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## ABSTRACT

The specific objectives for the course on "Psychoactive Drugs" are to gain knowledge about drugs and drug effects, and to acquire the ability to seek out and use available information on drugs. This course outline is divided into 2 sections: basic psychological, pharmacological, and physical aspects of psychoactive drug use; and (11) cultural, social and personality aspects. Methods of evaluation are presented for each objective, and individual lectures are outlined. Included in section 1 are discussions on factors influencing drug effects, problems of drug research, chemistry of the brain, and facts about specific drugs, including alcohol. Section 11 presents historical and cultural perspectives, contemporary drug use patterns and reasons for usage, drug culture, and society's response to drug abuse. Appended is a sample questionnaire which seeks student evaluation of the course as learning experience, and which is intended to provide guidelines for future content improvement. (CJ)

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ED057397

Lecture Outlines and Ancillary Materials, and  
Evaluation Questionnaire for a  
General Undergraduate Course, Psychoactive Drugs,  
as offered Spring 1971

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06 953



Spring, 1971

85-120 Psychoactive Drugs

J. Goldstein & J. H. Korn

GENERAL GOALS:

- I. Knowledge about drugs and their users.
- II. Ability to find information about drugs.

SPECIFIC OBJECTIVES AND METHODS OF EVALUATION:

1. Knowledge about drugs and their users.
  - A. Pharmacological aspects of drugs.
  - B. Physiological and psychological effects of the most important psychoactive drugs and the factors that influence these effects.
  - C. Social and cultural aspects of drugs.
  - D. Familiarity with laws covering psychoactive drugs.
  - E. Motives for using or not using.
  - F. Understanding the concept of addiction.
  - G. Awareness of similarity between drug states and other psychological states.

Methods of evaluating the achievement of these objectives.

There will be three or four one-hour exams testing (1) recognition and recall of facts and concepts and (2) ability to objectively evaluate statements about drugs and drug users. If there is sufficient interest, opportunities will be given for students to consider and discuss the meaning of his own use of psychoactive drugs or their use by others.

- II. Ability to find information about drugs.
  - A. Knowledge about what sources of information are available.
  - B. Ability to use these sources.

Methods of evaluation.

Some items on the exam will concern sources of information. All students will use these sources in preparing a short paper.

Concerning Grading.

In order to pass this course (or to receive a grade of "B"), all students will be expected to meet a criterion of mastery of objectives I and II. For example, 80% correct on exams with an opportunity to retake an exam if your score is less than 80%. (Note that this is an example. We have not yet set the criteria for mastery.)

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Students who wish to pass this course with "honors" (or an "A") must submit a term paper of high quality. The specific assignment for this paper will be made shortly after the beginning of the semester.

This course is intended to be neither entertainment nor therapy. We are primarily concerned with having students achieve the objectives that we have stated. We do not feel that it is our responsibility to force students to learn. However, for those students who do wish to learn about drugs, we feel that it is our responsibility to provide the information and feedback that will help learning occur. If you simply wish to sit and listen, you may do so as long as there are enough seats in the room.

Books to be purchased:

Gamage, J. R. & E. L. Zerkin, HALLUCINOGENIC DRUG RESEARCH: IMPACT ON SCIENCE and SOCIETY

Kessel, N. & H. Walton, ALCOHOLISM

Lingeman, R. R. DRUGS FROM A TO Z: A DICTIONARY

Recommended Reading - available after about 6 weeks:

Brotman, R. & F. Suffet Youthful Drug Use

DeBold, R. C. & R. C. Leaf LSD, Man and Society

Fort, J. The Pleasure Seekers

Goode, E. Marihuana

Kaplan, John Marijuana--The New Prohibition

National Clearinghouse for Mental Health Information Resource Book for Drug Abuse Education

Nowlis, Helen H. Drugs on the College Campus

Solomon, D. The Marihuana Papers

## General Outline for Psychoactive Drugs

Spring Semester, 1971

### I. Basic Psychological, Pharmacological and Physiological Aspects (Korn)

- A. Introduction
- B. Factors influencing drug effects
- C. Problems in drug research
- D. The brain and its chemistry
- E. Facts about specific drugs
  - 1. alcohol
  - 2. narcotics
  - 3. barbiturates
  - 4. tranquilizers
  - 5. stimulants and anti-depressants
  - 6. marihuana
  - 7. LSD and other psychedelics

### II. Cultural, Social, and Personality Aspects: (Goldstein)

- A. Historical perspective
- B. Cross-cultural perspective
- C. Contemporary use patterns in the U.S.: Who uses what?
- D. Reasons for usage:
  - 1. social factors
  - 2. characteristics of users
  - 3. psychology of usage - legal and illegal
- E. The drug usage culture
- F. Society's response to usage
  - 1. The drug problem
  - 2. prevention
    - a. education
    - b. law enforcement
    - c. treatment and rehabilitation

## Psychoactive Drugs, 85-120

### Lecture Outline No. 1

#### I. Introduction

##### A. Definitions

1. pharmacological
2. legal
3. social
4. psychological
5. functional - three interrelated levels:  
physiological, psychological, social

##### B. History

1. primitive man
2. isolation of active drug from plant  
(Serturmer - morphine - 1806)
3. psychopharmacology - early 1950's  
(reserpine, chlorpromazine)

##### C. Drug names and classifications

1. generic names
2. brand names
3. expensive names
4. "me - too" drugs

#### II. Factors Influencing Drug Effects

##### A. Characterization of drug effects

1. dose-response
2. dose-percent
3. selectivity
  - a. therapeutic index
  - b. side effects
4. time course

Classification of Major Psychoactive Drugs  
(from M. E. Jarvik, Psychology Today, 1967)

PSYCHOTHERAPEUTICS

These drugs are typical of many used in the treatment of psychological and psychiatric disorders. Anti-psychotic drugs are used primarily to treat major psychoses, such as schizophrenia, manic depressive psychoses, and senile psychoses.

Anti-anxiety drugs are used to combat insomnia, induce muscle relaxation, treat neurotic conditions, and reduce psychological stress.

Anti-depressant drugs are effective in the treatment of psychiatric depression and phobic-anxiety states.

Stimulants (see STIMULANTS, below)

PSYCHOTROPICS

These drugs produce changes in mood, thinking, and behavior. The resultant drug state may resemble a psychotic state, with delusions, hallucinations, and distorted perceptions. These drugs have little therapeutic value.

STIMULANTS

Also called Psychodelic or Hallucinogenic.

These drugs elevate mood, increase confidence and alertness, and prevent fatigue. Analgetics stimulate the central nervous system and can reverse the depressant effects of an anesthetic drug.

Caffeine and nicotine, found in beverages and tobacco, are mild stimulants.

SEDATIVES AND HYPNOTICS

Most of these drugs produce general depression (sedation) are used to treat mental stress, insomnia, and anxiety. low doses and sleep (hypnosis) in larger doses. They

ANESTHETICS, ANALGESICS, AND PARALYTICS

These drugs are widely used in the field of medicine. General anesthetics act centrally to cause a loss of consciousness. Local anesthetics act only at or near the site of application. Analgesic drugs, many of them addicting, typically produce euphoria and stupor, and are effective pain-relievers. Paralytic drugs are primarily at the neuro-muscular junction to produce motor (muscular) paralysis, and are commonly used by anesthesiologists.

NEUROHUMORS. (NEUROTRANSMITTERS)

Adrenergic and cholinergic compounds are known to be synaptic transmitters in the nervous system. Other natural compounds (e.g., 5-HT,  $\gamma$ -aminobutyric acid, Substance P) may also be neurotransmitters.

<u>Group</u>	<u>Example</u>	<u>Trade or Common Name</u>	<u>Natural or Synthetic</u>	<u>Usage</u>	<u>How Taken</u>	<u>First Used</u>	<u>Evidence of Addiction?</u>
<b>PSYCHOTHERAPEUTICS:</b>							
<u>Anti-psychoctic:</u>							
Rauwolfia alkaloids	reserpine	(Serpasil)	nat	greatly diminished	injected	1949	no
Phenothiazines	chlorpromazine	(Thorazine)	syn	widespread	injected ingested	1950	no
<u>Anti-anxiety:</u>							
Propanediols	meprobamate	(Miltown)	syn	widespread	ingested	1954	yes
Benzodiazepines	chlor diazepam	(Librium)	syn	widespread	ingested	1933	yes
Barbiturates	phenobarbital	(see Sedatives, below)					
<u>Anti-depressant:</u>							
MAO Inhibitors	tranlycypromine	(Parnate)	syn	diminished	ingested	1958	no
Dibenzazepines	imipramine	(Tofranil)	syn	widespread	ingested	1948	no
<u>Stimulant:</u>	amphetamine	(see Stimulants, below)					
<b>PSYCHOTOGENICS:</b>							
Ergot derivative	lysergic acid diethylamide	(LSD Lysergide)	syn	widespread?	ingested	1943	no
Cannabis sativa	marijuana	(hemp, hashish)	nat	widespread	smoked	?	no
<u>Lophophora williamsii</u>	mescaline	(peyote button)	nat	localized	ingested	?	no
<u>Psilocybe mexicana</u>	psilocybin		nat	rare	ingested	?	no
<b>STIMULANTS:</b>							
Sympathomimetics	amphetamine	(Benzedrine)	syn	widespread	ingested injected	1935	yes
Analeptics	pentylentetrazol	(Metrazol)	syn	rare	ingested injected	1935	no
Psychotogenics	lysergic acid diethylamide	(see PSYCHOTOGENICS, above)					
Nicotinics	nicotine		nat	widespread	smoked	?	yes
Xanthines	caffeine		nat	widespread	ingested	?	yes



85-120 Psychoactive Drugs

Outline No. 2

II. Factors Influencing Drug Effects (continued)

B. Factors that influence rate of absorption.

1. solubility
2. concentration
3. circulation
4. area of absorbing surface
5. route of administration
  - a. oral (p.o.)
  - b. rectal
  - c. subcutaneous (s.c.)
  - d. intramuscular (i.m.)
  - e. intraperitoneal (i.p.)
  - f. intravenous (i.v.)
  - g. intra-arterial (i.a.)
  - h. inhalation
  - i. mucous membranes
  - j. skin
  - k. directly into brain
6. rate of administration

