Effects of Marihuana on Adolescents and Young Adults

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The large amount of marihuana smoking (12 million to 20 million people) in this country was reviewed, as well as some of the literature concerning adverse effects. Thirty-eight individuals from age 13 to 24 years, all of whom smoked marihuana two or more times weekly, were seen by us between 1965 and 1970, and all showed adverse psychological effects. Some also showed neurologic signs and symptoms. Of the 20 male and 18 female individuals seen, there were eight with psychoses; four of these attempted suicide. Included in these cases are 13 unmarried female patients who became sexually promiscuous while using marihuana; seven of these became pregnant.

The smoking of cannabis derivatives in the United States has now reached alarming proportions. Between 12 million (estimated by J. L. Goddard, MD, US Food and Drug Administration, in *Life*, Oct 31, 1969, p 34) and 20 million (estimated in *Drug Abuse: The Chemical Cop-Out*, National Association of Blue Shield Plans, 1969) adolescents and young adults are using, or have tried smoking, cannabis derivatives. In February 1970, a *Newsweek* survey (Feb 16, 1970, p 65) showed that 30% to 50% of all high-school students in this country had made marihuana an accepted part of life. Results of surveys of college students smoking marihuana are similarly high. In our own observations at local high schools and at several college campuses along the eastern seaboard, we have noted the openness of marihuana smoking, which may indicate a trend toward more universal use of the drug. All of this is in marked contrast to the situation as recently as four years ago when the COMMITTEE ON ALCOHOLISM AND DRUG DEPENDENCE of the American Medical Association reported that most experimenters give up the drug quickly or continue to use it on a casual basis.[1]

Literature in the United States describing the adverse effects of smoking marihuana is rather sparse. Among the more important communications was a report by Bromberg[2] in 1934, describing studies made while individuals smoked. Talbott and Teague[3] recently described 12 patients with acute toxic psychosis associated with cannabis smoking. Of special significance in their communication was the development of psychosis in each of the 12 upon the first smoking of marihuana. Ten of 12 were delusional, and all showed paranoid symptoms. Physical symptoms, including evidence of neurologic dysfunction, were seen in some. Ten showed no history of premorbid personality disorder. The American Medical Association's COUNCIL ON MENTAL HEALTH, along with the National Research Council of the National Academy of Sciences,[4] and an editorial in THE JOURNAL in 1968[5] warned that cannabis is a dangerous drug and a public health concern. Also, there have been articles by Ames[6] and Allentuck[7] describing ill effects.

In the literature of clinical experiments, Isbell[8] and his associates showed that the isolated chemically-active ingredient of the cannabis group, (−) Δ^9-*trans*-tetrahydrocannabinol, caused psychotic reactions in humans tested at the Addiction Research Center in Lexington, Ky. Hartmann[9] and Wieder and Kaplan[10] described some psychological effects in 1969.

In the pharmacological literature, a detailed report and review by Gershon[11] in 1970 showed the many effects of marihuana on animals. He stressed that, in most animals extracts of marihuana induced stimulation and excitement followed by general depression. Gershon also called our attention to the marked diminution of oxygen uptake by the brain while the animals were intoxicated with marihuana.

We (both authors) are in separate, individual, private practices of child and adult psychiatry and psychoanalysis, and both of us have extensive consultative opportunities. In the period from 1965 to 1970, we began to note a sizeable increase in referrals of individuals who, upon

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investigation by history, showed an onset of psychiatric problems shortly after the beginning of marihuana smoking; these individuals had either no premorbid psychiatric history or bad premorbid psychiatric symptoms which were extremely mild or almost unnoticeable in contrast to the serious symptomatology which followed the known onset of marihuana smoking. In our study, all in this group who smoked marihuana more than a few times showed serious psychological effects, sometimes complicated by neurologic signs and symptoms. In 38 of our patients, our findings demonstrate effects ranging from mild to severe ego decompensations (the latter represent psychoses). Simultaneously, we have examined and treated many other marihuana smokers who either had severe psychological problems prior to smoking marihuana or who also used lysergic acid diethylamide (LSD), the amphetamines, or other drugs; these patients had more complex findings and were not included in this study of 38 patients because we could not be certain that symptoms seen were related to marihuana alone. We have studied some neurotic individuals whose symptoms became more severe after smoking marihuana, but since their earlier symptomatology would becloud such a study as this, we did not include them. Still others who had a marked predisposition to psychosis and who became psychotic after beginning to smoke marihuana were not included in this series, since our purpose was to report only the effects seen as a consequence of marihuana smoking in those not showing a predisposition to serious psychiatric problems. We are currently studying the group with a known predisposition to determine whether marihuana acted as a catalyst to produce psychosis. The 38 patients described in this communication range in age from 13 to 24 years, and the group consists of 20 male and 18 female individuals. We have seen many patients older than 24 who have been smoking marihuana and who have similar symptoms to those we describe, but we have confined our present communication to those aged 24 and younger.

