

Use of Hallucinogenic Drugs on Campus

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A questionnaire, administered to random samples of students on the Yale and Wesleyan campuses, revealed that one of every five students on each campus had used hallucinogenic drugs at least once in his lifetime. Marijuana was by far the most popular. There was no appreciable difference between the two campuses as to whether students had ever used it or, if so, when they first tried it, but the students from Wesleyan used it more heavily and more recently. Wesleyan students were more likely to have used lysergic acid diethylamide (LSD) at some point and showed some tendency to have used it more recently, but did not differ significantly as to total cumulative use or the time they first tried it. For all hallucinogens, all users reported experiencing pleasant effects much more frequently than unpleasant effects. A majority of all nonusers reported knowing someone who had used hallucinogens, and a sizeable minority reported having seriously considered trying it.

In reviewing some of the literature on lysergic acid diethylamide (LSD) and other hallucinogens in lay and professional media, it was noted that definite statistics on the extent of the use of hallucinogens on campus were not known. Young and Hixson state the problem as follows:

There have been plenty of statistical guessers ("A million LSD users"; "over 30,000"; "one-third of all college students are experimenting"; "1 in 7"), but there is a crying need for a chemical Kinsey to appear with factual data on the extent of LSD use.¹

In a recent paper, Pearlman² surveyed the few published reports on this subject and reported a range of 5% for illicit use of drugs. In conclusion his statement was:

Careful in-depth studies of experimentation with these drugs on 1-3 occasions will undoubtedly show higher figures, perhaps an overall college average of 15% and a somewhat lower average in the high schools. But we doubt that chronic

abuse of marijuana, amphetamines or barbiturates or abuse of major hallucinogens or opiates in our colleges will be found even in exhaustive studies to exceed 5-7% except in isolated instances.

In his own questionnaire study of 2,270 Brooklyn College seniors, there was a 55% return rate of the questionnaires and 6.3% of these admitted to some drug use. This group did not differ in age, sex, marital status, home living, or academic standing from the group not using drugs. About 60% of the group using drugs were occasional marijuana users and had already given up this use by the time of the study. Only a few students admitted using LSD.

Because of the need for more definite statistics, it was decided to study the undergraduate population of Yale and Wesleyan in an attempt to determine the prevalence of use of hallucinogens on these two campuses.

Method

A one-page anonymous questionnaire on the use of hallucinogens was composed and mailed to a 10% random sample of the Yale undergraduate classes in February 1967. In a covering letter, the students were asked to fill out the questionnaire and return it in the stamped envelope provided. On the questionnaire, students were invited to come in for an interview (only one student responded to the invitation). At Wesleyan, a similar procedure was followed with the same questionnaire but a slightly different covering letter, and was sent to a one third random sample.

Yale and Wesleyan are old, prestigious, private, liberal arts colleges in Connecticut with residential facilities for men. They are located approximately midway between New York and Boston. The undergraduate student body in both institutions is highly selected, and most of the students go on to graduate and professional schools after completion of their undergraduate studies. Though drawing heavily from the northeastern states, the student bodies contain students from most of the United States and from many foreign countries. The principal differences between the two institutions are those of size and location. Yale College is located in a metro-

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politan area and has some 4,000 undergraduates who are slightly outnumbered by the enrollment in the university's various graduate and professional schools. Wesleyan, by contrast, is located in a much smaller, less metropolitan community and has an undergraduate enrollment of some 1,200 students which is approximately 80% of the total enrollment at the university.

At each institution the same anonymous questionnaire was mailed to a 10% (Yale) and 33% (Wesleyan) random sample of the undergraduate student body. The three major questions were confined to hallucinogenic drugs. First, the respondent was asked to indicate whether he had ever seriously considered using LSD, dimethyltryptamine, psilocybin, peyote, marijuana, mescaline, morning glory seeds, or other hallucinogens. He was then asked to indicate whether he knew anyone who had consumed any of these drugs. Finally, he was asked whether he personally had used any of these drugs. If so, he was asked to specify each drug used, months ago first and last used, approximate total time of use on different occasions, and whether, as a result of use, he had experienced any pleasant or beneficial effects and, conversely, unpleasant or negative effects. Because of sensitivity to the issue of student drug use on campus, the questionnaire was conducted anonymously and the only identifying datum requested was that of the respondent's undergraduate class level.

