

California State University, San Bernardino

CSUSB ScholarWorks

---

Theses Digitization Project

John M. Pfau Library

---

1981

## External versus internal locus of control in longterm drug abusers

Heidi Knipe

Follow this and additional works at: <https://scholarworks.lib.csusb.edu/etd-project>



Part of the [Counseling Psychology Commons](#), and the [Substance Abuse and Addiction Commons](#)

---

### Recommended Citation

Knipe, Heidi, "External versus internal locus of control in longterm drug abusers" (1981). *Theses Digitization Project*. 260.

<https://scholarworks.lib.csusb.edu/etd-project/260>

This Thesis is brought to you for free and open access by the John M. Pfau Library at CSUSB ScholarWorks. It has been accepted for inclusion in Theses Digitization Project by an authorized administrator of CSUSB ScholarWorks. For more information, please contact [scholarworks@csusb.edu](mailto:scholarworks@csusb.edu).

EXTERNAL VERSUS INTERNAL LOCUS OF CONTROL

IN LONGTERM DRUG ABUSERS


---

A Thesis  
Presented to the  
Faculty of  
California State  
University, San Bernardino

---

by  
Heidi Knipe  
June 1981


Approved by:

  
\_\_\_\_\_

Chair

5/2/81

  
\_\_\_\_\_

  
\_\_\_\_\_

External versus Internal Locus of Control  
in Longterm Drug Abusers

Heidi Knipe

California State College, San Bernardino

## ABSTRACT

A major problem in determining a drug user's suitability for a certain treatment approach is the difficulty of predicting whether the user's personality is such that he/she will be helped or harmed by the treatment program. To help make this prediction, some drug treatment programs make systematic distinctions between CNS depressant users, CNS stimulant users, and opioid users, and adjust the treatment approach to the presumed personality profile of the individual drug user. Other drug treatment agencies maintain that many of the differences separating alcoholics from drug abusers, and barbiturate abusers from amphetamine abusers, have more to do with incidental and external factors like age, and ethnic, social, and cultural background - and prejudice - than with profound differences in the addictive process or therapeutic needs. In the present study, the Rotter IE Scale of internal versus external locus of control orientation was administered to 20 clients in a drug abuse counseling center. Users of stimulants, depressants and opioids were equally represented. Controls were college students who reported minimal drug involvement. Scores of the counseling center clients indicated that they were significantly more externally controlled than were the control subjects. The results suggest that diagnostic interviews as well as therapy sessions focusing on a client's locus of control orientation may be productive treatment approaches for drug abusers regardless of their choice of substance.

Drug addiction continues to be one of the most pressing social problems today. There are no reliable estimates of the number of substance abusers in the United States, and the estimates which do exist are confounded by the tendency to equate experimental and "recreational" use with psychological dependency, compulsive use or addiction. The US Department of Health and Human Services states that for the period of May 1977 to April 1978, barbiturates were involved in more deaths from overdose than were the narcotic analgesics, i.e., heroin, morphine, methadone. Barbiturates, non-barbiturate hypnotics, and non-barbiturate anxiolytics accounted for 39.2 percent of all drug mentions involved in overdose deaths reported to the Drug Abuse Warning Network System (DAWN) for that time period (Drug Enforcement Administration and National Institute on Drug Abuse, 1978). Amphetamines and other anorectics, while less life-threatening, have been viewed by many as inappropriately prescribed, particularly where client obesity or fatigue are an issue (Ellinwood, 1979). Moreover, there is the question of the extent to which licitly manufactured substances are finding their way into illicit distribution channels. Indeed, there are several studies to suggest that

stimulant/depressant drugs are widely used by a substantial segment of the adolescent and young adult population for recreational purposes (Abelson et al. 1977; O'Donnell et al. 1976; Johnston et al. 1977).