Methods

Prior to 1965, we only occasionally saw patients who smoked marihuana. The 38 patients described are part of a consultation practice that included several hundred new referrals seen during the five-year period from 1965 to 1970, most of whom did not smoke marihuana.

To establish a diagnosis for the usual adult referred for consultation, we see the patient once or twice to determine his history and to examine his psychiatric status; following this, treatment recommendations are made. When children and adolescents are referred, we see the parents two to five times to obtain a history; following this we examine the youngsters in one or two office visits. About one of four of our patients is also psychologically tested. Psychological testing is performed by clinical psychologists with long experience on those of our patients for whom our diagnostic impressions are that we are dealing with a psychosis, an ego disturbance, an organic central nervous system disorder, or a severe learning disability. We followed the same diagnostic procedures with those of our patients known to be smoking marihuana.

Formal neurologic examinations were not done, but there were gross indications of neurologic impairment in a few patients who smoked marihuana four or five times weekly for many months. This impairment consisted of slurred speech, staggering gait, hand tremors, thought disorders, and disturbance in depth perception (such as overshooting exits on turnpikes, misjudging traffic lights and stop signs at intersections, diminished ability to time catching a baseball, or undershooting a basketball net).

A diagnosis was established and treatment recommendations were made for each of our 38 patients. In some, psychotherapy or psychoanalysis was indicated, and in that group, further psychological understanding of the underlying causes of marihuana smoking was obtained. In others, the gamut of psychiatric treatment was instituted, which sometimes, of necessity, included hospitalization.

In each instance, only one of us diagnosed the condition and prescribed the treatment. In a few instances, diagnosis was made by one author and treatment was instituted by the other. In these few cases, there was agreement on diagnosis.

General Psychiatric Considerations

Most of the 38 patients in this study smoked marihuana two or more times weekly and, in general, smoked two or more marihuana cigarettes each time. These patients consistently showed very poor social judgment, poor attention span, poor concentration, confusion, anxiety, depression, apathy, passivity, indifference, and often, slowed and slurred speech. An alteration of consciousness which included a split between an observing and an experiencing portion of the ego, an inability to bring thoughts together, a paranoid suspiciousness of others, and a regression to a more infantile state were all very common. Sexual promiscuity was frequent, and the incidence of unwanted pregnancies among female patients was high, as was the incidence of venereal diseases. This grouping of symptoms was absent prior to the onset of marihuana use, except in 11 patients who were conscious of mild anxiety or occasional depression.

There was marked interference with personal cleanliness, grooming, dressing, and study habits or work or both. These latter characteristics were at times present in some pa-

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tients prior to smoking marihuana, but were always markedly accentuated following the onset of smoking. In one subgroup, a clear-cut diagnosis of psychosis was established, and in these patients, there was neither evidence of psychosis or ego disturbance nor family history of psychosis prior to the patients' use of marihuana. Several in this group were suicidal. In some individuals, instead of apathy, hyperactivity, aggressiveness, and a type of agitation were common. In no instance were these symptoms in evidence prior to the use of marihuana.

A. Psychosis With Suicidal Attempts

Four individuals, two male and two female between the ages of 14 and 17, showed psychotic reactions directly attributable to cannabi derivatives, and each attempted suicide. In the usual type of adolescent psychosis, there is an antecedent history of very poor ego organization. In no instance was there a history of such earlier ego disorganization in our eight psychotic patients; nor prior to smoking marihuana was there psychosis, ego disturbance, family history of psychosis, fragile ego, or suicidal attempts.