Results

At Yale, 80% of the 409 students in the sample returned completed questionnaires, a significantly higher response rate than the rate of 66% from a sample of 380 students at Wesleyan. (The term "significant" is used throughout this paper in its statistical sense. Sample responses of the two institutions were compared by chi-square technique with $P < 0.05$ being the criterion of significance.)

Use of Hallucinogenic Drugs.—At both institutions, 20% of those answering the questionnaire reported that they had used hallucinogenic drugs. This does *not* mean that one of every five students was a confirmed user. It does mean that at the time of answering the questionnaire one of five had used one or more hallucinogenic drugs one or more times during his life. From the detailed responses it was apparent that marijuana was the most important hallucinogen. Eighteen percent of the respondents from Yale and 20% of the respondents from Wesleyan reported having tried it at least once, and 13% of the Yale respondents and 11% of the Wesleyan respondents reported having used only marijuana. Among those reporting some use of marijuana, approximately one of five students at each institution had tried it only once. However, at Wesleyan, there was a significantly higher percentage who reported having used marijuana more than ten times (40%, Wesleyan; 19%, Yale). There appeared to be no difference between the two samples with respect to time marijuana was first used: 70%

of the Yale users and 68% of the Wesleyan marijuana users had first used it within the 12 months prior to the time of answering the questionnaire. However, at Wesleyan, the marijuana users were significantly more likely to report having used it more recently. Of the Wesleyan users, 53% reported having last used it within a month prior to answering the questionnaire vs 32% of those from Yale. At both institutions, only 1% of the respondents reported having had hallucinogenic drug experience which did not include the use of marijuana.

LSD.—Although considerably less important from the viewpoint of prevalence, use of LSD was reported by students on both campuses. Of the Wesleyan respondents, 7% reported having tried it, a figure significantly higher than the 2% of Yale respondents who had used LSD at least once. There was no difference between LSD users on the two campuses with respect to when they had first tried the drug: 72% of each sample of LSD users had first tried the drug within a year before answering the questionnaire. However, as with marijuana, LSD users at Wesleyan reported more recent use of LSD (44% within a month prior to answering the questionnaire) than did the LSD users at Yale, none of whom had used LSD within the preceding month. This difference was not statistically significant at the 0.05 level, but it is noteworthy because it was significant at the 0.01 level.

Effects.—On both campuses, it appeared that the use of hallucinogenic drugs was regarded as a pleasant or beneficial experience or both by those who had used such drugs. Forty-one percent of the drug users at Yale and 35% of the drug users at Wesleyan reported having had some unpleasant effects from their use of hallucinogens, while 78% of Yale users and 92% of Wesleyan users reported pleasant or beneficial effects of drug use, a difference that is statistically significant.

Exposure.—In an effort to obtain some measure of how much the individual student on each campus was exposed to hallucinogenic drugs and what the size of the "population at risk" was, each student was asked whether he personally knew anyone who had ever used a hallucinogen. At both institutions the overwhelming majority of students *who had never used any hallucinogen* reported that they knew users. Seventy-six percent of the nonusers at Yale and 80% of the nonusers at Wesleyan had such acquaintances. The same findings were obtained when grouped according to the type of drug: 69% of nonusers of marijuana at Yale and 74% of nonusers of marijuana at Wesleyan knew marijuana users; 47% of nonusers of LSD at Yale and 48% of nonusers of LSD at Wesleyan knew LSD users.

It further appeared that a sizeable minority of nonusers on both campuses had "seriously considered" trying hallucinogens. Twenty-five percent of those without hallucinogenic drug experience at Yale and 30% of their counterparts at Wesleyan reported that they had considered trying halluci-

nogens. Again, according to drugs, similar results were obtained; 24% of Yale's nonusers of marijuana and 27% of Wesleyan's had seriously considered trying marijuana; 19% of Yale's nonusers of LSD and 14% of Wesleyan's had considered trying LSD.

Comment

The similarity between the two campuses as far as overall drug use is concerned suggests the reliability of the questionnaire method in eliciting such data. The validity of the results, however, would need to be confirmed by other means, perhaps a door-to-door survey.