In the National Survey on Drug Abuse (1979), Abelson, Fishburne and Cisin surveyed non-medical drug use by a scientific sample of more than 7,000 Americans 11 years of age and older. Findings show that between 1972 and 1979, experience with marijuana and cocaine had doubled among 11-17 year olds (youth) and among those over 25 years of age (older adults). Between ages 18 and 25, the percentage of cocaine use has tripled and the level of marijuana use has increased from 48% in 1972 to 68% in 1979. The survey was conducted by the Social Research Group at George Washington University (Washington, D.C.) and the Response Analysis Corporation in Princeton, N.J. for the National Institute on Drug Abuse. Experience with inhalants and hallucinogens has also shown a marked increase since the early 1970's, the survey revealed. Only the illicit use of stimulants, sedatives and tranquilizers reported by 12 to 17 year olds and those over age 25 has remained relatively constant over the last decade. These drugs have shown large

increases by 18 to 25 year olds until 1977, when the increase leveled off somewhat. Experience with heroin has remained constant during the 1970's with about three percent of those surveyed reporting that they have tried it.

Former Secretary of the Department of Health and Human Services, Patricia Roberts Harris comments that the concerns of the American people in general, and parents in particular, about the rapid rise in illicit drug use over the past few years are well founded. Professionals working in the area of drug abuse treatment and prevention readily agree with this comment.

In a feature article of September 10, 1980, the Los Angeles Times describes the move of drugs into the work place, with some companies "winking at the problem", and other companies refusing to acknowledge it. More progressive companies offer their workers in-house treatment programs, while some firms simply call the police. Agencies and firms publicly acknowledging a drug abuse problem among their workers include the Chicago Board of Trade, the Social Security Administration in Baltimore, Md., the Seabrook, N.H. nuclear power plant construction site, the Compugraphic Corporation in North Reading, Mass., and Armatron in Melrose,

Mass. "The drug bust solves the problem for 24 hours," the Los Angeles Times quotes the Rev. John McVernon, director of community projects at the National Association of Drug Abuse Problems, Inc. in New York City. This organization works with 75 companies around the country on alcoholism and drug addiction, referring employees to treatment centers, helping management establish a corporate drug policy and finding jobs for rehabilitated drug addicts and alcoholics.

For the purposes of this study, the terms "addiction" and "psychological dependence" will be defined as separate and distinct degrees of drug dependency. Jaffe's (1975) terminology will be used to define "addiction" as a "behavioral pattern of compulsive drug use, characterized by overwhelming involvement with the use of a drug, the securing of its supply, and a high tendency to relapse after withdrawal " (285). Psychological dependence, in contrast, is seen by Jaffe as behavior by individuals who act as though "the effects produced by a drug, or the conditions associated with its use, are necessary to maintain an optimal state of well being" (288). Psychological dependence and addiction are clearly related phenomena in that drug use is an important factor in the user's life; it is the degree of dependence



and the power which the drug habit holds in the user's life which set the two conditions apart. In the case of the psychological dependence, it is optimal functioning which eludes the user if he cannot procure his drug. In the case of addiction, the desired drug merely provides maintenance of a tolerable level of existence for the user. Jaffe sees addiction "as an extreme on a continuum of involvement with drug use and refers in a quantitative rather than a qualitative sense to the degree to which drug use pervades the total life activity of the user" (285).

To gain a perspective on how drug abuse habits are formed, the leading theories on the genesis of drug abuse shall be reviewed here. Several factors are operative in the genesis of drug use and dependence: 1. Drugs as reinforcers, 2. Drug tolerance, and 3. Physical dependence.

Drugs as Reinforcers: Man shares with animals a propensity to take drugs. Andrew Weil (1975), in his book The Natural Mind, makes a strong case for the view that man seeks gratification through the altering of his consciousness, be it through chemicals or physical activities such as whirling, running, swinging or rocking oneself, or complete motionlessness. The powerful reinforcement value of the

commonly used drugs, including opioids, barbiturates, alcohol, volatile solvents, central nervous system stimulants, nicotine, and caffeine is demonstrated by the behavior of human users of the same drug. Schuster and Thompson (1969) report that when given continuous access, animals show patterns of self-administration that are strikingly similar to those exhibited by human users of the same drug. These observations suggest that pre-existing psychopathology is not a requisite for initial or even continued drug taking, and that drugs are powerful reinforcers, even in the absence of physical dependence.