CASE 1.—A 17-year-old girl smoked marihuana daily for one year prior to consultation and for an additional year while she was in psychiatric treatment. By history from her parents and by observation during the year following entry into treatment, she showed a gradual regression in organizing thought. She continuously repeated phrases and had the delusion that she was a great actress, but saw life as through a veil. Speech and thinking slowed down, and she believed that she was living life in slow motion. Memory and perception became markedly impaired, thinking became tangential, and judgment became poor. This led to marked social and familial difficulties. Suicide was attempted while she was smoking marihuana, and despite the seriousness of the attempt, the patient was euphoric during and following the effort, with slurred speech, pleasant mood, absent judgment, and missing reality testing.

CASE 2.—A 17-year-old boy was seduced homosexually after an older man gradually introduced him to marihuana smoking over a period of one year. His history showed no evident previous psychopathological condition, and his adolescent development appeared to be normal prior to smoking. Confusion and depression gradually developed, which led to psychiatric evaluation. He continued to smoke marihuana and gradually withdrew from reality, developing an interest in occult matters which culminated in the delusion that he was to be the Messiah returned to earth. He attempted suicide three times by wrist cutting. When he was hospitalized and marihuana was withdrawn, a slow and gradual reversal of the process described occurred.

CASE 3.—Shortly after a 14-year-old boy began to smoke marihuana, he began to demonstrate indolence, apathy, and depression. Over a period of eight months, his condition worsened until he began to hallucinate and to develop paranoid ideas. Simultaneously, he became actively homosexual. There was no evidence of psychiatric illness prior to smoking marihuana and hashish. At the height of his paranoid delusions, he attempted suicide by jumping from a moving car he had stolen. He was arrested, and during his probation period, he stopped smoking and his paranoid ideation disappeared. In two six-month follow-up examinations, he was still showing some memory impairment and difficulty in concentration. Of note was the fact that he still complained of an alteration in time sense and distortion of depth perception at the time of his most recent examination.

CASE 4.—A 16-year-old girl in whom there was no prior psychiatric difficulty smoked cannabis derivatives (marihuana and hashish) at first occasionally, and then three to four times weekly for a period of two years. She began to lose interest in academic work and became preoccupied with political issues. From a quiet and socially popular girl, she became hostile and quite impulsive in her inappropriate verbal attacks on teachers and peers. She dropped out of school in her senior year of high school, which led to psychiatric referral. She showed inappropriate affect and developed paranoid ideas about an older sister's husband having sexual interests in her. She refused to give up smoking marihuana and eventually became so depressed that she attempted suicide by hanging. After withdrawal from the drug, her depression and paranoid ideas slowly disappeared, as did her outbursts of aggression. Ten months of follow-up showed continued impairment of memory and thought disorder, marked by her complaint that she could not concentrate on her studies and could not transform her thoughts into either written or spoken words as she had once been able to do quite easily.

B. Psychoses Without Suicidal Attempts

Four individuals, all male between the ages of 18 and 24, showed psychoses as a consequence of smoking cannabis derivatives. As with those who attempted suicide, this group showed no prior history of ego fragility, predisposition to psychosis, or familial history of psychosis.

CASE 1.—A married 24-year-old man who had shown no previous psychiatric illness or evidence of personality disorder met a group of new friends who taught him to smoke marihuana. He enjoyed the experience so much that he smoked it daily for two months, claiming that it did not interfere with his daily functioning. He even said that he could think more clearly. Gradually he began to withdraw from his friends and seemed suspicious of them. He developed ideas of reference, believing that his friends talked about him saying that he was impotent. (Impotence had actually occurred on several occasions after he had smoked a large amount of "good hash.") He also believed that he was developing heart disease as a result of "bad drugs." He had experienced palpitations and a feeling of his heart "jumping" in his throat on several occasions while smoking some Mexican marihuana. He believed that his friends were trying to do away with him in order to have his wife. At the end of the two months, he showed a full-blown paranoid psychosis and had delusions of grandeur. He believed that he had developed a superior intellect at the expense of a loss of his sexual life. He was the first member of a new "super race." After stopping his smoking, his delusional ideas disappeared and he returned to his normal functioning in his job and marriage.

