MARIJUANA

Effects on Human Behavior

edited by

LOREN L. MILLER

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EFFECTS ON HUMAN BEHAVIOR

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PREFACE

The use of marijuana in the United States during the past decade has burgeoned. Yet, until recently, a paucity of objective evidence existed pertaining to the behavioral and physiological actions of the drug. Although efforts have been made recently to research the marijuana problem, the use of the drug has increased at such an alarming rate that it is doubtful that such efforts will keep pace with the discovery of new social consequences concerning its continued use. In addition, much research to date has been hampered by political and social issues surrounding the use of marijuana on a widespread basis. Whether or not marijuana ingestion has long range detrimental effects on the mental and physical health of members of our society is certainly a polemic question with no final answers but only more questions. Unfortunately, debating the relative merits of using or not using marijuana has in numerous instances clouded an important issue: that of scientifically determining in a systematic and objective manner the effects of this agent on human behavior. Eschewing the use of marijuana without an unbiased evaluation of the drug's actions and at the same time offering moralistic arguments makes no more sense than promoting the use of the drug on the basis of subjective evaluations such as "it makes me feel more creative" and "insightful" or "more well-rounded." Numerous types of arguments for or against its consumption can be contrived, but most suffer from speciosity and from what Harry Stack Sullivan has termed paritaxical reasoning.

Although a plethora of research on marijuana has been conducted in the past three to four years, the majority of it has been devoted to defin-

ing and characterizing such variables as the pharmacological and chemical properties of cannabis and its basic physiological effects. Surprisingly, systematic research concerning the effects of marijuana on human behavior is minimal compared with some of the above-mentioned research areas when in fact this area is of vital importance from a scientific as well as social point of view.

This book attempts to synthesize much of the existing experimentation concerning the acute and chronic effects of marijuana and its derivatives on human behavior.

Loren L. Miller

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Chapter 1

THE LOGISTICS OF MARIJUANA RESEARCH: METHODOLOGICAL, LEGAL, AND SOCIETAL

HARRY KLONOFF

I. INTRODUCTION

The progress of science is the work of creative minds. Every creative mind that contributes to scientific advance works, however, within two limitations. It is limited, first, by ignorance, for one discovery waits upon that other which opens the way to it. Discovery and its acceptance are, however, limited also by the habits of thought that pertain to the culture of any region and period, that is to say, by the *Zeitgeist:* an idea too strange

> or preposterous to be thought in one period of western civilization may be readily accepted as true later. Slow change is the rule—at least for the basic ideas. On the other hand, the more superficial fashions as to what is important, what is worth doing and talking about, change much more rapidly, depending partly on discovery and partly on the social interaction of the wise men most concerned with the particular matter in hand—the cross-stimulation of leaders and their followers, of protagonists and their antagonists (Boring, 1950).

This chapter is directed to those scientists and researchers who are willing to persevere in their search for explanation, understanding, and prediction, in spite of *Zeitgeist* protagonists and antagonists of marijuana usage.

Is the drug problem of today really as unique and mysterious as many would have us believe? From a historical perspective, the use of mind-altering agents may be as timeless as man, the motivation in all probability deriving from the need to make life more pleasurable or from the desire to diminish the stress of human existence. The Sumerians, 7000 years ago, described on clay tablets the cultivation and preparation of opium (Neligan, 1927). Alcohol, with all its distressing consequences, is described in the Old Testament. The Chinese, 4000 years ago, used cannabis as a remedy (Nahas, 1973). In turning from the historical to the contemporary, a National Commission on Marijuana and Drug Abuse survey estimated that the total number of persons who have used marijuana in the United States may exceed 24 million (National Institute of Mental Health, 1972). Fejer *et al.* (1971), in surveying students in grades 7, 9, 11, 12, and 13, found that marijuana use increased 173% in Toronto between 1968 and 1970, and 162% in Halifax between 1969 and 1970. It should also be noted that in addition to nonprescribed mind-altering agents ingested in North American society there has been an explosion of prescribed psychotropic drugs (major tranquilizers, minor tranquilizers, antidepressants, stimulants, sedatives, and hypnotics). Between 1958 and 1967, there was a 65% increase in new psychotropic drug prescriptions filled in the United States; in 1967, psychotropic drugs accounted for 17% or 178 million prescriptions; mixture of psychotropic and nonpsychotropic drug prescriptions was 275 million or 25% of all prescriptions written; extent of use was 133.1 new and refill prescriptions for every 100 of adult population; one-quarter of all adults took a psychotropic agent in the 12 months preceding the survey; prescribing occurs in the over 20 age group, principally ages 40 to 59; and females account for 67% of all psychotropic drug usage (Balter and Levine, 1969).