Drug Tolerance: Although a person with a high tolerance of drugs is not necessarily more likely to continually abuse a drug, tolerance can affect the pattern of use because a higher dosage must be taken to produce the desired effect, resulting in increased likelihood of drug induced organic damage. Also, the shortened duration of the desired effect probably increases the frequency of instances in which drug using behavior will be reinforced. At this point, the inter-relationship of tolerance and drug use is not fully understood. Tolerance and physical dependence result not only from the abuse of narcotics, alcohol and hypnotics, but also from the

repeated administration of various other drugs, such as anticholinergics, chlorpromazine, etc., which are not self-administered by animals nor abused by man. It is also important to note that physical dependence does not develop in every instance of drug tolerance. Jaffe points out that tolerance is a "very general phenomenon observed with a host of substances and involving many independent mechanisms" (286). How a combination of these mechanisms may be operative in the formation of drug tolerance was shown by Kalant et al. (1971) and Hug (1972).

Physical Dependence: Physical dependence is closely associated with a phenomenon referred to by Jaffe and other researchers as the "rebound effect" (288). Studies show that the withdrawal symptoms associated with opioids, general central nervous system depressants, amphetamines, nicotine and opioid antagonists are characterized by rebound hyperexcitability in the same physiological systems that were modified originally by the drug. This effect is observed in general depressants which elevate the seizure threshold; when general CNS depressants are withheld, spontaneous seizures occur. Morphine depresses the flexor and crossed spinal reflexes; during morphine withdrawal, these same

polysynaptic reflexes are hyperexcitable. Amphetamines elevate mood, suppress appetite and alleviate fatigue; amphetamine withdrawal is infamous for the depression, hyperphagia and lack of energy it entails. Nicotine tends to suppress anger; heavy smokers trying to quit are widely feared for their notorious irritability.

The time required to create physical dependence on opioids as well as on general CNS depressants is short; when rapidly metabolized drugs are used, the earliest signs of rebound excitability occur after as little as 2-3 days. (Methadone, phenobarbital and chlordiazepoxide seem to be exceptions in that they bring on withdrawal symptoms much more slowly.) It is possible, then, to suggest that the adaptational processes that eventually lead to highly visible withdrawal symptoms actually begin with the first dose. This sheds new light on the problem of deciding exactly when physical dependence is present, and determining the causes of compulsive abuse. Governed by the rebound effect, individuals who use short-acting drugs to induce euphoria, raise their mood, or reduce tensions experience an exacerbation of the very symptoms they wanted to alleviate as soon as the first dosage of the drug loses its effect. Increases

in the unwanted symptoms would then lead to a repeat of the drug use, and the alleviation of withdrawal phenomena might increase the perceived effectiveness of the drug and play a heightened role as a reinforcer of drug using behavior.

On the physiological level, several theories have been proposed to explain basic mechanisms for physical dependence. Martin (1968) suggests a homeostatic and redundancy model in which tolerance is due to the opening of redundant pathways in the CNS as the primary pathway is blocked by the action of the drug. With drug withdrawal and restoration of activity in the primary pathway, the dual activity in the primary and redundant pathways results in a rebound hyperexcitability of the pathways once depressed by the drug.

Enzyme expansion theories state that drugs which cause dependence inhibit an enzyme that synthesizes a product important for cell activity (e.g. a neurotransmitter), and that the level of the enzyme itself is regulated by its product, the neurotransmitter. The initial drug effect is a result of the decrease in transmitter concentration, but this decrease also leads to increased synthesis of the enzyme and a new steady-state level that restores transmitter concentration, resulting in tolerance. When the drug is



withdrawn there is excess enzyme, which then causes excess synthesis of transmitter; and this produces rebound effects until the enzyme activity falls to a new steady state (Goldstein and Goldstein, 1968; Shuster, 1971).

