-smokers among Antioch College students failed to graduate. Lynn (20) claimed that non-smoking adolescents make higher grades (but scholastic averages according to age were found sometimes to favor the smokers). Horn et al. (13) present evidence that there is a higher proportion of smokers among high school students who are older than the modal age of their classmates. The authors describe such students who are older than their classmates as students who "tend to be scholastically unsuccessful" implying that under-achievement may relate to their smoking. However, since smoking is age-linked among high school students, statistical differences between older and younger students within any given school grade can be accounted for by their age differences.

Thomas (38) and Lilienfeld (19) found no differences between smokers and non-smokers in academic standing and in number of years of schooling completed, respectively.

In general, the evidence seems somewhat to favor a moderate tendency towards less satisfactory achievements by smokers than by non-smokers. Again, the question of "why" is difficult to answer. It is most unlikely that smoking itself could be responsible. It is possible that whatever accounts for poorer classroom performance may also account for the higher smoking prevalence. It is also possible that smoking is an effect of frustration, or of other psychological reactions to such failure to maintain high scholastic standards.

Some Hypotheses on the Beginning of Smoking

Davis (4) deduces from responses to the question "how did you come to start?" two factors that explain the beginning of smoking: a *sociability-imitative* and a *wish-for-adult-status* factor. Support for this hypothesis is seen in the similarity between parents' and children's smoking habits. Other studies (2, 3, 5, 13) also support it.

Despite this agreement among several studies, at least along general lines, and despite the plausible, common-sense nature of the hypothesis, it is not an altogether satisfying one. First, evidence is derived largely from self-reports. These may or may not reflect valid insight on the part of the respondents. Second, the similarity between parents' and their children's smoking behavior lends itself to such other, and perhaps more plausible, interpretations as have been presented earlier. Third, the explanations for first smoking, such as "curiosity," "saw others smoke" or "someone offered me a cigarette" (reported by investigators) come to mind easily and this may account for the frequency with which children offer them rather than other possible explanations requiring both deeper insight and more introspective efforts.

Considering that during adolescent years the problem of becoming an adult is universal and that smoking has probably become a very pervasive symbol of adulthood in our society, the hypothesis fails to explain why so many children, under the very same circumstances fail to become smokers. A collection of self-inspective reports from smokers, even though probably representing valid reasons for those respondents who give them, is not sufficient to explain why these respondents, but not others, become smokers. In order to have greater confidence in this hypothesis, it is necessary to know whether non-smokers do not also have the "wish for adult status"; whether, if they do, they do not see smoking as appropriate symbolic behavior; if they do not see it as such a symbol, why some do and others do not; and if non-smokers do see it as such a symbol, why do they not take up smoking.

As to "imitation," it is less an explanation than a description of what occurs. In somewhat more dynamic terms, one might think of it as conforming behavior in the sense that conformity with the behavioral norms of one's social reference groups may be a means for gaining social acceptance. Although the hypothesis has a persuasive ring and has some suggestive

evidence, all that can be said is that these two factors, imitation and desire for adult status, may play a role in inducing some, and perhaps many, children to take up smoking.

Status Striving

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

Horn (11) points out that there emerges from a variety of studies a "syndrome of intercorrelated measures that seem to have in common the failure to achieve peer group status or satisfaction." The reference is to such reported findings as that smoking is more frequent among students who are older than their classmates, fall behind their peers in scholastic standing, become drop-outs, and choose easier over more demanding curricula. This relation between under-achievement and smoking has generally been interpreted in terms of compensation.

Salber et al. (32) suggest, "it may be that children who do not achieve this desirable state (good standing with family and peers) because of poor academic grades, find in taking up smoking a way of demonstrating their maturity and achieving acceptance in a peer group whose values are somewhat different from those of the academically more successful student." In a wider sense, Horn (11) regards smoking as a "compensatory behavior, a symptom of other problems of emotional health."