C. Drug interactions

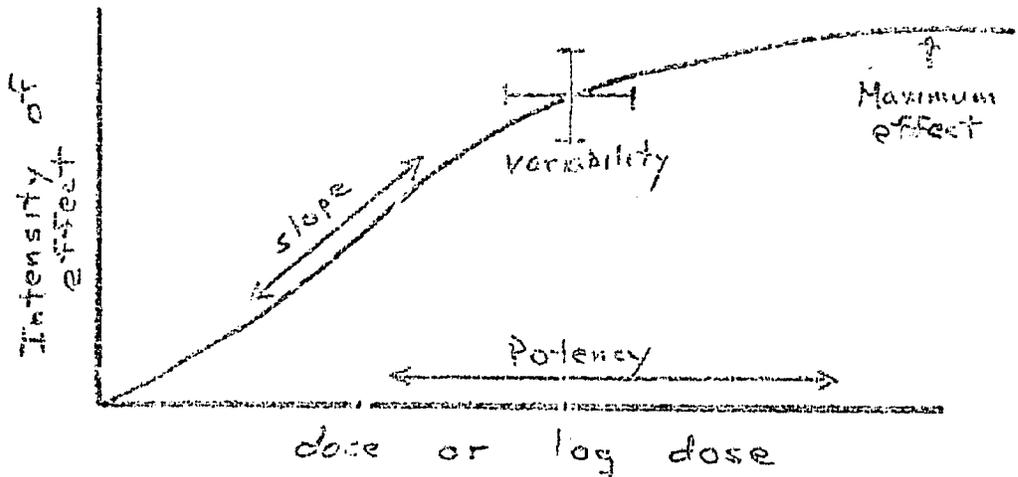
1. synergistic
2. summation
3. potentiation
4. antagonistic

## Advantages and Disadvantages of Routes of Administration

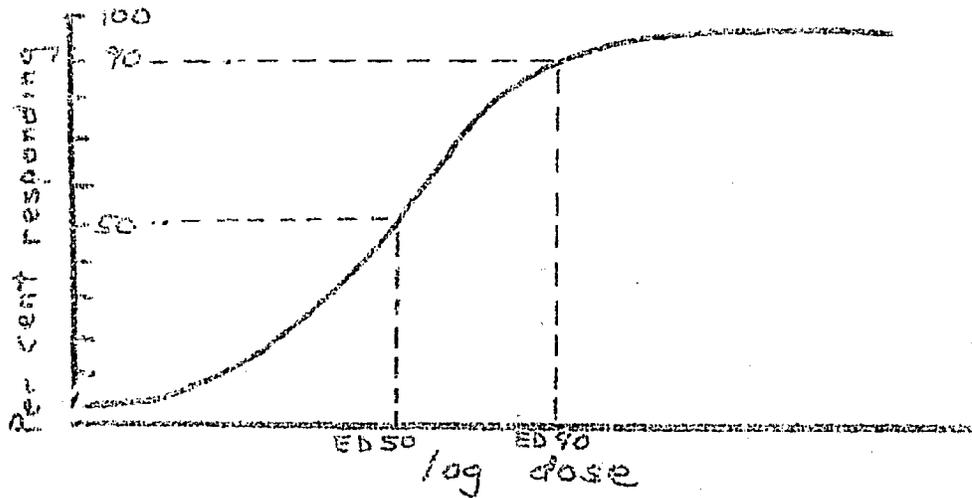
- ORAL:** Advantages - most convenient, safest, most economical  
Disadvantages - nausea, drug destruction by enzymes, interaction with food slows absorption, patient cooperation required, sensitive to taste
- RECTAL:** Advantages - less patient cooperation, slow absorption, by pass liver  
Disadvantages - irregular and incomplete absorption, may irritate mucosa
- SUBCUTANEOUS:** Advantages - slow absorption, availability of injection site  
Disadvantages - possible irritation
- INTRAMUSCULAR:** Advantages - less irritation than S. C., protracted absorption possible  
Disadvantages - depot formation leads to slow absorption
- INTRAPERITONEAL:** Advantages - large absorbing surface, rapid absorption, some by-passing of liver, most convenient and easy for laboratory animals  
Disadvantages - danger of infection and visceral damage
- INTRAVENOUS:** Advantages - most exact, rapid, eliminates problems of absorption  
Disadvantages - difficult to administer, dosage dangers, possible infection and vascular (blood vessel) disorders
- INTRA-ARTERIAL:** Advantages - localization in tissue or organ  
Disadvantages - difficult, dangerous
- INHALATION:** Advantages - large surface area  
Disadvantages - possible irritation and infection, few substances can be given this way
- MUCOUS MEMBRANES:** Advantages - local effects, rapid (eye, nose, vagina)  
Disadvantages - irritation
- SKIN (rubbing, DMSO):** Advantages - easy  
Disadvantages - limited usefulness

SEVERAL WAYS OF CHARACTERIZING DRUG EFFECTS:

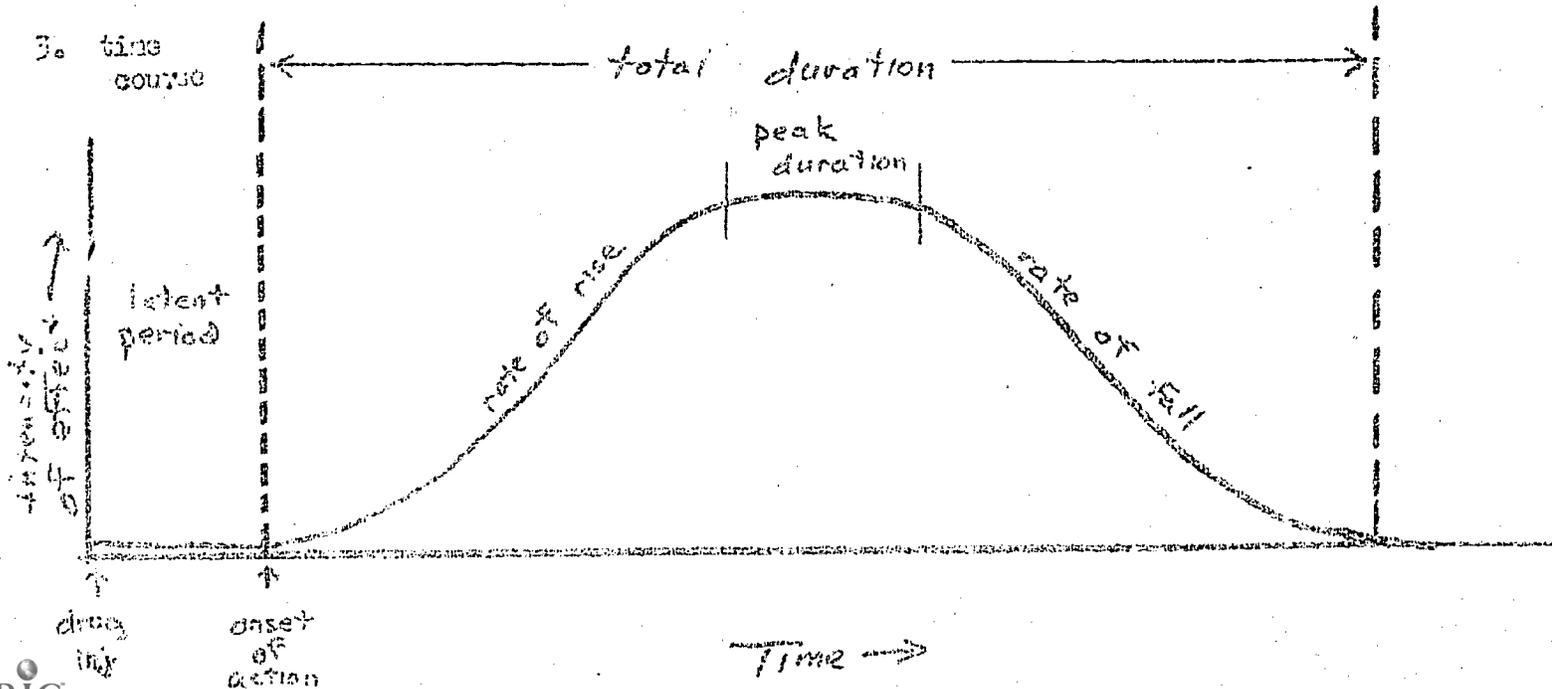
1. dose-response curve



2. dose-percent curve



3. time course



II. Factors Influencing Drug Effects (continued)

D. Physiological characteristics of the individual

1. genetic
2. metabolic rate
3. biological rhythms
4. sex
5. age
6. weight
7. body temperature
8. pathology
9. nutrition

E. Psychological factors

1. learning
  - a. drug effects on learning
  - b. state-dependent learning
  - c. learning to experience drug symptoms
2. motivation
3. emotion and stress
4. attitude
5. set
6. setting

F. Social factors

1. group interaction
2. social class
3. culture

85-120 Psychoactive Drugs

Outline No. 4

III. Problems in Drug Research

- A. Spontaneous recovery
- B. Placebo effect
  - 1. main effects
  - 2. side effects
  - 3. placebo "reactors"
  - 4. double blind
  - 5. ethics of placebo prescribing
- C. "Hawthorn" effect - novelty
- D. Pre-drug tests
- E. Clinical definitions of effects and effectiveness
  - 1. psychosis
  - 2. brain damage
  - 3. "mystification"

85-120 Psychoactive Drugs

Outline No. 5

IV. Basic Neuroanatomy

- A. Autonomic nervous system - emotion
- B. Neocortex
  - 1. motor, sensory, speech areas
  - 2. Temporal lobe - "memories", hallucinations, illusions
  - 3. frontal lobe - inhibition
- C. Reticular formation (reticular activating system)
  - 1. arousal
  - 2. attention
- D. Limbic system
  - 1. hypothalamus - motivation
  - 2. hippocampus - memory or motivation
  - 3. septal region - pleasure
  - 4. amygdala - fear, aggression
- E. Important general points
  - 1. circuits, not "centers" in the brain
  - 2. complex chemical coding
  - 3. interaction and integration in the nervous system
    - a. control by thinking (cortex) - yoga
    - b. autonomic balance - voodoo death

Readings: Review chapters on the physiological basis of behavior in an Introductory Psychology textbook.