No single model accounts for the complexity of drug use, tolerance and physical dependence phenomena. Multiple mechanisms are likely to be involved, with each model explaining some facets of the phenomena. For a broad discussion of opioid tolerance and physical dependence, reference is made to Dole (1970), Shuster (1971), Wikler (1972) and Way (1973). Non-opioid tolerance and physical dependence are discussed by Kalant et al. (1971). CNS agents are discussed in a review by Hug (1972).

Treatment: Treatment approaches differ not only in the way in which the drug abuse problem is conceptualized, but also in the priority given to treatment goals, and the degree of drug use considered acceptable after completion of treatment. A prudent rate of drug intake, a productive life style and rewarding interpersonal relationships are often ranked higher by drug abuse counselors as criteria for successful treatment of drug abusers than total abstinence, which is, especially in the case of marijuana

and cocaine users, an often unrealistic goal. Some treatment approaches focus on the emotional problems which are believed to lead to drug abusing behavior. Behaviorist approaches aim at providing alternative gratifications or modifying life styles. Still other approaches use confrontation and attack therapy to break down a compulsive abuser's defense system and disrupt his self-destructive drug use pattern.

Attempts to assess and compare the effectiveness of different drug abuse treatment approaches are complicated by the spontaneous recovery experienced by many drug abusers without the benefit of any treatment program whatsoever. Robins and Murphy (1967) and Vaillant (1973) have studied spontaneous discontinuation of drug abuse in an adult population of heavy drug users, a phenomenon that is well known to any drug abuse counselor and is bound to weaken the counselor's own sense of effectiveness. The use of traditional individual psychotherapy in the treatment of the compulsive drug user is controversial. Jaffe rejects individual psychotherapy on the grounds that its proven success rate is low. Many Veterans Administration hospital alcohol and drug abuse wards equally reject individual psychotherapy on the assumption that a drug user is likely to be



a manipulator who will use the psychotherapy session to further his own goals by manipulating the therapist and drawing him into his con artist's scheme. Nevertheless, numerous drug abuse treatment centers continue to offer individual psychotherapy in addition to specialized forms of group therapy.

A major problem in determining a drug user's suitability for a certain treatment approach is the difficulty of predicting whether the user's personality is such that he/she will be helped or harmed by the treatment program. To help make this prediction, some drug treatment programs make systematic distinctions between CNS depressant users, CNS stimulant users, and opioid users, and adjust the treatment approach to the presumed personality profile of the individual drug user. Gordon (1980) confirms this approach with the results of her study comparing the coping styles and stress responses of former sedative-hypnotic abusers with those of former polydrug abusers. She found that "the polydrug abusers' changeable coping styles parallel their lack of preference for specific drug effects and underlie their conformity and passive submission " (68). According to Gordon's results, the sedative-hypnotic abusers prefer drug



effects which obliterate angry impulses and permit avoidance of confrontation. These results, interesting as they may be, suffer from a methodological weakness: Subjects were chosen from a group of voluntarily hospitalized psychiatric patients. Circumstances surrounding hospitalization and standard psychiatric medication may sufficiently confound the results of such sensitive measurements as mood changes, coping skills and stress tolerance.

Other drug treatment professionals state that there are no correlations between abuse of a specific drug and a specific personality profile, citing studies such as Gendreau, Andrews and Wormith (1977), who found amphetamine abusers to be characterized by no distinct personality traits.

Thornburg (1977), while finding no significant personality differences among drug addicts, does identify personality differences between drug addicts and alcoholics. Pittman (1967) notes the well established sociological dissimilarities of alcoholism and drug abuse and argues that they demand different treatment approaches.

Ottenberg (1977) notes, however, that the shifting of substance abuse in the U.S. away from a pattern of single substance dependence toward multiple substance dependence

is raising renewed interest in "combined treatment" (115) and its ideological base, a generic conceptualization that encompasses and integrates into a unitary theory all types of substance abuse. Ottenberg maintains that many of the differences separating alcoholics from drug abusers, and barbiturate abusers from amphetamine abusers, have more to do with incidental and external factors like age, and ethnic, social and cultural background - and prejudice - than with profound differences in the addictive process or therapeutic needs. Just because a relatively cheap drug like phenylclidine (PCP) tends to show up in predominantly urban, poverty and minority environments, while the much more expensive cocaine is typically found in middle and upper middle class, white circles does not mean that the same treatment approach cannot be equally effective in both groups of abusers. The need for enhancement of self-worth and growth in personal awareness unites all social ranks and eliminates class distinctions. In Ottenberg's study, combined treatment has been found to be no less effective than substance-segregated treatment.