This patient and the others in this subgroup, although delusional, were never hospitalized, since they

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adequately functioned in other ways. It was only after some acquaintance with the psychiatrist that each of these patients told of his delusional system. Characteristic of some of our long-term marihuana smokers who develop paranoid delusions is an ability to function for a period of time without others being aware of their illness, either because they join groups who share their aberrational thinking or because they keep their delusional thoughts to themselves.

We have also noted that, as these individuals withdraw from marihuana, the delusional system is given up more quickly in those patients who have been smoking for a shorter period of time; however, as better reality testing is achieved, these patients seem to be left with a residual of some memory difficulty and impairment of concentration. One patient has shown this for two years at the time of this writing.

CASE 2.—A 20-year-old man developed delusions of omnipotence and grandeur six months after starting to smoke marihuana. He believed that he was in charge of the Mafia and that he was an Eastern potentate of the Ku Klux Klan. He began to collect guns and knives in addition to training his German shepherd dog to attack others. He had not previously smoked marihuana except experimentally on two occasions while in college. He graduated cum laude in business administration in less than three years by attending summer school. He worked in a family business and was doing creditably in his job as well as in his social life. He found his way into a "swinging" crowd that smoked cannabis derivatives regularly. He took up "the habit" and almost immediately noticed changes in his working pattern and a shift or decline in ambition. He gradually withdrew from a heterosexual relationship after a few episodes of impotence while "high" on hashish. He became apathetic and more of a "loner," and then finally became distrustful of his friends and family. At this point, he sought psychiatric treatment and told of his delusional thoughts, fearful that he was losing his mind. Upon withdrawal from the drug, psychotic symptoms disappeared, yet a residual of difficulty in thinking (which he described as "fuzzy") was still complained of in a one-year follow-up examination.

CASE 3.—An 18-year-old boy who smoked marihuana and hashish regularly for a three-year period became progressively withdrawn, confused, and depressed. His interest in astrology and Eastern religions increased. He became a vegetarian and practiced yoga. He had the delusion that he was a guru and eventually believed that he was the son of God who was placed on earth to save all people from violence and destruction. This patient gave a history of mild anxiety and headaches in his earlier adolescent years, as well as that of some difficulty in getting along with others. Prior to smoking marihuana, he had mild general and social anxiety and headaches for several years. He began smoking marihuana occasionally with friends at the age of 15, and over a two-year period, showed signs of ego decompensation. He did poorly in school, although he could "get along." When he increased the frequency of smoking, delusional symptoms began to develop. Consultation with one of us previously because of some of his adolescent difficulties made it easier for him to consult us again upon becoming concerned with his beliefs that he was God's son. He knew that his thoughts were not "right" and worried when a smoking friend told him of his own similar delusions. There was even a joke among his crowd that they knew "a guy had gone too far" when he thought that he was like a god. Persuasion could not convince this young man to give up cannabis, although he acknowledged that his symptoms resulted from drug use. After consultation, he moved to the west coast and continued his unproductive, aimless life, supported financially by his parents.

CASE 4.—A 19-year-old boy smoked marihuana for four months, gradually developing ideas of reference. Believing he had superhuman mental powers, he felt that he was able to communicate with and control the minds and actions of animals, especially dogs and cats. No one knew of his belief in his messianic powers and divine rights. He was referred for psychiatric consultation by his school because of a sharp decrease in his interest in his schoolwork. He seemed listless, apathetic, and depressed. Prior to smoking marihuana he had been outgoing and did well academically, but following the onset of smoking he shunned family and friends. He continued to maintain good grades on the basis of sheer momentum of accumulated academic experience, although there was decline in academic interest.

His most closely guarded secret was the belief that he was the Messiah, and although he believed this to be a "weird idea," he felt it to be true and thought that marihuana gave him this power.

Upon cessation of marihuana smoking, the delusional system disappeared, and he was able to return to a level of functioning similar to that of the days before marihuana smoking.

It was our impression in these cases that the use of cannabis derivatives caused such severe decompensation of the ego that it became necessary for the ego to develop a delusional system in an attempt to restore a new form of reality. It would appear that this type of paranoid reaction is a direct result of the toxic effects of cannabis upon the ego organization of those patients described in this study.

We have not included in this communication a large number of cases of psychosis due to the use of other psychotomimetic drugs in combination with cannabis derivatives. It is our impression that those patients who had been taking LSD or mescaline or both with marihuana appeared to have more acute psychotic reactions which were accompanied by greater panic and distress, resulting in more frequent need for hospitalization, than those smoking marihuana alone.