SYMPATHETIC REACTION

constriction  
relaxation (far vision)

constriction, dryness  
dilation  
rapid, shallow breathing

acceleration  
dilation

constriction  
constriction  
dilation  
constriction  
constriction  
constriction

inhibition of motility  
contraction  
inhibition  
inhibition of glycogen release  
and secretion of bile

inhibition of motility  
contraction  
inhibition

relaxation  
contraction

adrenalin secretion

constriction  
constriction  
constriction  
contraction  
relaxation

secretion  
contraction  
contraction (piloerection)

limited, thick secretion

ORGAN SYSTEM

Visual

iris  
lens (muscles)  
lacrimal glands

Respiratory

trachea  
bronchi  
diaphragm

Cardiac

heart rate  
arteries

Vascular (Blood Vessels)

cerebral  
respiratory  
heart  
visceral  
genital  
peripheral

Gastric

stomach wall  
stomach sphincter  
stomach glands  
liver

Intestinal

wall  
sphincters  
glands

Urinary

bladder wall  
bladder sphincter

Adrenal Gland

Medulla

Genital

penis vessels  
vaginal vessels  
clitoral vessels  
uterus (pregnant)  
uterus (normal)

Skin

sweat glands  
blood vessels  
hair erector musc.

Salivary Glands

PARASYMPATHETIC REACTION

dilation  
Contraction (near vision)  
secretion of tears

dilation, secretion  
constriction  
slow, deep breathing

deceleration  
constriction

dilation  
dilation  
constriction  
dilation  
dilation  
dilation

increased tone, motility  
relaxation  
secretion  
glycogen release

increased tone, motility  
relaxation  
secretion

contraction  
relaxation

no effect

dilation  
dilation  
dilation  
no effect  
no effect

no effect  
dilation  
no effect

heavy, watery secretion

85-120 Psychoactive Drugs

Outline No. 6

- V. Brain Chemistry.
  - A. Generation of a nerve impulse.
  - B. Synaptic transmission
    - 1. synapse - a gap
    - 2. synaptic vesicles
    - 3. receptor site
    - 4. excitatory and inhibitory
    - 5. destruction by enzyme
  - C. Transmitter substances.
    - 1. Acetylcholine
      - a. high concentration in motor cortex, thalamus
      - b. destroyed by cholinesterase.
    - 2. Serotonin (5 - hydroxytryptamine, 5 HT)
      - a. destroyed by monoamine oxidase (MAO)
      - b. high concentration - brain stem, hypothalamus
      - c. structure similar to LSD
    - 3. Norepinephrine (noradrenaline)
    - 4. GABA - gamma-aminobutyric acid
    - 5. Substance P
  - D. Drug - transmitter interference.
    - 1. competitive inhibition
    - 2. transmitter release - block or accelerate
    - 3. enzyme interference

85-120 Psychoactive Drugs

Outline No. 7

VI. Alcohol

- A. Contents of most booze
  - 1. congeners & fusel oils
  - 2. calories
- B. Physiological effects
  - 1. concentration in bloodstream
  - 2. effect on brain
    - a. reticular formation
    - b. cortex
  - 3. circulatory system
  - 4. kidneys
  - 5. liver - cirrhosis
  - 6. hangover
- C. Social aspects
  - 1. drinking norms
    - a. abstinence
    - b. ritual
    - c. conviviality
    - d. utilitarian
    - e. dietary
  - 2. alcohol and sex
    - a. sex behavior
    - b. males vs. females
  - 3. Social class

Reading: Kessel & Walton, Alcoholism , p. 15 - 42

Lingeman, Drugs from A to Z, p. 72 - 75, on ethyl alcohol.

VII. Morphine and Other Narcotics

A. Source: opium poppy

B. Effects

1. euphoria - not necessarily = "good sick"
2. analgesia - pain relief
  - a. primary therapeutic use
  - b. dual effect
    - i. specific pain sensation
    - ii. cognitive reaction
3. respiration depressed
4. antitussive effect
5. neausea
6. constipation

C. Other narcotic analgesics

1. heroin
2. meperidine
  - a. milder withdrawal
  - b. used by medical addicts
3. methadone
  - a. effective orally
  - b. used in treating addicts

D. Narcotic antagonists

1. nalorphine
2. also analgesic
3. produces immediate withdrawal symptoms in addicts

E. Narcotic addiction

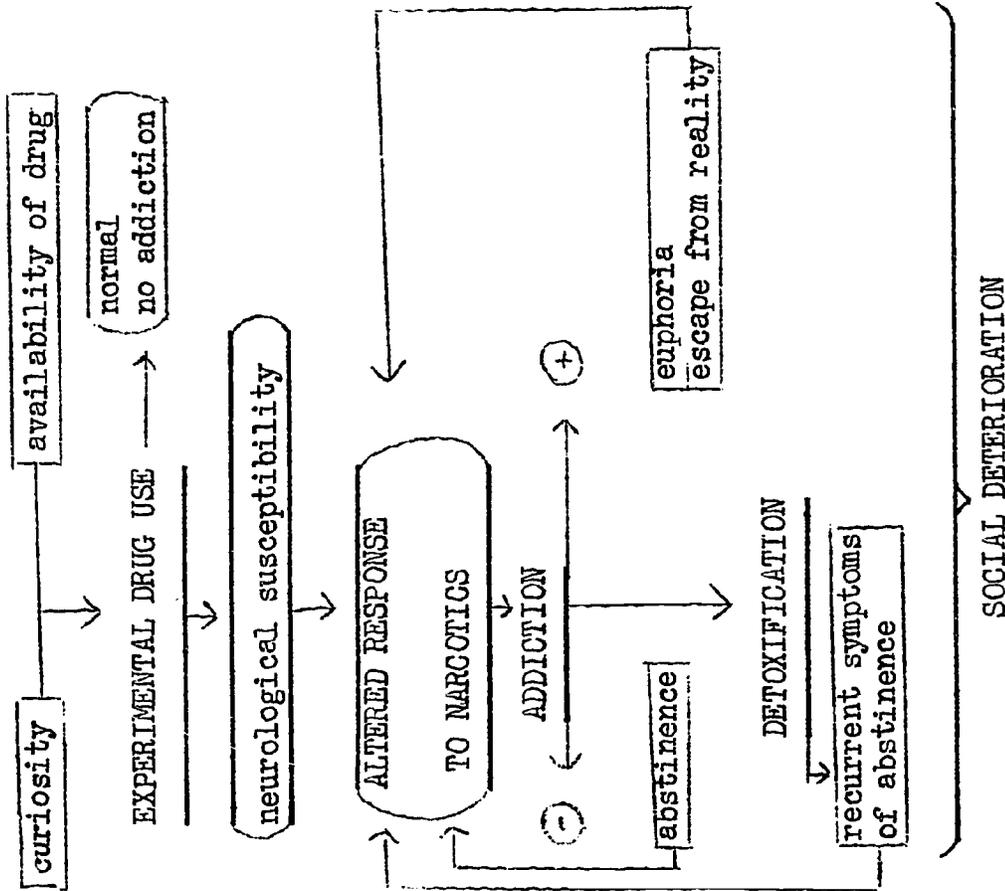
1. Addiction, habituation, dependence
  - a. definition of addiction in terms of withdrawal symptoms
  - b. drug dependence
    - i. recognizes both physiological and psychological aspects
    - ii. type of dependence related to specific drug
2. Important properties
  - a. tolerance and cross-tolerance
  - b. physical dependence
  - c. abstinence syndrome (withdrawal)
3. Theories of addiction
  - a. psychological
  - b. metabolic or physiological

Comparison of Narcotic Analgesics <sup>1/</sup>

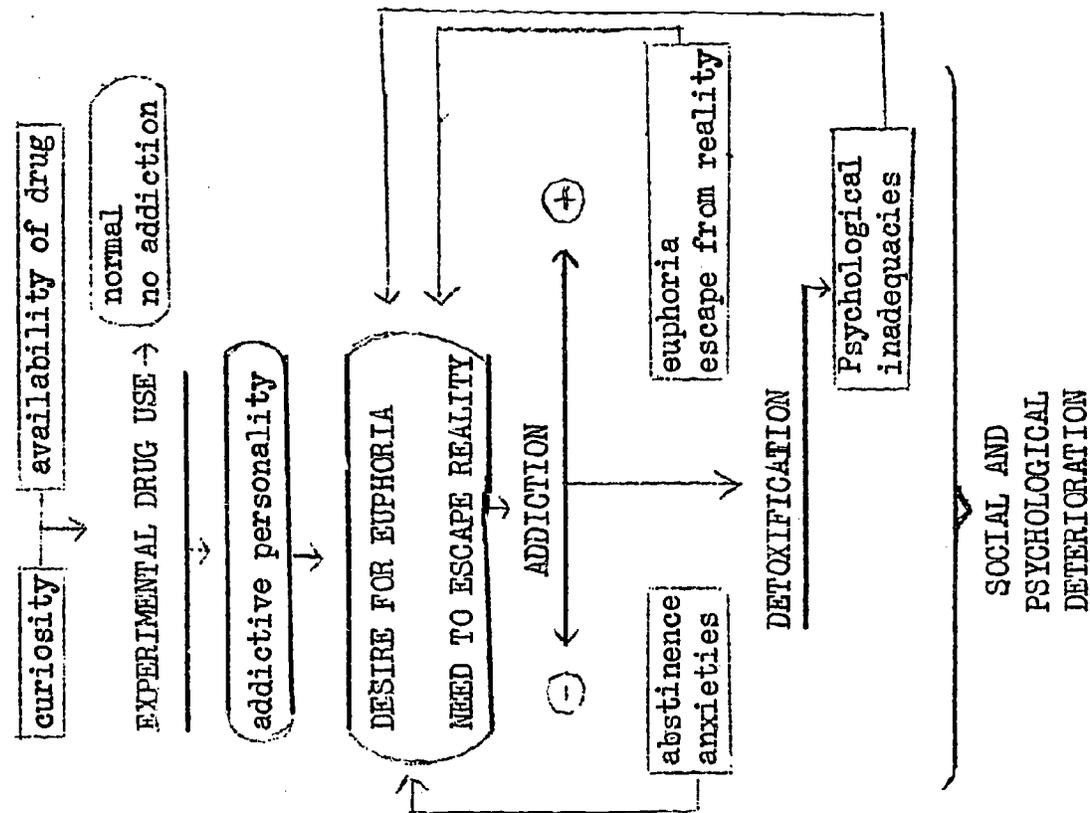
<u>Generic Name</u>	<u>Trade Name</u>	<u>Dose (mg)</u>	<u>Duration (hrs.)</u>
Morphine		10	4 - 5
Heroin (diacetylmorphine)		3 (2-8)	3 - 4
Hydromorphone	Dilaudid	2	3 - 4
Codeine		120 (8-20)	(4 - 6)
Oxycodone	Percodan	10-15 (3-5)	4 - 5 (4 - 5)
Levorphanol	Levo-Dromoran	2-3	4 - 5
Methadone	Dolophine	7.5-10	3 - 5
Meperidine	Demerol	80-100	2 - 4

<sup>1/</sup> Modified from Goodman & Gilman: The Pharmacological Basis of Therapeutics, third edition. Dose shown is the amount given s.c. that produces approximately the same analgesic effect as 10 mg of morphine administered s.c. The figures in parentheses are the doses and duration of action for oral, antitussive doses; they are not necessarily equieffective doses. Duration of action shown is for s.c. administration. After i.v. administration, peak effects are somewhat more pronounced but overall effects are of shorter duration.