Hall (1978) studied internal vs. external locus of control orientation in drug abusers and detected no signi-

ficant differences in internal locus of control orientation between users of narcotics, CNS stimulants, hypnotic-sedatives and hallucinogens. This result suggests that where treatment procedures are directed at a drug user's self-perceived power to control his life, treatment approaches again need not be adjusted to hypothetical differences in drug abuser profiles. Hall tested his hypothesis, based on earlier work by Berzins and Ross (1973), that the subjective effects of narcotics lead to an internal locus of control orientation. He sees the drug abuser as a person who must possess "a great deal of personal organization and resourcefulness; to daily procure large sums of money for narcotics and then to obtain the drugs requires the development of social and vocational skills - socially unacceptable skills but skills nevertheless" (145).

Hall hypothesized that these "skills" would actually lead to a shift toward the internal end of the control continuum. He administered the James IE Scale to 105 persons in an outpatient drug treatment center. The James IE Scale is a 60-item test (30 to measure locus of control and 30 filler) that calls for a response along a Likert-type continuum. The range of possible scores is zero (internal)

to 90 (external). In addition, each subject was administered a drug effects inventory and a drug usage survey. The drug effects inventory consists of six items to be rated upon a six-point agreement-disagreement continuum. The content of the items included feeling less anxious, more in control, in a better mood, etc., when intoxicated than when not so. The drug usage questionnaire determined the drug of choice and the extent of usage.

Hall's hypothesis that the effects of narcotics tend to result in a relatively internal orientation was not supported by his study. This result considerably weakens the theory of Berzins and Ross (1973), who had stated that by using narcotics, the addict can "achieve control over anxieties, conflicts, impulses, moods, bodily states and so on" (90).

The present study is based on the premise that the analysis of internal vs. external locus of control as stated by Hall and Berzins, and by Ross, is false. To give one's life over to the procurement of a drug, no matter how great the resourcefulness and "inner" strengths required to bring off this daily task, is to surrender to an external locus of control. The present study hypothesizes that the compulsive drug users, in contrast to the non-users, tend to have an

external locus of control orientation which lets them experience themselves essentially at the mercy of external forces. To such a person, a drug is an external source of control, as powerful an antagonist against planning and decision-making as fate, luck, the state of the economy, or more concrete sources of control, like one's neighbors, fellow workers, or the amount of one's income. Forced into the life style dictated by the drug habit, the user is unable to freely determine the course of his life. He copes by giving himself over to an external agent - a drug - for relief from the other external pressures which he feels incapable of alleviating through the decisive action produced by inner controls. The present study thus re-examines the question whether heavy drug users do have a predominantly internal or external locus of control orientation, so that treatment approaches may be modified to heed this variable to a greater degree than is commonly done in drug treatment centers.

### Methods

Subjects were 20 clients in a drug abuse counseling center in a heavily industrial suburb of Los Angeles, tested between November 1980 and March 1981. Controls were college students from a nearby campus of the University of California. Average age of the experimental group was 23, average age of the control group was 21. There were 13 males and 7 females in the experimental group, and 12 males and 8 females in the control group. Experimental subjects were chosen from among those clients whose pattern of drug procurement and use met the criteria for addiction as stated in the introduction: overwhelming involvement with the use of a drug, the securing of its supply, and a high tendency to relapse after withdrawal. Users of stimulants, depressants and opioids were equally represented.

Before participating in the study, members of the control group had stated that they had - in most instances - experimented with the recreational use of marijuana in high school; only two students stated that they had never used any drugs at all. All participants in the control group stated that they did not use drugs during the school year, and only sporadically when away from the campus.