Le Dain (1973) lists the following causes which interact to predispose and encourage the individual to engage in nonmedical drug use: per-

sonality of the user; his close personal relations—family, school, and peer group; social and economic conditions; and the general attitude of society toward drug use as reflected by advertising media and the practices of the adult population.

Some of the hysteria surrounding marijuana use is abating and the climate for research on marijuana is improving. But those concerned with social action and legislative change are still searching for credible information, and it would seem that there are four streams of relevant investigation that might help to bridge the information gap. The first area of investigation is that of the acute effects of marijuana. Researchers have been active in this area and the acute effects of marijuana have been documented in Canadian studies (Le Dain Commission, 1972, 1973; Klonoff, 1973a,b; Klonoff *et al.*, 1973; Low *et al.*, 1973; Marcus *et al.*, 1974), as well as numerous studies in the United States (National Institute of Mental Health, 1972). The second area is that of the effects of marijuana on driving in a real life situation, and only two studies have been reported in this area (Le Dain Commission, 1972; Klonoff, Chapter 14). The third area is that of the chronic use of marijuana, particularly heavy chronic use, and in a relevant culture. There is no reported study in this area that can withstand critical scrutiny. The fourth area would involve a consideration of the effects on society if two mind-altering agents (marijuana and alcohol, rather than only alcohol) were available on demand, possibly using the ecosystems approach of Fisher and Strantz (1972).

Regarding the fourth area of investigation, Milner (1973) outlines some of the relevant variables that would be worthy of investigation before moving into the legalization of marijuana, and these are as follows: adverse effects, driving hazards, multiple drug use, incorrect evaluation, consumer culture, alcohol and marijuana, example to children, rights of the less-privileged, prejudiced assessments, community testing, legal control difficulties, social group alienation problems, regard for the law, and social goals.

II. CLINICAL RESEARCH PLANNING

A. Strategy and Tactics for Clinical Research on Marijuana

Weil *et al.* (1968) pointed out that research on marijuana is fraught with a large number of legal and attitudinal hurdles and obstacles. The situation they described still obtains today. Accordingly it might be help-

ful to provide first-hand information and data regarding the nature of such obstacles and, even more important, the ways and means of meeting the necessary demands in order to embark on marijuana research. Figure 1 outlines the channels—university, medicolegal, funding, Food and Drug, and law enforcement—that one must go through before beginning a systematic inquiry on marijuana.