METABOLIC THEORY



PSYCHOLOGICAL THEORY



85-120 Psychoactive Drugs  
Outline No. 9

VIII. Barbiturates

A. General characteristics

1. 50 different compounds
2. primary effect on reticular activating system
3. respiratory depression
4. other minor physiological effects

B. Therapeutic uses

1. sedation
2. anticonvulsant
3. narcoanalysis
4. "truth serum"

C. Addiction

1. widespread use
2. types of abuse
  - a. avoid emotional stress - semipermanent stupor
  - b. paradoxical excitation
  - c. counteract stimulant (amphetamine) abuse
  - d. combine with alcohol or narcotic abuse
3. severe withdrawal

Relationship of Dose of Barbiturate to Intensity of Physical Dependence

No. of Patients	Daily Dose (mg.)	No. of Days	No. of Patients having Symptoms		
			Convulsions	Delirium	Other
18	900-2200	32-144	14	12	18
5	800	42-57	1	0	5
18	600	35-57	2	0	9
18	400	90	0	0	1
2	200	365	0	0	0

D. Use of Barbiturates in suicide

IX. Tranquilizers

- A. Chlorpromazine (Thorazine)
- B. Meprobamate (Miltown)
- C. Chlordiazepoxide (Librium)
- D. Diazepam (Valium)

Reading in Lingeman, Drugs from A to Z:

Amytal	pentothal sodium
barbiturates	glutethimide
chloral hydrate	Librium
Dexamyl	major tranquilizer
Drug Abuse Control Amendment - 1965	
Luminal	meprobamate
Nembatal	minor tranquilizer

COMMON BARBITURATE DRUGS\*

<u>GENERIC NAME</u>	<u>Most Common Brand Name</u>	<u>Slang Name</u>	<u>Doseg**</u>	<u>Onset</u>	<u>Duration of Action</u>
Barbital	Veronal		0.3-0.5	Delayed	Long
Phenobarbital	Luminal	Pink Lady	0.1-0.2	Delayed	Long
Amobarbital	Amytal	Blue Angels	0.1-0.2	Intermediate	Intermediate
Pentobarbital Sodium	Nembutal	Yellow Jackets	0.1	Intermediate	Intermediate
Secobarbital Sodium	Seconal	Red Devils	0.1	Quick	Short
Amobarbital Sodium with secobarbital sodium	Tuinal	Christmas Trees	-----	Quick	Long
Hexobarbital Sodium	Euipal		-----	Very rapid	General Anesthetics
Thiopental Sodium	Pentothal		-----	Very rapid	Given I.V.

\* Modified from Fig. 12 in D. W. Maurer & V. H. Vogel: Narcotics and Narcotic Addiction.

\*\* Average oral dose for adult in grams (from Goodman & Gilman).

85-120 Psychoactive Drugs  
Outline No. 10

X. Amphetamines and Other Stimulants

A. Most common amphetamines

1. amphetamine - Benzedrine
2. d-amphetamine - Dexedrine
3. methamphetamine - Methedrine, Desoxyn

B. Effects and Uses

1. arousal and wakefulness
2. performance and fatigue
  - a. physical
  - b. mental (alertness, not intelligence)
3. appetite suppression
4. hyperkinetic children
5. analgesic enhancement

C. Abuse and Addiction

1. euphoria, confidence, excitement
2. tolerance develops slowly
3. amphetamine psychosis
4. speed kills

D. "Hallucinogenic" Amphetamines

1. STP = DOM (2, 5 - dimethoxy - 4 - methyl-amphetamine)
  - a. longer trip, 16 - 24 hr.
  - b. psychological effects like LSD
  - c. more intense physiological effects than LSD
2. MDA - methylendioxy amphetamine

E. Cocaine

1. local anesthetic
2. coca leaves - anti-fatigue
3. rapid metabolism
4. no tolerance
5. subjective effects

F. Xanthines

1. caffeine (strongest), theophylline, theobromine
2. effects on cortex and brain stem
3. use in beverages

Reading in Lingeman, Drugs from A to Z

amphetamines

Dexedrine

Benzedrine

Drug Abuse Control Amendment - 1965

coca

Khat

cocaine

methadrine

Desbutol

STP

Desoxyn

Dexamyl

85-120 Psychoactive Drugs

Outline No. 11

XI. Marihuana.

A. Research history.

1. Mayor LaGuardia's Committee on Marihuana - New York, 1939.  
General conclusion: not addictive, dangers are exaggerated
2. dark ages, 1944 - 1966, very few studies
3. research break throughs
  - a. 1965 - first total chemical synthesis of marihuana's active component
  - b. 1968 - major study of effects of "natural" marihuana on humans.

B. Clinical and Psychological effects of marihuana in man (Weil, Zinberg, & Nelson, Science, 1968).

1. research problems

- a. route - smoking
- b. dose - chemical & human determination
- c. placebo control - male marihuana
- d. set & setting
- e. welfare of Ss; medical & legal

2. results

- a. no adverse reactions to marihuana
- b. all "chronics" got high but only 1 of 9 naive Ss
- c. different subjective reactions
- d. recognition of pot vs. placebo
- e. heart rate increased moderately
- f. no effect on respiration, pupil size, or blood sugar
- g. significant reddening of conjunctivae (eye)
- h. digit-symbol substitution and pursuit rotor tests; performance of naive Ss was impaired; chronic users improved with practice
- i. time estimation - things seemed to take longer
- j. time course of effects; peak intensity after  $\frac{1}{2}$  hr. - lasted for  $\frac{1}{2}$  hr. - gone after 3 hr.

3. Conclusions

- a. it is safe to study effects of marihuana on humans
- b. in a neutral setting, naive Ss do not get much of an effect
- c. chronic users differ from naive Ss in performance and subjective effects

C. Other studies of effects of natural marihuana on humans

1. physiological effects always minor
2. simulated driving performance - little effect

85-120 Psychoactive Drugs

Outline No. 12

XI. Marihuana. (continued)

C. Other studies of effects of natural marihuana on humans (continued)

3. studies of perception
  - a. few visual or auditory tests show any effects
  - b. slight increase in ability to detect vibration
  - c. decreased ability to discriminate loudness of sounds
  - d. time estimation - intervals seem longer
4. speech
  - a. more vivid imagery, emphasis on present, loose associations
  - b. trouble remembering what is being said
5. immediate (or short-term) memory impairment

D. Research with  $(-)\Delta^9$  - trans - tetrahydrocannabinol (THC)

1. Effects on humans
  - a. no effect on pupil size, respiration, blood pressure
  - b. increased pulse rate, reddening of eyes
  - c. low dose - effects like natural marihuana
  - d. high dose - intense reaction
  - e. smoked THC  $2\frac{1}{2}$  - 3 times as potent as oral
  - f. no effect with other components of marihuana
  - g. no cross tolerance for LSD
  - h. physiological effects different from LSD, but subjective effects are similar
  - i. LSD 150 - 160 times as potent as THC in producing subjective effects
2. THC on the street is something else.
3. THC is to marihuana as grain alcohol is to beer.

E. Adverse reactions to marihuana

1. low incidence
2. problems of interpretation
3. relation to benefits

Reading in Lingeman, Drugs from A to Z:

bhang	ghanja
Cannabis indica	haschischins, le club des
Cannabis sativa	hashish
charas	La Guardia Report
dagga	marijuana

## 85-120 Psychoactive Drugs

### Outline No. 13

#### XII. LSD - Lysergic acid diethylamide

##### A. Physiological effects.

1. almost entirely on central nervous system
2. concentration in brain highest in pituitary and pineal glands and in limbic system
3. brain waves (EEG) indicate alerting and arousal
4. effect on visual system
  - a. action on retina and optic tract
  - b. not on visual center in neocortex
5. autonomic nervous system - sympathetic dominance

##### B. Pharmacological characteristics.

1. serotonin antagonism
2. potency
  - a. one of most potent drugs known 25 mcg. effective in man.
  - b. much more potent in man than animals
3. half life in man - 175 min.
4. rapid tolerance
5. low toxicity

##### C. Psychological effects

1. perception
  - a. laboratory tests show impairment
  - b. subjective effects show enhancement
2. creativity - probably no direct effect
3. peak experience

##### D. Possible Therapeutic Uses

1. Alcoholism
2. Infantile autism
3. Terminal cancer

##### E. Chromosome damage and birth defects - not proven

1. Human experiments
  - a. 3 exp. say yes
  - b. 3 exp. say no
  - c. 2 say chlorpromazine and aspirin break as many chromosomes as LSD
2. Animal exps.