Subjects and controls were given the Rotter IE Scale. This test consists of 29 forced choice items of which six are filler items. The range of possible scores is zero (internal) to 23 (external). Correlations between the Rotter test and the James test, used in the Hall study, are reported by James to be within the range of .61 to .72 (James, 1974).

In discussing his test, Rotter points out that the items deal with the subject's belief about the nature of the world. Items are concerned with the subject's expectations about how reinforcement is controlled, not the subject's preference for internal or external control. Further technical information may be found in Rotter (1966).

### Results

A t-test comparing two sample means was conducted on the locus of control scores. A significant difference was found between the scores of counseling center clients ( $\bar{X} = 11.15$ ) and the control group ( $\bar{X} = 8.4$ ), ( $t = 2.52$ ),  $t > .05$ . The scores of the counseling center clients indicated that they were significantly more externally controlled than were the control subjects.

### Discussion

The results support the hypothesis that persons whose lives are dominated by their daily drug habits have a more external orientation than persons in whose lives drug use plays, if any, a minor role. This result confirms the observations frequently made by drug abuse counselors that addicts are quick to cite external factors as determinants of their behavior, instead of seeing themselves as free agents determining the course of their behavior. Scapegoats and excuses abound in self-reports of addicts.

In interpreting the results of this study and generating from the results some relevant treatment approaches to drug addiction, Rotter's statement must be emphasized that his test addresses the subject's beliefs about his environment, and not his preferences about the nature of this environment. A drug addict may indeed have an ideological preference for an internal locus of control, but feel himself powerless to act upon this preference, and consequently resign himself to an external locus of control belief system. An item from Rotter's scale may serve as an example:

A When I make plans, I am almost certain  
that I can make them work.



B It is not always wise to plan ahead because many things turn out to be a matter of good or bad fortune anyhow.

Almost every subject scoring high (external) on the scale chose B over A as an expression of their belief in the invincibility of external forces, although they would probably prefer A to be the case. An addict may cherish the thought that he is free at any time to discontinue the drug dependence which is dominating his life, but sees himself defeated daily by unabated drug use. In time, feelings of powerlessness become inevitable, and replace the belief in his control over his life. It is the task of therapy to address itself to an addict's perception of his own powers to control his behavior, and to strengthen his determination to exert this control.

Depending on the theoretical orientation of the therapist, a number of treatment approaches may be available to promote an internal locus of control orientation in the drug abusing client. A Gestalt therapist will include in his treatment plan techniques for raising the client's awareness of the conflict within him between drug avoidance wishes and drug using behaviors. Calling upon the perpetually defeated internal aspect of the client's

personality to give voice to its pain and frustration over the seeming futility of making plans, the therapist can help the client achieve a stronger awareness of his internality and strengthen it through verbal self-assertion.

A rational-emotive therapist, following the example of Albert Ellis, may proceed in treatment by helping the client sort out correct thinking from faulty thinking. "All planning is futile" is an example of faulty thinking. The therapist will energetically encourage the client to reorganize his belief system, and attempt to motivate him to take responsibility for his life and act according to the premise that he does indeed have the power to control his own behavior.

The strategy of the behavior therapist, on the other hand, will consist of systematically charting the client's drug use behaviors in order to identify a pattern of use; internal control behaviors will be discussed by client and therapist as possible goals, for which a contingency schedule will be established. The client's drug using (external) behaviors are closely monitored, and any reduction in their occurrence, and increase in internal orientation behaviors, is promptly reinforced.

In addition to these standard approaches, and their creative combination by inventive therapists, there are a number of other treatment strategies which focus on the weakness of the drug addict's internal locus of control. Long-term residential drug treatment programs, such as MY FAMILY, INC., use confrontation therapy in an attempt to tear down the addict's belief system which he has often carefully nurtured over the years to defend his external control orientation and absolve him from all responsibility for his situation. Radical confrontation therapy aims at destroying the external orientation even at the cost of stripping away the addict's ego defense system, so that a new, internal orientation can gradually develop.