Other authors have found evidence of greater participation of smokers in sports (although this evidence is not entirely consistent), of smokers' more daring war records, of their poorer disciplinary records, and of impulsive, rebellious behavior, especially on the part of heavy smokers (20, 22, 33). The findings from anthropometric studies of students' physiques which detected an association between physical masculinity and non-smoking (35) has also been cited as support for this interpretation.

Once again there is considerable evidence to render the hypotheses advanced very plausible but not altogether satisfactory. A number of questions can be raised. First of all, the evidence that scholastic underachievement may be to some measure responsible for smoking (as is more or less strongly implied by some authors) is not very impressive. For example, in all studies reviewed, the fact that a student does not perform as well as his peers in the classroom is accepted as prima-facie evidence that he feels psychologically frustrated or socially deprived. The underlying assumption is that children generally see scholastic achievement as an important goal to strive for, and that even partial failure to achieve this goal is sufficiently disturbing to them to lead to compensatory behavior. This assumption is open to question especially among population groups in whose hierarchy of values

the pursuit of intellectual goals does not rank very high. Many children from lower socio-economic levels (who contribute considerably to the ranks of "underachievers" and among whom smoking is more prevalent), may be among those who ascribe relatively little importance to competing successfully with their peers in classroom performance. No studies have demonstrated that there is a relation between smoking and under-achievement as a psychological variable.

The evidence concerning greater participation of smokers in sports is, as stated earlier, not consistent. Nor is the evidence on each of the other variables that are presumed to be indicative of status deprivation or status striving.

Other questions can be raised. Even if smokers do participate in more sports, do engage in more dating and courtship behavior (4) and generally do manifest more "masculine behavior," why need this be interpreted as "compensatory" behavior rather than a reflection of actual masculinity? If these behaviors are mere demonstrations of masculinity, why should smoking be taken up as an additional, certainly less self-evident, demonstration of masculinity? Why is it that smoking, a habit acquired increasingly by women, should persist in carrying with it such a pervasive symbolic meaning of masculinity? And again there is the troublesome question as to why some, but not so many others, choose this particular means of giving evidence of their masculinity?

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

Rebellion Against Authority

Since a need for independence, a striving for adult status and more stature among one's peers in an adolescent are associated with rebellion against authority, the hypothesis relating smoking with such rebellion is a logical extension of the foregoing hypothesis.

While rebellion may play a role, perhaps an important one, there is not much evidence for it. Claims in the literature are at best based on circumstantial, suggestive evidence, linked to conclusions by a chain of questionable assumptions.

Smoking as a Response to Stress and as a Tension Release

Stress seems to be related to smoking, as it does to a score of other habits. There is some evidence that the experience of stressful situations contributes to the beginning of the habit, to its continuation, and to the number of cigarettes consumed (4, 14, 22). Kissen (15) concludes that "cigarette consumption increases in relation to the occurrence of some emotionally stressful situations. Such situations therefore appear to play a part in perpetuating smoking. The interpretation of what is emotionally stressful may depend on its particular significance to the individual, that is, it may depend on the personality traits of the individual."

A plausible case can be made that the experience of stress together with social situations favorable to smoking can provide the trigger to initial experiments with smoking as well as a mechanism to reinforce the habit once established.

Considerable evidence lends credence to this hypothesis. "Nervous" traits, anxiety, and over-reaction to environmental stimuli have been found to be very prevalent among smokers as compared to non-smokers. Under-achievement, that is failure to live up to one's expected norms, may produce stress if the experience is relevant to a person's needs and values. Cartwright et al. (3) found that men often tended to start smoking when they took their first wage-earning job. This could be due to the tensions and anxieties associated with the event, together with new social influences and, perhaps, the new-found freedom from home restraints. The same explanation could be advanced for the observed increase in initial smoking among young men in military service (7).