XII. LSD - Lysergic acid diethylamide (continued)

E. Chromosome damage and birth defects - not proven (continued)

3. Criticisms of these experiments.

- a. lack of dose-effect relationship
- b. blood cells vs. reproductive cells
- c. large individual differences
- d. predicting human birth defects from animal studies
- e. LSD vs. aspirin
- f. reliability of experiments

F. Adverse Psychological reactions

1. Prolonged psychosis
2. Spontaneous recurrence
3. Prolonged panic and depression
4. Suicide
5. Homicide - questionable
6. General problems of interpretation
  - a. quality of acid
  - b. size of dose
  - c. incidence

Reading: Lingeman, Drugs from A to Z p. 128 - 138

Gamage & Zerkin, Hallucinogenic Drug Research p. 1 - 39

## EMERGENCY PROCEDURE FOR BAD TRIPS

1. Ask the patient's friends not to leave the area.
2. Assess the status of the patient (violent, suicidal, comatose, etc.) and determine the cause of the crisis from the patient or friends or both. Rule out other causes such as trauma, epilepsy, alcoholism, etc.
3. Reassure the patient and attempt to reduce panic.
  - a. Angry moral judgments should not be made, since they reinforce the patient's mistrust.
  - b. Friends of the patient should remain with the patient to minimize disorientation and reassure the patient.
4. Do not attempt to empty the stomach routinely. It is seldom of value and is a threatening procedure which may induce or prolong a psychosis. If there are indications that massive amounts of the drug have been ingested, as in suicide attempts, lavage is indicated, and must be done at a hospital.
5. The patient undergoing an anxiety or panic attack is best treated with reassurance and talking down. The presence of friends, a quiet room with subdued lighting, lack of extraneous stimuli, avoidance of rapid movements, and comforting physical contact with the patient are of extreme importance. Such statements as "it's only a bad trip (or bummer) don't worry" or "it's only a drug you're on and this will end soon" are beneficial. In some cases the patient will improve following a discussion about his experience. In other cases, patients may improve following a discussion unrelated to his trip; changing the topic to music or other peaceful topics is often a very successful technique. This phase of treatment may take hours, but if successful is the best treatment. The reassurance provided by an avenue of communication may abort a spiraling anxiety reaction more effectively than drug therapy. The best treatment for a bad trip is to convert it into a good trip without chemical (drug) intervention. It should be kept in mind that many of the psychedelic drugs are found in mixtures, and many drugs are sold as other drugs (such as strychnine and amphetamines being sold as LSD; or LSD and amphetamines being sold as mescaline). Consequently, the patient or friends can rarely be certain which drugs have been ingested. For this reason, one should never attempt to treat a bad trip with other drugs without the aid of a physician. Complications of self-treatment with other drugs can be more dangerous than the bad trip itself, and may even be life-threatening. These include:
  - a. Increased incidence of subsequent flashbacks (recurrences);
  - b. Creation of a more confusing picture, which is harder for the physician to diagnose and treat;
  - c. Paradoxical responses, in which the treatment may make the trip worse rather than better;
  - d. Interference with normal breathing patterns; and
  - e. Idiosyncratic combinations of drugs which can cause shock and even death.
6. The patient who does not respond well to the above treatment and who appears psychotic or uncontrollable should be taken to appropriate medical facilities for further treatment.

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Part II

Psychoactive Drugs 85-120

Outline No. 14

I. Introduction

A. An historical perspective of drug use

1. First recorded usages: beer (6400 BB) and wine (2000 BC) in Mesopotamia and Egypt; Opium (7th Century B.C.) in Assyria.
2. Age per se does not indicate value.
3. Ignorance due to lack of evaluation of effects
  - a. Early attempts at evaluation
  - b. Doctrine of signatures
4. Adoption process requires: availability, awareness, ingestion, identification (for repeated use).
5. Historical motivational reasons for use.
6. The limitations of motivational causation
7. Multiplication of motives after use begins
8. Drug "problems" are socially defined
  - a. Historically "abuse" label does not require demonstration of ill effects
  - b. There are also governmental reactions to drug effects per se.

B. The Cross-Cultural Perspective on Use

1. Incidence of drugs reported as used in 92 contemporarily observed hunting and gathering societies

<u>Drug</u>	<u>No. of Societies with reported use</u>
Alcohol	52
Tobacco	57
Stimulants	15
Hallucinogens	40
Opium	3
Cannabis	7
Coca-Cocaine	1

## I. Introduction (continued)

## B. The Cross-Cultural Perspective on Use (continued)

## 2. Setting and intentions for psychoactive drug use in 144 contemporary hunting and gathering cultures

SETTING-INTENT All Psychoactive Drugs	Number of Societies (N = 144)
Social	49
Social/mind-modifying/escape	3
Social/religious-magical	21
Mind-modifying	7
Social/mind-modifying	16
Mind-modifying/religious-magical	10
Escape only	0
Escape/social	1
Escape/mind-modifying	1
Religious-magical	6
Social/mind-modifying/escape/religious-magical	4
Social/mind-modifying/religious-magical	26

## 3. Perceptions of abuse in nonliterate societies

- a. By indigenous informants is limited to association with an insecure food supply.
  - b. By outside observers is associated with: environmental harshness, class stratification based on wealth and/or occupational status, military glory and bellicosity.
4. Extensive own-nation perceived drug abuse, excluding alcohol, is essentially a problem of the underdeveloped non-western countries
5. World view of drug use and abuse (by Dr. Joel Fort)
- a. "Abuse" is use to extent that is damaging to a person's social or vocational adjustment, or to his health, or is otherwise detrimental to society.
  - b. Asia
    - (1) Major drugs used: alcohol, cannabis, opium, heroin, indigenous substances, manufactured sedatives and stimulants.
    - (2) Abuse: Narcotics in Hong Kong, Iran, Thailand, Japan, Singapore and South Korea.  
Alcohol in Ceylon, Japan and India
  - c. Africa
    - (1) Major drugs used: Cannabis and alcohol
    - (2) Alcoholism growing especially in large cities
  - d. Australia and New Zealand - 3% of population is alcoholic

## I. Introduction (continued)

## B. The Cross-Cultural Perspective on Use (continued)

## 5. World view of drug use and abuse (by Dr. Joel Fort) (continued)

- e. Central and south America and Carribean
  - (1) Drugs in wide use: coca, cannabis, indigenous hallucinogens
  - (2) Abuse recognized for: sedatives and stimulants in cities, alcohol.
- f. Europe - Most used and abused drug throughout is alcohol.
  - (1) France - 10% population is alcoholic; Alcoholism significant also in Russia, Switzerland, Finland, Norway, Denmark, Sweden, Netherlands and West Germany.
  - (2) Considerable use and abuse of manufactured sedatives, stimulants and tranquilizers in large cities, particularly among young people.
  - (3) Marijuana use in Denmark, Sweden, England
  - (4) LSD in West Germany and England  
Both marijuana and LSD sought out by intellectual, artistic, nonconformist and alienated groups of relatively affluent origins.
- g. North America
  - (1) Alcohol widely used. 3% of U.S. and Canadian populations alcoholic [6 million in U.S.].
  - (2) Narcotic addiction: 100 to 150,000 (?) in U.S. -- half in New York City.
  - (3) Sedatives, stimulants and tranquilizers extensively used and abused.
  - (4) Marijuana use extensive, growing, mostly middle class.
  - (5) Hallucinogens - middle class; Native American Church
  - (6) Volatile inhalents - among small numbers of teenagers.

## 85-120 Psychoactive Drugs

### Outline No. 15

## II. U.S. Drug Use Distributions

### A. General Adult Use

#### 1. Prescriptions for psychoactive drugs

- (a) Were 178 million - 17% of all prescriptions written in U.S. in 1967.
- (b) Renewed at twice rate of others
- (c) Three-fourths are written by general practitioners, internists and surgeons, and about 5% by psychiatrists.
- (d) Concern over use of amphetamines, barbiturates lead to Drug Abuse Control Amendment of 1965 [See Lingeman's dictionary].

#### 2. Survey by Family Research Center on use of "psychotherapeutic" drugs by adults in San Francisco

- (a) Ever using Rx type: women 49%, men 34%.
- (b) More men have used "over the counter" (OTC) drugs.
- (c) 60% of women and 50% of men have used some psychotherapeutic drug.
- (d) Use in previous year: women 45%, men 33%.
- (e) More use of Rx drugs by women because:
  - (1) they visit physicians more often, (2) they use the alternative of drinking less than men do.
- (f) Use of various drugs in previous year:

Drug Type	Drug Class	Women %	Men %
Rx	Stimulants	13	8
	Minor Tranquilizers	13	7
	Hypnotic (Nembutal etc.)	10	7
	Sedative (Phenobarbital)	9	4
	Major Tranquilizer	3	3
	Antidepressant (Ritalin, etc.)	1	2
OTC	Stimulant (No-Doz)	5	7
	Sleeping Pill (Somnex, Sleep-Eze)	6	7
	Tranquilizer (Compoz)	4	3
None		55	67

(Note: Some persons used drugs from more than one class).

II. U.S. Drug Use Distributions - Continued

A. General Adult Use - Continued

2. Survey by Family Research Center on Use of "psychotherapeutic" drugs by adults in San Francisco - Continued

(g) Type and source for drugs used during past year.

Type	Drug Source	% Using in Past Year		
		Women	Men	All
Rx	Medical	32	16	25
Rx	Non-medical	7	8	7
OTC	Any	13	14	14

- (1) Men more likely to use nonmedical sources.
- (2) Nonmedical sources for Rx drugs is usually a "friend".
- (3) Age relationships:
  - Young (18-29) are more likely to have used any drug
  - Rx drugs from medical sources rises until 45-59 age group; then drops off
  - Stimulants are drug of choice for both sexes, 18-29.
  - Older people (over 30) more likely to use sleep inducing drugs.
  - Minor tranquilizers, sedatives, hypnotics most used by those 45-59.
  - Hypnotics most used in 60 and over group

(h) Reasons given for use.

Sex	Drug Type	Source	Weight	% using past year for:			
				Somatic	Relax	Sleep	Stimulation
Women	Rx	Medical	89	87	73	55	49
	Rx	Non-medical	14	12	16	12	14
	OTC	Any	--	1	13	35	39
Men	Rx	Medical	<1	<1	68	46	18
	Rx	Non-medical	<1	<1	14	11	36
	OTC	Any	--	--	21	47	51

- (i) Variety and regularity of use.
  - Rx-med drug users tend to use 1-3 drugs regularly (daily for a month or more).
  - Rx-nonmed drug users tend to use more than 3 drugs, but none regularly.
  - OTC users tend to be low on variety and regularity

II. U.S. Drug Use Distributions - Continued

B. Correlates of adult use

1. Income over 10,000 have higher use rates, but not if well-educated.
2. Male managers highest occupational rate
3. Negro rates lower than average.
4. Jewish rates higher than average
5. Sex differences
  - (a) White females use more than white men
  - (b) None among Negroes.
6. Relationship to escape drinking is inverse.
7. Economic mobility
  - (a) upward men have low sedative and high stimulant use.
  - (b) Downward women - high use of sedatives
  - (c) upward women - like upward men

C. Marijuana and LSD Use Among Urban Adults

1. By sex and age:

	<u>POT</u>	18 - 24 years only	<u>LSD</u> (all under 30)
Men	18%	50	Men and women combined 3%
Women	9%	33	

2. Use of alcohol and pot occurred together
3. Majority of pot users were "reasonably conventional"
4. Use was associated with:
  - Anti-establishment point of view
  - Lack of religious affiliation
  - Use of Rx drugs from non-medical sources

D. Drug use by Students

1. Measurement difficulty and interpretation
2. Nationwide Gallup Polls:

<u>Date</u>	<u>% Pot</u>	<u>% LSD</u>	<u>% Amphetamines</u>	<u>Method</u>
May 1969	22	4	not asked	interview
Dec. 1969	32	8	13.5	Questionnaire

3. Highest measured usages in college students.
  - Pot: 1968 questionnaire of Wesleyan University class of 1969, infrequent users 36%, frequent users 23%.
  - LSD: Dec. 1969 Gallup Poll above.  
Wesleyan, 1967 questionnaire 7%.
  - Amphetamines: 1964 questionnaire of a medical school in the Northwest, 27%.