An intriguing approach is paradoxical therapy. It is based on the observation that if a person is challenged to exaggerate his beliefs in an extreme way, he will respond with a new-found tendency toward the opposite point of view. If the therapist takes up the addict's stated belief of his powerlessness, and challenges the client to express and act out just how totally he is at the mercy of external forces, a feeling of internal power may emerge in the client. It is the task of an ongoing therapy to support and strengthen

this emerging sense of internal power.

No one therapeutic strategy has been shown to be more effective than the others. In spite of the similarity of external orientation among many drug addicts, the personality characteristics of each individual client must always be taken into consideration. It is hoped that the present study will stimulate drug abuse counselors to consider the variable of external/internal locus of control as they work within the framework of their particular theoretical treatment approaches.

## References

- Abelson, H. I., Fishburne, P. M., and Cisin, I. National Survey on Drug Abuse. Rockville, Md.: National Institute on Drug Abuse, 1977.
- Berzins, J. I. and Ross, W. F. Locus of control among opiate addicts. Journal of Consulting Clinical Psychology, 1973, 40, 84-91.
- Dole, V. P. Narcotic addiction, physical dependence and relapse. New England Journal of Medicine, 1972, 286, 988-992.
- Ellinwood, E. H. Amphetamines/Anorectics. In DuPont, R. L., Goldstein, A. and O'Donnell, J. Handbook on Drug Abuse. Rockville, Md.: National Institute on Drug Abuse, 1979.
- Hall, J. N. Relationship between locus of control and drug effects in users of narcotics, stimulants, hypnotic-sedatives, and hallucinogens. International Journal of the Addictions, 1978, 13, 1, 143-147.
- Hug, C. C., Jr. Characteristics and theories related to acute and chronic tolerance development. In Mule, S. J. and Brill, H. Chemical and Biological Aspects of Drug Dependence, Cleveland: CRC Press, 1972.
- Jaffe, J. H. Drug addiction and drug abuse. In Goodman, L. S. and Gilman, A. The Pharmacological Basis of Therapeutics. New York: McMillan, 1975.
- James, W. H. Internal and External Control as a Basic Variable in Learning Theory. Doctoral Dissertation, Ohio State University, 1957.
- James, W. H. Personal Communication. New York: Academic Press, 1974.
- Johnston, L. D., Bachman, G. C. and O'Malley, P. M. Drug Use among American High School Students, 1975-1977. Rockville, Md.: National Institute on Drug Abuse, 1977.

- Kalant, H., LeBlanc, A. E. and Gibbins, R. J. Tolerance to and dependence on some non-opiate psychotropic drugs. Pharmacology Review, 1971, 23, 135-191.
- O'Donnell, J. A., Voss, H. L., Clayton, R. R., Slatin, G. T. and Room, R. G. W. Young Men and Drugs: A Nationwide Study. Rockville, Md.: National Institute on Drug Abuse, 1972.
- Pittman, D. J. The rush to combine: Sociological dissimilarities of alcoholism and drug abuse. British Journal of the Addictions, 1967, 64, 337-343.
- Rotter, J. B. Generalized expectancies for internal versus external control of reinforcement. Psychological Monographs, 1966, 80, (1, No. 609).
- Schuster, C. R. and Thompson, T. Self-administration of and behavioral dependence on drugs. American Review of Pharmacology, 1969, 9, 483-502.
- Shuster, L. Tolerance and physical dependence. In Clouet, D. H. Narcotic Drugs: Biochemical Pharmacology, New York: Plenum Press, 1971.
- Way, E. L. Some biochemical aspects of morphine tolerance and physical dependence. In Fisher, S. and Freedman, A. M. Opiate Addiction: Origins and Treatment, Washington, D. C.: V. H. Winston & Sons, 1973.
- Weil, A. The Natural Mind. New York: McMillian, 1976.
- Wikler, A. Theories related to physical dependence. In, Mule, S. J. and Brill, H. Chemical and Biological Aspects of Drug Dependence, Cleveland: CRC Press, 1972.