C. Borderline States (Ego Decompensation) in Those on Trial for Possession of Marihuana

Twelve adolescents (aged 15 to 18), nine male and three female, had smoked marihuana regularly for one or more years prior to being arrested for using marihuana. In each instance, the legal authorities asked for a psychiatric evaluation, and none of these individuals smoked marihuana immediately prior to the examination. All 12 showed evidence of ego decompensation and disturbance in reality

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testing, memory, social judgment, time sense, concept formation, concentration, abstract thinking, and speech production. All 12 gave a history of steadily declining academic ability and class standing, and all felt isolated from others. Eight of this group complained of trouble converting thoughts into words, which resulted in a rambling, disjointed flow of speech with hesitation and circumstantiality. Memorized phrases were frequently substituted to mask the loss of speech and thought continuity.

Three of these adolescents had periods of depersonalization while *not* under the influence of the drug. They felt that they were watching themselves and others interreact, as if in a dream.

None of these 12 individuals showed evidence by history of psychotic disturbance prior to beginning to smoke marihuana.

Psychological testing performed on four patients in this group showed these patients to have regressed to early stages of psychological development and to be relying on omnipotent and grandiose fantasies as methods of psychological defense against anxiety. All of these patients showed impairment in control of impulses and judgment and an inability to distinguish the subtleties of the feelings of others in social situations. Limited attention span and encroachment on reality testing, as well as generally impaired cognition, were evident in all.

The psychological tests were done without the psychologists' previous knowledge of cannabis use by the patients, but testing was not used to help determine whether cannabis was used or whether cannabis produced a specific effect. It was used instead to help determine the extent of ego decompensation.

A bright 16-year-old boy smoked marihuana for 18 months. He had a "B" average prior to smoking. He was well liked by teachers and peers, seemed happy, and appeared to have no more difficulties than other adolescents prior to smoking marihuana. He said that he began to smoke because his friends did. He felt that it was safe, believing marihuana was harmless. As he began to notice some apathy, loss of goal direction, and increasing depression, he still felt that marihuana was not harmful.

Upon examination, he attempted to win over the psychiatrist with a pleasant, willing, cooperative manner. There was, however, mild disorientation, feelings of omnipotence, and a feeling of isolation.

In psychological testing, he had bright-normal scores on the Wechsler-Bellevue intelligence scale. He showed poor attention span and concentration and poor retention of acquired, as well as of accumulated, knowledge. There was evidence of tenuous control of impulses. Reality testing was impaired. The psychologist reported "early signs of personality decompensation in that he retreated into himself. He functioned at a level of early childhood, believing in his own omnipotence. This state might result in further impulse-motivated behavior so that he would probably commit further asocial and/or anti-social acts prior to becoming severely depressed."

D. Borderline States (Ego Decompensation) Not at First Associated With Marihuana

Six individuals 14 to 20 years of age, five male and one female, were seen in consultation. All of these individuals were seen because of the chief complaints of general deterioration in schoolwork, inability to concentrate or to pay attention in class, gradual decrease in academic standing, apathy, indifference, passivity, withdrawal from social activities, and limitation of interest. All showed the same evidence of ego decompensation as described in group C, including disturbance in reality testing, memory, social judgment, time sense, concept formation, concentration, abstract thinking, and speech production. All felt isolated from others. Four of these individuals showed no prior history of these symptoms, while two showed some difficulty in concentration in school prior to smoking marihuana. In the latter two, the difficulty in concentration became far more pronounced following regular smoking of marihuana.

CASE 1.—A 19-year-old college freshman arrived on time for psychiatric consultation, dressed in old, torn, dirty clothes. He was unkempt, with long hair that was uncombed and disheveled. He talked in a slow, hesitant manner, frequently losing his train of thought, and he could not pay attention or concentrate. He tried hard to both talk and listen, but had difficulty with both. He had been an excellent high-school athlete and the highest student in his class in a large city. He was described as neat, orderly, and taking pride in his appearance, intellect, and physical fitness. During the last half of his senior year, he began casual (one or two marihuana cigarettes each weekend) smoking. By the time of the evaluation in the middle of his first college year, he was smoking several marihuana cigarettes daily. While in college, he stopped attending classes, didn't know what his goals were, and was flunking all subjects. He partook in no athletic or social events, and was planning to drop out of college to live in a young, drug-oriented group.