-- Heroin: SUNY at Buffalo, 1967 questionnaire, .6%; CMU 1968, .5%

4. Highest measured usages in high school students.

-- Pot: 1969 questionnaire, San Mateo County, California

	<u>Men</u>	<u>Women</u>
1 - 2 Times	8.4	7.6
3 - 9	7.0	7.0
10 or more	26.8	21.1

-- LSD: 1969, San Mateo

	<u>Men</u>	<u>Women</u>
1 - 2 Times	5.4	4.3
3 - 9	4.2	3.6
10 or more	7.4	4.1

-- Amphetamines: 1969, San Mateo

	<u>Men</u>	<u>Women</u>
1 - 2 Times	7.1	7.7
3 - 9	4.7	5.0
10 or more	8.0	7.7

-- Heroin: 1967, Juniors and Seniors in Castro Valley, Calif.

Men 4.7%, women 3.4%

-- Glue, etc.: 1967, Juniors and Seniors, Castro Valley, Calif.

Men 10%, women 3.8%

5. Usages in other population groups (Highest measured percentages)

<u>Date</u>	<u>Group</u>	<u>Method</u>	<u>Pot</u>	<u>LSD</u>
1970	Boston Corp. Employees	Quest.	26	7.0
1969	Nationwide, adults	Interview		
		age 21-29	12.0	
		30-49	3.0	
		over 50	1.0	
		Men	6.0	
		Women	2.0	
		College Ed.	9.0	
		High school	3.0	
		Grade school	1.0	
		East	5.0	
		Midwest	2.0	
		South	2.0	
		West	9.0	

<u>Date</u>	<u>Group</u>	<u>Method</u>	<u>Pot</u>	<u>LSD</u>	<u>Amph.</u>	<u>Heroin</u>
1967	E. Village (NYC) Hippies (College Ed.)	Interview				
		Men				
		Ever use	100	97	52	13
		Use now	97	58	29	--
		Women				
		Ever use	100	80	70	20
		Use now	100	65	35	5
1969	Utah high school dropouts	Quest.				
		Men	58	45	41	28
		Women	36	21	16	16
1965-6	Negro Men, St. Louis Normal I.Q.	Interview	47		17	13
1967	U.S. Enlisted men in Vietnam	Questionnaire				
		Ever used	31.7			
		Used in Vietnam	28.9			

Psychoactive Drugs 85-120

Lecture Outline No. 16

III. Causation of Drug Use

A. Varieties of Explanations and what they tell us

B. Simple and Sovereign Theories of Drug Use

1. Moral decay
2. Criminals
3. Publicity
4. Conspiracy (left and right)
5. Personalistic

C. Value-Added Theory

1. Definition
2. Historical variables
3. Societal variables
4. Individualistic variables

D. Ether in Ireland: A case study in multiple causation

1. Identification of relevant variables
2. An added twist: collective behavior or personality explanations?

Psychoactive Drugs 85-120

Lecture Outline No. 17

IV. Characteristics of Drug Users of Various Types (Carnegie-Mellon Survey)

A. Demographic

Variables	Straight Students	Drinker	Heavy Up	Heavy Down	Marijuana Taster	Marijuana User
Sex		Males	Females	Females		Females
Year	Freshmen	2nd yr. & older grad. students	Sophs.	Seniors	Juniors	Juniors
Majors*	N.A.	Grads. in E & S	Fine Arts; H&SS	Fine Arts; H & SS		
Grades	N.A.	Above average	Below average	Below average	above average	average
Housing at college	home or dorm		Rent	Rent	Rent or Frat.	Rent
Religion reared	Protestant	Catholic	Jewish			Jewish
Present Religion	Protestant	Catholic Protestant	None Other	None	None Other	None Jewish
Relig. Attendance	Regular	Regular	Not at all	Not at all	Not at all	Not at all Infrequent
Parent's Education	Mother High school grad.	Mother high school grad	Father: some college or post grad Mother: some college	Father: post grad.	Father: College grad Mother: post grad.	Father: College grad or post grad Mother: college grad.
Family income (thousands of dollars)	10 - 15 5 - 10		over 25	over 25	10 - 15 15 - 25	over 25
Type home-town	Small town suburb	Ave. size town	Suburb large city	Large City	City	Suburb
Participation in activities	Fewer say none or seldom on or off campus		Occasional on campus; frequent off campus	None on campus; frequent off campus	Seldom on campus	Seldom on campus
Frat. or Sorority	No	Yes	No			Yes

\* E & S = Engineering and Science; H & SS = Humanities and Social Sciences

18.

as "illegal drugs" in this report. All drugs inquired about have some legal controls over them, but the exceptions listed are widely available without medical prescription to persons of specified ages. Following the discussion of types of users, the report will deal with selected characteristics of users across drugs, e.g., intended future use of various drugs.

It may be noted from an inspection of our questionnaire that many possible analyses of our data are not presented here. The authors intend a second phase of this investigation which is designed to delineate some of the more subtle relationships in the data. In this report emphasis will be placed upon who uses what substances in what ways for what reasons and with what attitudes.

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### User Type Definitions

The following definitions of user types are listed in the order in which the results for each type will be presented. The number of students and the per cent of the total sample that met each definition are given in Table 8 which follows this listing.

Straight Student - no use of any of the substances listed on the questionnaire (which included beer, No-Doze and tobacco). In addition, a category of "principled" non-users was defined as students who said they did not intend to use any of the substances in the future.

Drinker - use of beer or liquor more than ten times but no use of any other drug except tobacco and Do-Doze. Since only one freshman met this criterion, all drinkers discussed are upperclassmen or graduate students.

Heavy Up Users - use more than ten times of at least one of the following drugs: amphetamines, hallucinogens, cocaine.

Heavy Down Users - use more than ten times of at least one of the following drugs: barbiturates, tranquilizers, heroin, morphine, opium.

For the up and down categories use of marihuana, beer, liquor, No-Doze and tobacco were considered irrelevant, since heavy users of strong drugs tend to be

heavy users of all drugs. Again, very few freshmen met these definitions (18 - up; 15 - down) and so only the results for upperclassmen and graduate students will be presented.

Marihuana Taster - a one-time user who has not used any other illegal drug.

Marihuana user - has used marihuana between two and ten times but has used no other illegal drugs.

An attempt was made to create a marihuana "head" category involving use more than ten times and use of no other illegal drugs more than once, however, there were almost no individuals in our sample who fit this definition. Virtually all heavy marihuana users had used other illegal drugs more than once.

Table 8

Number of Students and Per Cent of Total Freshman  
and Upperclass Samples Included in Each User Type

User Type	Freshman (N=802)		Upperclassmen & Graduate Students (N=2208)	
	N	%	N	%
Straight	114	14.2	75	3.4
Drinker	---	---	424	19.1
Heavy Up	---	---	112	5.1
Heavy Down	---	---	98	4.4
Marihuana Taster	26	3.2	72	3.2
Marihuana User	26	3.2	108	4.9

For ease of comparison of user types, per cent responses of all user types and of the total sample are presented together in Table 9 for demographic variables and in Table 10 for opinion questions. Those tables should be referred to for detailed presentation of the results discussed in the following sections. Some of the data discussed under each user type was taken from the matrix on page three of the questionnaire and are not included in Tables 9 and 10. In those cases, percentages will be given in the text or in smaller tables.

B. Drug-Related Opinions, and Political Attitudes

Item	Fresh Others	Non- Users	Prin. Non-U.	Heavy Users		Freshman Pot Taster	Non-Fresh Pot Taster	User			
				Up	Down						
Polit. Attit. Mean rating	3.2	3.3	3.9	4.1	3.5	2.5	3.0	2.9	1.9	3.1	2.7
"My position not represented"	9%	9	12	12	7	20	10	8	8	7	14
"No interest in politics"	10%	9	14	10	6	6	7	12	4	8	6
"Pot lead to crime?" Yes	30%	17	35	43	18	5	15	20	12	6	3
No	36%	46	27	16	34	80	59	52	88	62	81
Don't know	30%	33	44	41	45	13	20	28	0	31	14
Pa. Pot Law?		6	16	16	7	1	7	0	4	0	0
Too Llenient	7%	25	50	59	29	6	12	23	0	1	6
About Right	39%	64	29	20	58	90	74	77	96	95	93
Too Severe	50										
"What % CMU ever used pot?"	--	--	23	18	--	49	47	43	41	43	45
"Pot create need for: LSD?"	4%	3	3	4	2	1	4	8	8	4	5
Heroin?	24%	11	25	18	9	6	10	4	8	6	11
Neither?	36	49	23	24	40	79	56	62	73	56	68
Don't know	28%	32	41	49	43	12	22	27	12	32	15
Both	5%	2	3	4	3	0	2	0	0	0	1

Definitions: Population categories: Frosh=entire freshman class, 9/68; all others=all upperclassmen + all graduate students (full time); Non-users=use no substance listed; Prin. Non-U.=principled non-users: have used none and say intend to not use in future; Drinkers=upperclass + grads who use significant amounts of liquor; but no illegal drugs; Heavy Users/Up=heavy users of stimulants and/or hallucinogens; Heavy users/Down=heavy users of sedatives and/or opiates; Pot Taster=only one time user with no other illegal drug use; Pot User=user 2-10 times of pot but no more than one usage of another illegal drug.