The climate on the campuses at the time of the survey with regard to use of drugs was one of uncertainty and in some cases fear. It was unclear how hard the institutions would be on drug use if it were discovered and, in addition, if the national press had featured reports of raids by police on campus and the use of informers or plants. In this climate, the authors felt it unwise to try to elicit more data that students could possibly feel to be revealing of their identity—data such as class rank or academic standing, academic major, social activities, family background, and place of residence. In retrospect, the authors may have been too cautious, and such data might have been readily proffered if requested. The authors likewise avoided too detailed questioning on use of drugs, per se, hoping that a short simple form would be more likely to be returned. Such data have been reported on selected samples in the literature.³⁻⁵

The results themselves are somewhat higher than Pearlman² had predicted for overall use but are still well within the range he predicted for heavy or chronic use. They approximate what the authors would have predicted on the basis of their clinical experience at the Department of University Health and, not surprisingly, are much lower than what students say about the extent of drug use on the two campuses. Estimates by students tend at least to double the present figures and at times to triple them. The discrepancy may be due to problems of a questionnaire technique or to the need for involved students to overestimate drug use to justify to themselves their own use or, perhaps, to the openness with which drugs are used which creates an impression of "everyone is doing it." The marked increase of the current figures over the 6.3% Pearlman obtained for drug use at Brooklyn College may be due to factors such as the time his study was done (1965) and the commuter nature of the institution he investigated (more than 90% of the students live at home).

As noted earlier in the paper, the two campuses are similar to each other in many respects, with size of the institution, size of the surrounding community, and a much larger graduate enrollment at Yale being the main superficial differentiating characteristics. It is, therefore, not surprising to find many similarities in the patterns of drug use

on these campuses. The differences that emerged seem to indicate somewhat heavier and more recent use of marijuana at Wesleyan and a greater tendency there to try LSD. It is not clear why these differences are present, although one may speculate, for example, that perhaps they are caused by a greater isolation and fewer social facilities at Wesleyan. To clarify these distinctions it would be useful to have similar studies done at other campuses which might highlight the role of features such as size, coeducation, geographic setting, residential pattern, and academic stress in the complex pattern of drug use.

The psychological hazards from unsupervised use of the stronger hallucinogens have been amply documented in the literature⁶⁻⁹ and, recently, some possible physical and genetic hazards as well.¹⁰⁻¹² The status of marijuana in both of these respects is less clear^{13,14} and it is currently the subject of heated debates as well as legal proceedings, as reported in the *New York Times* (Oct 9, 1967, p 1). It is beyond the scope of this paper to enter this controversy. The findings in this communication, however, emphasize the extent of the problem for those medical and academic personnel who must cope with drug use in their practices or on their campuses. The population at serious risk includes not only the 20% of students who admit to some use of drugs but, in addition, the 25% to 30% of students who responded as "seriously considering" such use. It may be useful to review the comments of Phillip¹⁵ on possible preventative steps in this context. He points out the need for the presentation of factual information, the need to have the university health department as a "sanctuary" where drug use can be discussed without fear of disciplinary action, and the need for a university course in growth and development in which drug use could be viewed in its developmental setting. In addition, it is important to work with dormitory counselors and student leaders whose opinions on drug use are often more heeded than information from anyone "over 30."

The difficulties of preventing drug use are emphasized by noting the large percentage of students reporting pleasant or beneficial effects from their use of drugs, the figure being more than twice that of reports of unpleasant effects. Typical of the pleasant effects reported were comments such as the following: pleasantly high without being drunk; heightened sense impressions; generally happy and content; euphoria; relaxation; heightened sexual sensitivity (though not desire); feeling of great peace and harmony; able to "see" music in brightly colored pulsating forms; hallucinations when eyes are closed; heightened tactile sensitivity; increased enjoyment of music, art, and dance; feeling of silliness.

Typical replies for adverse effects of marijuana were that it made the user extremely tired, fearful, hot, and caused an uneasy feeling in the stomach; smoke was painful to the throat; the user was not

completely in control of himself; there was nausea and vomiting; headache; dizziness; giddiness; paranoid feelings; and feelings of insects crawling on the user.

Some of the reasons for and against drug use, as the students see it, can be noted from the following comments that the students wrote on the questionnaires:

- ... I could lose all my worries and imagine many things ...
- ... the mind is magnificently delighted by very simple situations or memoirs ...
- ... Drugs, then, are our only means of feeling love (in the general, perhaps Christian, sense) in this debacle of self-destruction ... it is a return to Eden ...
- ... I have stopped taking drugs ... It became all too easy to

'groove' on something ... without ever coming to terms with real problems, without ever really thinking. The borders of illusion and reality became hazy ...

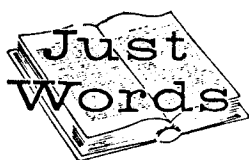
... I consider it now a part of the growing up process. It was an answer. It no longer is. I am still overwhelmed by the madness that is my country but I must find another way of coming to terms with it.