CASE 2.—A 19-year-old boy entered college with an "A" average. He began smoking marihuana early in the freshman year, and within two months of starting to smoke cannabis, he became apathetic, disoriented, and depressed. At the semester's end, he had failed all courses and lacked judgment in most other matters. Upon return to his home, he discontinued marihuana after a total period of 3½ months of smoking. Gradually, his apathy disappeared, his motivation returned, and his personal appearance improved. He found employment, and in the following academic year, he enrolled at a different university as a preprofessional student. His motivation returned, as did his capability. As with so many of our patients, this young man told his psychiatrist that he had observed changes while smoking marihuana; he even went to a college counselor and told the counselor that he felt he was having a thinking problem due to smoking marihuana. The counselor reassured him that the drug was harmless and that there was no medical evidence of difficulties as a consequence of smoking.

E. Ego Impairment With Marked Sexual Promiscuity

Thirteen female individuals, all

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unmarried and ranging in age from 13 to 22, were seen in consultation with almost the same symptoms as those in groups C and D. (One in this group was psychotic and is listed as case 1 of group A. Thus, our total reported group of cases remains 38, not 39.)

This group is singled out because of the unusual degree of sexual promiscuity, which ranged from sexual relations with several individuals of the opposite sex to relations with individuals of the same sex, individuals of both sexes, and sometimes, individuals of both sexes on the same evening. In the histories of all of these individuals, we were struck by the loss of sexual inhibitions after short periods of marihuana smoking. Seven patients of this group became pregnant (one on several occasions), and four developed venereal diseases. Each showed confusion, apathy, depression, suicidal ideas, inappropriateness of affect, listlessness, feelings of isolation, and disturbances in reality testing, and among the 13, all of whom attended junior high school, high school, or college, all showed a marked drop in academic performance. The decline in academic performance was in direct proportion to the frequency and amount of smoking. Most smoked three or more times weekly.

Five of the 13 were engaged in homosexual activities which began after the onset of smoking, and three attempted suicide.

In no instance was there sexual promiscuity prior to the beginning of marihuana smoking, and in only two of the 13 cases were there histories of mild anxiety states prior to smoking. We take these results to indicate marihuana's effect on loosening the superego controls and altering superego ideals.

Adolescent Development and Marihuana

The nature of adolescent development is of importance in a discussion of marihuana. The adolescent may begin to smoke marihuana and then suffer damage in further psychological growth, development, and maturation.

In brief, adolescence has as its central driving force the organic, maturational establishment of puberty. Related to physical changes of adolescence are profound (normal) psychological changes.

Anna Freud[12] has described these psychological changes in the normal adolescent as follows:

> It is normal for the adolescent to behave . . . in an inconsistent and unpredictable manner; to fight his impulses and to accept them; . . . to love his parents and to hate them; . . . to thrive on imitation of and identification with others while searching unceasingly for his own identity; to be more idealistic, artistic, generous, and unselfish than he will ever be again; but also the opposite, self centered, egoistic, and calculating.

These psychological changes, according to Pearson,[13] are due to the unsettling effect of sudden, general bodily growth and the gradual changes in primary and secondary sexual characteristics, as well as to a final stage of myelinization within brain tracts which leads to greater perception of nuances of color and sound. Pearson also described the conflict of generations, and how lack of parental understanding further weakens the adolescent's ego, leading to the psychological changes already mentioned.

The normally developing adolescent compares the image of his body (often characterized by uneven growth spurts) to his preadolescent body (smooth and even), to those of his peers (different), and to those of adults (who are ambivalently admired), and feels himself lacking. He is bombarded by known sexual impulses related to the organic sexual changes, and he feels overwhelmed and at first unable to control or deal with these impulses effectively. He feels flooded by subtleties of color and sound never before perceived, but now very taxing to his mind. Typically, in efforts at management of these biologically induced phenomena, and also due to the struggle with his parents, he regresses psychologically and tends to handle these anxieties in paradoxical ways, as by immersing himself in glaring colors and loud sounds, by fighting with parents, or by dressing in a bizarre way which accentuates his body-growth disproportions.