Items: Attit. ratings=scale with 1 as very liberal and 7 as very conservative; "My position cannot be represented" on the above scale; "No interest in politics"="I am not particularly interested in politics"; "Pot lead to crime?"="Does the regular use of marijuana increase the likelihood of criminal activity (other than the fact that marijuana is itself illegal)?" "Is Pa. pot possession law.;" "What % of all students at CMU do you think have used pot at least once?" "Need"= bodily.

The following is taken from: Joel W. Goldstein, James H. Korn, Walter H. Abel and Robert M. Morgan, The Social Psychology and Epidemiology of Student Drug Usage: Report on Phase One. Department of Psychology, Carnegie-Mellon University, Pittsburgh, Pa. Final Report for NIMH Grant No. MH-15805, June 1970.

### Summary and Conclusions

A survey of the entire student body of Carnegie-Mellon University was carried out in the fall of 1968. The questionnaire was anonymous and included demographic and background information, 13 questions on various aspects of the use of 17 drugs and other substances, and several opinion questions. Upperclass and graduate students received the questionnaire by mail. Freshmen were tested en masse and also completed the California Psychological Inventory (CPI) and Allport-Vernon-Lindzey Study of Values (AVL). In addition, all freshmen were sent a follow-up questionnaire (similar in format to the one in the fall, but shorter) in May of 1969.

A total of 3010 usable questionnaires were returned in the fall survey, or 67.6% of the students who could be reached. Analysis of the non-respondents indicated that they were most likely to be male Fine Arts students or graduate students in Engineering and Science. Six types of drug users were defined and results were presented for each of the six types:

Straight Students (N = 189) had never used any of the drugs about which they were asked. They were more religious, more conservative politically, and took a stronger view against drugs than did students in general. They also knew less about drugs than did other students.

Drinkers (N = 424) regularly used beer and liquor, but no other drugs except perhaps tobacco or No-Doze. This group did not differ greatly from students in general, except that they tended to be older and to be Catholic. Most drinkers started using alcohol before entering college and used liquor in order to "get high" or "feel good." Over half did not think that liquor is physiologically addictive.

Heavy Up (N = 112) and Down (N = 98) Users, used some stimulant or depressant drug ten times or more. Generally, the drugs used were amphetamines for heavy up

users and tranquilizers for heavy down users. Heavy users of stimulant drugs looked much more like the stereotype of the drug "head" than did heavy users of depressant drugs. The former tended to be fine arts or humanities students who lived in rented apartments and came from higher socio-economic levels than did students in general. They were less religious, more liberal, and had strong positive opinions about marihuana. There was also more heavy marihuana use by up users than by down users. Females tended to be over-represented among heavy down users. Experience with amphetamines and with tranquilizers was generally reported as being positive and beneficial.

Marihuana Tasters (N = 98) and Users (N = 134). A taster had used marihuana only once and a user two to ten times and both had used no other illegal drugs. Both tasters and users were more likely to be fine arts or humanities majors who lived in apartments. Jewish students and those indicating no religion were more likely to use marihuana than were other students. Marihuana use was also related to higher levels of parental education and income, living in the suburbs, and liberal political attitudes. Most tasters and users felt that marihuana was not addictive, did not lead to use of LSD or heroin or to criminal activity, and they overestimated the amount of marihuana use on the campus. Most intended to use marihuana again, but not to use LSD or heroin. Typically, they were introduced to the drug by a close friend of the same sex and usually had used it either in a friend's apartment or their own with only 1 or 2 others present. The most frequently mentioned reasons for using marihuana were to "get high, feel good," "curiosity," and to "explore inner self." Most students found the drug a beneficial and not a harmful experience or reported no particular effects, good or bad.

Several comparisons were made across user types. It was shown that if a student used a particular drug he was more likely to have friends who also used it and few friends who disapproved of its use.

Students gave primary and secondary reasons for stopping, decreasing or never using drugs. The most common reason given was "no desire to experience its effects;" among the least frequent reasons was urging from parents and friends. Heavy up users gave "unsatisfactory personal experience" as their most frequent reason and this was also mentioned by some marihuana tasters and users. Reports of harmful psychological effects was more often mentioned for LSD than for any other drug and reports of harmful medical effects for tobacco. Asked whether several substances were physiologically addictive, it appeared that, among user types, many students do not have a very accurate view of the addictive properties of several important and widely used drugs.

Data on the total sample were presented for the question on extent of use (number of times used) and intent of use (likelihood of future use) of all substances. Most commonly used substances were beer, liquor and tobacco; most rarely used were narcotics and hallucinogens. Use of amphetamines, marihuana and tranquilizers was frequent but not common. Amount of intended future use was about the same as previous use, except for a large decrease in intent to use tobacco. It was emphasized that figures on extent of drug use are tenuous, primarily due to changes in the drug "scene" over time, and that the question of extent is less important than questions of motivation for, and effects of, drug use.

Analysis of the freshman follow-up survey (rate of return 60.6%) showed increased use of several drugs. The 10% increase in marihuana use was consistent with the national trend at that time. The only substance for which there was decreased use was tobacco (-10%).

An analysis of CPI and AVL data for freshmen was presented which found significant relationships between usage of several substances and personality characteristics of the users.

Finally, an analysis was made of the written notes returned with some questionnaires. These notes gave some idea of the qualitative experiences of users.

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Outline No. 18

V. Psychological processes in the causes and effects of use

(Students should review the lecture accompanying Outline No. 3)

A. Approval and Avoidance Forces

1. Brehm and Back: A general disposition to use drugs
  - (a) Desire to change unsatisfactory self
  - (b) Absence of restraints
2. Dollard and Miller: The conflict model
  - (a) The Nature of Conflict
  - (b) The role of alcohol, barbiturates and lobotomy
    - (1) In animal experiments
    - (2) Cross-cultural perspective
  - (c) Drugs as therapy: A learning theory explanation
    - (1) Use by psychotherapists
    - (2) Use by Everyman

B. Cognition and Drug Use.

1. The labeling of effects: Schachter and Singer
2. Learning to get high: Becker
3. Accomodating our thoughts to what we do, and vice versa
  - (a) Cognitive dissonance and its reduction
  - (b) behavior change leads to attitude change.

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Lecture Outline No. 19

VI. Personality Variables and Usage Explanations

- A. The concept of personality defined
- B. Do personality variables exist? The usefulness test
- C. Data from personality studies
  - 1. Disenchantment
  - 2. Immediate rather than deferred gratification
  - 3. Powerlessness; pessimistic about own future
  - 4. Narcissistic
  - 5. Impulsive; flexible
  - 6. Nonconforming & hostile to conventions; amoral
  - 7. Intuition preferred to sensing; feeling preferred over thinking
  - 8. Hypnotic susceptibility
  - 9. bright
  - 10. anxious and insecure; disorganized under stress
  - 11. skillful in self-presentation
- D. A paradox: the most disturbed seek those drugs they are least able to handle adequately.
- E. Values - General types
  - High: aesthetic; (social)
  - Low: economic, political, religious
  - No relationship with theoretical
- F. Values - Political and Social

VII. Interpretations of Personality Data

- A. The pitfall of ideological bias
- B. Use seen as a coping process
  - 1. Historically
  - 2. Current personality findings
  - 3. Other coping mechanisms being used
- C. Coping with what?
  - 1. Adolescence in America
    - a. confused status
    - b. identity formation problems
  - 2. Psychic numbing
  - 3. Value changes produced by technological change

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Lecture Outline No. 20

VIII. Responses to Drug Use -- Marihuana

- A. By Users
  - 1. Positive and Neutral experiences
  - 2. Negative experiences
  
- B. Law Enforcement
  - 1. Costs of the laws
  - 2. Alternative Control Strategies (Kaplan, 1970)
    - a. Sugar Candy -- free availability with only quality, purity, etc. controls
      - (1) Advantages
      - (2) Disadvantages
    - b. Vice Model -- Selling is a crime but user is completely free of criminal punishment.
      - (1) Details
      - (2) Advantages
      - (3) Disadvantages
    - c. Medical Model -- Available on prescription
      - (1) Advantages
      - (2) Disadvantages
    - d. Licensing Model -- State controls quality, potency, taxation, conditions of sale.
      - (1) Details
      - (2) Advantages
      - (3) Disadvantages
  
- C. Educational Strategies
  - 1. General Public
    - a. Governmental
    - b. Private groups
  - 2. Schools
    - a. College
    - b. Secondary
    - c. Primary
  
- D. Therapeutic Strategies
  - 1. Lack of consensus
  - 2. Medical Model
    - a. Detoxification
    - b. Methadone maintenance
    - c. Lomotil
    - d. Hospitalization
  - 3. Resocialization
    - a. Walk-in Centers
    - b. Intensive communities
  - 4. Crisis Intervention
    - a. Hot lines
    - b. Free clinics
    - c. Counseling Centers

Summary of Drug Schedules and Penalties for Violation  
Comprehensive Drug Abuse Prevention & Control Act of 1970

Schedule	Potential for abuse	Medical Use?	Production Controlled?	Examples	Maximum Penalties for Manufacturing Distribution	Maximum Penalties for Illegal Possession
I	High	None	Yes	Heroin, Marijuana, THC, LSD, Mescaline; Generally, opiates, opium derivatives and hallucinogenic substances	Narcotics - 1st offense 15 yrs/\$15,000/3 yrs 2nd & more offenses 30 yrs/\$50,000/6 yrs	1st offense - 1 yr/\$5,000 2nd offense 2 yrs/\$10,000
		Yes	Yes	Morphine, Cocaine, Methadone Injectable methamphetamine	NonNarcotics - 1st offense 5 yrs/\$15,000/2 yrs 2nd offense 10 yrs/\$30,000/4 yrs	For first offense probation may be given.
III	Same, less than drugs in I & II	Yes	No	Amphetamine and other stimulants; Barbituates and other depressants. Some narcotic preparations	1st offense 5 yrs/\$15,000/2 yrs 2nd offense 10 yrs/\$30,000/4 yrs	
IV	Low, less than drugs in III	Yes	No	Barbital, chloral hydrate, meprobamate, Phenobarbital	1st offense 3 yrs/\$10,000/1 yr 2nd offense 6 yrs/\$20,000/2 yrs	
V	Low, less than drugs in IV	Yes	No	Compounds, mixtures and preparations with very low amounts of narcotics, stimulants or depressants. Dilute codeine and opium compounds.	1st offense 1 yr/\$5,000/none 2nd offense 2 yrs/\$10,000/none	



85-120 Psychoactive Drugs

Evaluation - May, 1971

Name (please print clearly): \_\_\_\_\_

Major: \_\_\_\_\_ Class: Fr. " So. Jr. Sr.