... I'm not *anxious* to try marijuana again soon, but am not closed to the idea. I'm definitely glad I've experienced it for myself at least once.

In the future it is planned to repeat this survey both to see if there are changes in the prevalence of use and to inquire into the use of other drugs such as the amphetamines, barbiturates, and narcotics. We also hope to extend the group surveyed to include both graduate students and faculty.

References

1. Young, W., and Hixson, J.: *LSD on Campus*, New York: Dell Publishing Co., 1966. p 8.
2. Pearlman, S.: Drug Use and Experience in an Urban College Population, read before the 44th annual meeting of the American Orthopsychiatry Association, Washington, DC, March 23, 1967.
3. McGlothlin, W.H., and Cohen, S.: The Use of Hallucinogenic Drugs Among College Students. *Amer J Psychiat* 122:562-574 (Nov) 1965.
4. Kleber, H.D.: Student Use of Hallucinogens. *J Amer Coll Health Assoc* 14:109-117 (Dec) 1965.
5. Ungerleider, J.T.; Fisher, D.D.; and Fuller, M.: The Dangers of LSD: Analysis of Seven Months' Experience in a University Hospital's Psychiatric Service. *JAMA* 197:389-392 (Aug 8) 1966.
6. Frosch, W.A.; Robbins, E.S.; and Stein, M.: Untoward Reactions to LSD Resulting in Hospitalization, *New Eng J Med* 273: 1235-1239 (Dec) 1965.
7. Kleber, H.D.: Prolonged Adverse Reactions From Unsupervised Use of Hallucinogenic Drugs, *J Nerv Ment Dis* 144: 308-319 (April) 1967.
8. Fink, P.J.; Golman, M.J.; and Lyons, I.: Morning Glory Seeds Psychosis. *Arch Gen Psychiat* 15:209-213 (Feb) 1966.
9. Bowers, M., et al: Dynamics of Unsupervised Use of Psychedelic Compounds. *Arch Gen Psychiat* 16:560-566 (May) 1967.
10. Cohen, M.M.; Marinello, M.J.; and Back, N.: Chromosomal Damage in Human Leukocytes Induced by Lysergic Acid Diethylamide, *Science* 155:1417-1419 (March 10) 1967.
11. Irwin, W., and Egozcue, J.: Chromosomal Abnormalities in Leukocytes From LSD-25 Users, *Science* 157:313-314 (July 21) 1967.
12. Auerbach, R., and Rugowski, J.A.: Lysergic Acid Diethylamide: Effect on Embryos, *Science* 157:1325-1326 (Sept 15) 1967.
13. McGlothlin, W.H.: Hallucinogenic Drugs: A Perspective With Special Reference to Peyote and Cannabis, *Psychodelic Rev* 6:16-57, 1965.
14. Isbell, H., et al: Effects of (—) Δ^9 -Trans-Tetrahydrocannabinol in Man, *Psychopharmacologia* 11 (pt 2):184-188, 1967.
15. Phillip, A.F.: Comments on Preventative and Therapeutic Approaches to Illicit Drug Use, read before the Group for the Advancement of Psychiatry, Philadelphia, Nov 12, 1966.



When I drive along an arterial highway, I have a feeling the oncoming traffic ought to be venous. It isn't, I know.

Actually, arteries without veins are extremely rare, though the opposite arrangement is quite common. There are veins in wood paneling, in leaves, in rock, in butterfly wings ... all without arteries, and nobody has ever managed to speak in a humorous artery.

Arteries are learned upstarts—and Greek, to boot. The general idea of blood vessel is represented by vein—just about the way goose is a cover-all for goose and gander. Indeed, the etymology of vein appears to link it to vehicle, making it qualified to stand for any kind of conduit.

An artery—in Greek and hence (as a Greek loan) in Latin—was a windpipe. Where the windpipe—at its lower end—branches out, it kept the name, though now on the whole in the plural form.

It thus came to pass that in the refined medical parlance of later days—e.g. in the essays of Aretaeus (who flourished in the second half of the second century)—both veins and arteries were defined as conduits, with the difference that the former carried blood, the latter air.

The currently acknowledged division of labor between veins and arteries seems altogether different, but its connection with the past becomes clear after death, when the conduits we call arteries may be seen to contain as little blood and as much air as what the Greeks called a trachytic artery and sometimes simply a trachea.

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