The normal adolescent needs support and guided firmness from the parent. If this is missing, he may turn increasingly to drugs. The adolescent living in a ghetto has the added problem of the absence of daily necessities, making reality harsh and the appeal of drugs even stronger. When the adolescent is further exposed to equivocation by authorities in speech or writing on the innocence or dangers of marihuana, then his urge toward a drug solution for conflict may be enhanced, and if there has been a lack of support and interest in the child prior to adolescence and a lack of continuing interest, support, and benevolent firmness by the parent in the teen-age years, the adolescent may still more readily turn to drugs.

To illustrate the issue of lack of firm guidance, several of our patients had parents who talked to the adolescent of their own curiosity about the effects of marihuana, without emphasizing its dangers, or emphasized the discrepancies in the law, without insisting that the youngster must not use marihuana or other drugs because of the serious effects that would occur. We have found that equivocation by the parents has contributed to eventual drug experimentation.

Most often, the normal adolescent, weakened by his own rising sexual pressures, body changes, and disillusionment with parental ideals, seeks peer relationships to establish

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new ideals and thereby strengthen his own character. Among his peers today, he finds many smoking marihuana. He cannot tolerate the isolation from those who smoke. Also, the need to repudiate parental ideals is strong. In his desperation to find new ideals, he turns to those who use drugs. Even though their smoking frightens him, gradually he accepts their drug use. He cannot see any changes in his friends as a result of smoking cannabis (early changes are even difficult for the professional to detect). He identifies, however, with their rebellious attitude toward authority as expressed by their use of marihuana. He may then smoke. At first, he is puzzled and disappointed at not reaching a "high" (which he will not admit to his new friends), and he fails to see any adverse effect upon himself other than some exaggeration or distortion of sensory perceptions. He continues to smoke in an attempt to achieve an effect. His parents and others are thought to be alarmists; he can see no harm in "smoking a little pot." He is unaware that increased smoking over a period of time will likely deprive him of the ability to adequately resolve his internal conflicts.

When we examined the effects of marihuana on the adolescents in our study, we were struck by the accentuation of the very aspects of disturbing bodily development and psychological conflicts which the adolescent had been struggling to master. Marihuana accentuates the inconsistencies of behavior, the lack of control of impulses, the vagueness of thinking, and the uncertainty of body identity which Anna Freud described.[12] Moreover, dependency and passivity are enhanced at a time when the more natural course would be to master dependent yearnings and to become independent. Rebellion toward parents and authority is increased while the adolescent is struggling toward abandoning such rebellion. His uncertainty about sex grows while he smokes marihuana. The desire to be independent diminishes while he is smoking with his peers.

While the adolescent is struggling to master his feelings about bodily growth surges, he is confronted with further changes in the mental image of his body if smoking marihuana. Also, while he is struggling to master new physical, intellectual, and emotional strengths, he is hampered by marihuana. This leads to further anxiety.

Moreover, while struggling to make order out of the sudden flood of new sounds and colors incident to normal brain maturation, he is inundated by the changes in sensory perceptions which are the hallmark of marihuana use. While valuing clear thinking, coherent speech, alertness of reasoning, good attention span, and concentration, he is now confronted with at least temporary interference with these activities.

Our study showed no evidence of a predisposition to mental illness in these patients prior to the development of psychopathologic symptoms once moderate-to-heavy use of cannabis derivatives had begun. It is our impression that our study demonstrates the possibility that moderate-to-heavy use of marihuana in adolescents and young people without predisposition to psychotic illness may lead to ego decompensation ranging from mild ego disturbance to psychosis.

Clearly, there is, in our patients, a demonstration of an interruption of normal psychological adolescent growth processes following the use of marihuana; as a consequence, the adolescent may reach chronological adulthood without achieving adult mental functioning or emotional responsiveness.

We are aware that claims are made that large numbers of adolescents and young adults smoke marihuana regularly without developing symptoms or changes in academic study, but since these claims are made without the necessary accompaniment of thorough psychiatric study of each individual, they remain unsupported by scientific evidence. No judgment on the lack of development of symptoms in large, unselected populations of students or others who smoke marihuana can be made without such definitive individual psychiatric history-taking and examination.

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