More direct, but possibly less reliable, is evidence from self-reports of smokers. With great consistency, investigators have reported that smokers state they tend to smoke, or to smoke more, under temporary stress-producing experiences. As McArthur et al. (22) point out, such short-lived fluctuations in response to brief stress episodes would not be detected by survey methods that elicit information on smoking behavior at only one point in the smokers' lives or even, as in McArthur's case, at yearly intervals. Here again different and more intensive research methods are called for.

Existence of an association between stress and tensions on the one hand, and smoking behavior on the other can probably be accepted with a reasonable degree of confidence. It should be noted, however, that stress, as here used, is defined in terms of an inner psychological-physiological response to certain external events. The fact that a number of people may be exposed even simultaneously to the same stressful life situation does not necessarily mean that all of them experience stress or experience it to the same extent and in the same way. Whether they do, in what way, and to what extent depends, among other things, on the psychological meaning that the situation has for them. This, again, points to the need to supplement broad correlational studies with research that more specifically examines constellations of the several interdependent variables within and without the individual.

Furthermore, the role of smoking relative to the tension which presumably evokes it is not at all clear. Is smoking merely an expression of tension or does it serve as a reducer of psychic tension? If the latter, is it effective, that is, would tension actually be less while smoking a cigarette than while not doing so? No research has apparently dealt with this problem.

DISCONTINUATION

Consideration of factors involved in discontinuation of smoking may help understand the nature of the habit itself.*

*Because the present chapter is concerned only with psycho-social aspects, discussion of methods of discontinuance or their relative effectiveness has been dealt with elsewhere (see Chapter 13).

Even less is known about discontinuance than about beginning of smoking. However, there is good evidence that it is related to the beginning of the habit, its nature, and its duration.

The rate of smokers who discontinue has consistently been found to be highest among those who start late in life, have smoked the least number of years, and whose average cigarette consumption has been smallest (7, 11, 16, 22).

Most frequent reasons for discontinuing given by children who had been fairly regular smokers but had quit, were lack of enjoyment and dislike for smoking. Interestingly, these reasons differ from reasons given by children who have never smoked for not taking up smoking. These latter are more along health, aesthetic and moral lines (29).

Among adult smokers who quit (the 1955 census data list about 11 percent, a rate that has probably increased in the intervening years), the most frequent reasons given were "various health considerations, the expense, moral reasons, and a test of one's will power" (9, 16). Relatively few people refer to publicity about lung cancer (17), but this may be changing with increased public attention to this issue. Also, the surprising lack of reference to fear of disease among respondents may be a function of certain inhibitions to admitting such a negative motive for what is generally regarded as an intelligent and desirable thing to do.

A study carried out in 1957 by Lawton and Goldman (17) yielded some interesting results that throw some light on the effects of intellectual elements in relation to discontinuation of smoking and at the same time raise some puzzling questions.

Two groups of scientists, matched for age and sex, and for the scientific nature of their interests formed the subjects. One consisted of 72 well-known lung cancer scientists, the other of experimental psychologists. Significantly fewer of the cancer specialists than of the psychologists were smokers, and the same difference existed in respect to the number of persons in each group who believed cigarette smoking to be a cause of lung cancer. But there was no difference in respect to the number of persons in the two groups who had discontinued smoking within the past five years, nor in respect to the number of smokers who expressed dissatisfaction with their smoking habits. Most interesting, however, was the finding that when those in the two groups who believed smoking to be a cause of cancer were compared, it was the psychologists who expressed more dissatisfaction with their own smoking, and who exhibited a significantly lower prevalence of smoking, a higher rate of attempted discontinuations, and a higher rate of deliberately diminished amount of cigarettes consumed.

There is no readily available convincing explanation for this finding, but it does demonstrate that the smoking habit is linked with so many aspects of a person's psychological make-up that mere intellectual awareness of risks involved, even among those with rather intimate and intensive contact with the subject, is insufficient to overcome other dynamic factors involved.

On the other hand, Horn (12) related that among several approaches used to modify high school children's smoking habits, the "remote" approach involving a logical appeal to the intelligence of the boys and girls proved