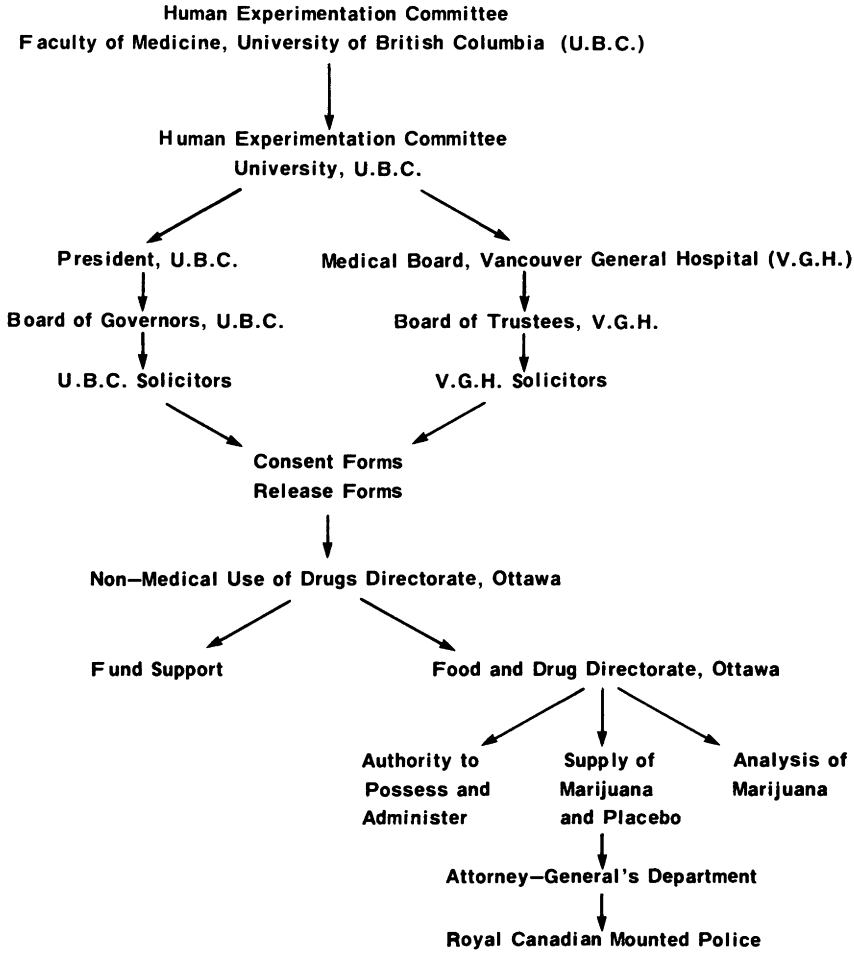

Fig. 1. Channels for initiating research on marijuana.

The process of endorsement begins with the university human experimentation committee. The human experimentation committee at the University of British Columbia passes on the proposed research and certifies

that the procedures planned are acceptable on ethical grounds and, in particular, that: (a) the safety, welfare, and rights of the subject(s) are adequately protected; (b) the amount and kind of information communicated to the subject(s) is appropriate in order to secure informed consent* within the best definition of that term; (c) suitable precautions are taken to minimize risks; and (d) the subject is made aware that he has the right to withdraw from the research at any time. In addition, the matter of confidentiality regarding the identity and data of the volunteers must be made explicit, and such confidentiality must be maintained by agreement with the various levels of law enforcement. It should be stressed that human experimentation committees are concerned with the ethical and legal aspects and implications of the proposed research and not with the scientific credibility of the research. The researchers on marijuana at the University of British Columbia obtained approval from a Faculty of Medicine human experimentation committee, and subsequently from a more general university human experimentation committee.

As the research project was to be carried out in the University hospital (Health Sciences Centre), University of British Columbia, as well as the Vancouver General Hospital, it was necessary to obtain the approval from the University administration, specifically, the President of the University and the Board of Governors of the University, as well as from the Vancouver General Hospital administration, specifically, the Medical Board and the Board of Trustees of the Vancouver General Hospital. University and hospital administrations, before endorsing the project, requested their respective solicitors to review the proposals as submitted and to draw up a release and consent form as well as an acknowledgment and certificate form.

The release and consent form made explicit the following: that information had been provided regarding the proposed experiment; the nature, expected duration, and means of administration of the marijuana; potential risks; the nature of supervision during the experiment; freedom to withdraw; assurance that an offence was not being committed against the laws of Canada; and release of the University and the Vancouver General Hospital and their respective staffs from liability. The release and consent form was signed by the volunteer before participating in the project and was witnessed and then endorsed by a physician on the project.

The acknowledgment and certificate form was signed by the volunteer

* Informed consent is defined within the terms of reference of the Declaration of Helsinki—Recommendations Guiding Doctors in Clinical Research (1964).