This evaluation has several purposes which your instructors feel are quite important. First, we want to know whether you thought the course was successful, especially in terms of how much you learned. Second, we want to obtain information which will help us improve the course the next time we teach it. Third, the evaluation is an attempt to go beyond the usual student rating form to determine the effectiveness of a course.

The success and usefulness of this evaluation are determined by the care and attention you give to your responses. Try to give careful thought to each question and answer it as accurately as you can.

There are three parts to this evaluation:

- Part I consists of two student rating forms used in all courses by the Psychology Department. There is one form for each of the instructors in this course. (Not included here).
- Part II consists of a general evaluation of various aspects of the course and its effects, and also evaluates your attitudes towards drugs.
- Part III consists of a number of items intended to find out what you remember from the first part of this course.

You will note that we ask you to print your name on the evaluation. This is not an anonymous evaluation because we want to relate your responses to your previous performance in this course. We promise not to look at the evaluations until after grades have been turned in and we promise to destroy the original questionnaires after the data have been recorded on IBM cards.

Once again, please answer the questions carefully. We appreciate your help.

Part II

1. One major objective of this course was to increase your knowledge about drugs and drug users. Use the scales provided to indicate the extent to which your knowledge increased in each of the following areas. (Circle your answer)

	no change	some increase	large increase
A. general pharmacological aspects of drugs	1	2	3
B. physiological and psychological effects of the most important psychoactive drugs	1	2	3
C. social and cultural aspects of drugs	1	2	3
D. familiarity with laws covering psychoactive drugs	1	2	3
E. motives for using drugs	1	2	3
F. understanding the concept of addiction	1	2	3
G. awareness of similarity between drug states and other psychological states	1	2	3

2. The purpose of the library search exercise was to increase your ability to find information about drugs. To what extent was this objective achieved for you? (Check one)

- \_\_\_\_\_ no change in my ability to find information  
 \_\_\_\_\_ some increase in my ability to find information  
 \_\_\_\_\_ large increase in my ability to find information

Do you have any comments on this exercise and how it could be improved?

3. If you wanted to obtain information (facts) about a specific drug or if you had a question about drugs in general, where would you go to find an answer? List no more than ten sources of information (books, places, etc.)

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.
- 7.
- 8.
- 9.
- 10.

Part II - continued

4. If you had to go to someone for advice about personal drug use, who, among the following, would you be most likely to see?

Place the number 1 before the name of that person. Who would be your next source of advice? Place a number 2 before the name of that person.

- |  |   |
|--|---|
| <input type="checkbox"/> father                    | <input type="checkbox"/> minister, rabbi, or priest       |
| <input type="checkbox"/> mother                    | <input type="checkbox"/> someone in CMU Counseling Bureau |
| <input type="checkbox"/> brother or sister         | <input type="checkbox"/> someone in CMU Health Service    |
| <input type="checkbox"/> close friend              | <input type="checkbox"/> other (specify) _____            |
| <input type="checkbox"/> physician                 | _____   |
| <input type="checkbox"/> Dr. Goldstein or Dr. Korn |   |
| <input type="checkbox"/> other faculty member      |   |

In the list above, place a "0" before the name of any person who you never would be likely to seek for advice about personal drug use.

5. Consider the following two methods of testing:

Method A: students take a test one time only and grades of A, B, C, D, and R are assigned depending on how well a student does on the test.

Method B: all students are expected to pass the test at a level of mastery equivalent to a grade of B and may retake the exam as often as necessary.

In this course we used Method B. Which method do you prefer? (check one)

- greatly prefer A over B
- somewhat prefer A over B
- somewhat prefer B over A
- greatly prefer B over A

Please explain the main reason for your preference.

Do you have any other comments to make on this method of testing and grading?

Part II - continued

6. Do you think you would have learned as much from the lectures if they had been written in a book for you to read? (check one)

- lecture better than book
- book as good as lecture
- book better than lecture

7. For each film or speaker indicate whether you feel it or he should be used again next year in this course. Do not respond to films or speakers you did not see.

	1 definitely omit	2 probably omit	3 probably repeat	4 definitely repeat
LSD: The Spring Grove Experiment	1	2	3	4
The American Alcoholic	1	2	3	4
Dr. John Ekstrand (methadone)	1	2	3	4
Rev. Richard Mowrey (Kharma house)	1	2	3	4
Mr. John Bingler (Public Safety Director)	1	2	3	4

Do you have any suggestions for films or speakers we should use?

8. How important do you think it is that this course be offered to groups other than college students; for example, to parents, teachers, police officers?

- not of any particular importance
- of some importance
- very important

Part II - continued

9. Please check and rate your feeling about the usefulness and extent of material (including the coverage in speakers, films and readings) on the following topics in the second part of the course or check the line indicating that you cannot recall that material:

Section of Course	Amount of Coverage Check one			Usefulness Circle one number					Cannot Recall
	Too Much	About Right	Too Little	1 LOW	2	3	4	5 High	
Historical and cross-cultural view	_____	_____	_____	1	2	3	4	5	_____
Use patterns in the U.S.: Who uses what	_____	_____	_____	1	2	3	4	5	_____
Varieties of explanations of drug use	_____	_____	_____	1	2	3	4	5	_____
Characteristics of users of various types	_____	_____	_____	1	2	3	4	5	_____
Psychological processes in the causes and effects of use (drug-taking as therapy, cognitive dissonance, labeling, etc.)	_____	_____	_____	1	2	3	4	5	_____
Personality and usage	_____	_____	_____	1	2	3	4	5	_____
Legal regulation of drug use	_____	_____	_____	1	2	3	4	5	_____
Educational strategies to drug use	_____	_____	_____	1	2	3	4	5	_____
Therapeutic strategies: drug abuse and types of responses to it	_____	_____	_____	1	2	3	4	5	_____

These are the questions for items number 10 and 11 in Part II.

Do not hand this page in with your evaluation.

We recognize that item number ten could refer to illegal behavior, but we tried to word it in such a general way that it would not be specific enough in any legal sense.

10. How would you rate the extent of your experience with "psychedelic" drugs, including marihuana? (check one)

11. A. Rate the current liklihood of your using each of the following drugs by placing an "X" in the appropriate box.

- a. - amphetamine
- b. - marihuana
- c. - LSD
- d. - hard liquor
- e. - tobacco cigarettes
- f. - any tranquilizer
- g. - heroin
- h. - opium
- i. - mescaline

B. How likely was it at the beginning of this semester that you would have used each of the above drugs. Using the same set of boxes, indicate the liklihood by placing an "O" in the appropriate box.

NOTE:

Since the items on this page are of a more personal nature than the previous items, the questions are printed on a separate page. Thus, only your responses will appear with no written indication of what you are responding to. We repeat our promise to destroy the original evaluation forms after the data are transcribed without your name.

10.     \_\_\_\_\_ none  
           \_\_\_\_\_ very limited  
           \_\_\_\_\_ some  
           \_\_\_\_\_ extensive  
           \_\_\_\_\_ very extensive

11.	definitely would not	probably would not	don't know	probably would	definitely would
a					
b					
c					
d					
e					
f					
g					
h					
i					

12. Suppose a close friend of yours was using one of the drugs listed below. As a result of this course, would you now be more or less concerned about him than you might have been at the beginning of the semester. Please respond for each of the drugs listed.

	much more concerned		no change		much less concerned	
amphetamine (once a day)	1	2	3	4	5	
marihuana (once a day)	1	2	3	4	5	
LSD (once a week)	1	2	3	4	5	
hard liquor (once a day)	1	2	3	4	5	
tobacco cigarettes (a pack a day)	1	2	3	4	5	
any tranquilizer (once a day)	1	2	3	4	5	
heroin (once a week)	1	2	3	4	5	
opium (once a week)	1	2	3	4	5	
mescaline (once a week)	1	2	3	4	5	

13. For each drug listed below give the classification in which it would be placed.

- a. methadone \_\_\_\_\_
- b. chlorpromazine \_\_\_\_\_
- c. STP \_\_\_\_\_
- d. mescaline \_\_\_\_\_
- e. amphetamine \_\_\_\_\_
- f. phenobarbital \_\_\_\_\_
- g. meprobamate \_\_\_\_\_
- h. codeine \_\_\_\_\_
- i. Methadrine \_\_\_\_\_
- j. Librium \_\_\_\_\_

Classes

- A. Stimulant
- B. sedative (barbiturate)
- C. tranquilizer
- D. narcotic
- E. hallucinogen

14. Identify the following:

a. grass -

b. speed -

c. smack -

d. bush -

e. THC -

f. bumper -

g. crystal -

h. snow -

Part III

Name: (print clearly) \_\_\_\_\_

1. Draw a figure showing a dose-response curve. Label as completely as possible.
2. Give an example of the effect that set has on a person's reaction to LSD.
3. In a simplified view of neuroanatomy certain functions of an individual can be associated with certain places in the brain. For each function in the list below, choose the structure that is associated with that function from the list on the right and write its letter in the space provided.

- |                         |                        |
|-------------------------|------------------------|
| hallucinations _____    | A. amygdala            |
| general arousal _____   | B. frontal lobe        |
| autonomic balance _____ | C. hippocampus         |
| pleasure _____          | D. hypothalamus        |
| aggression _____        | E. reticular formation |
| hunger _____            | F. septal region       |
|                         | G. temporal lobe       |

4. What are the physiological effects of smoking marihuana?

5. What drug would probably be used to treat each of the following conditions?

- a. cough
- b. fatigue
- c. mild anxiety
- d. insomnia
- e. infantile autism
- f. overactive child

6. Indicate whether each of the following statements is true or false by writing the answer in the space provided after each statement. You do not have to explain your answer, just indicate whether it is true or false.

- a. It is reasonable to drink alcohol in cold weather because alcohol will increase your body temperature. \_\_\_\_\_
- b. All barbiturate drugs take effect fairly rapidly. \_\_\_\_\_
- c. There is no such thing as a "truth serum" - a drug which can cause anybody to confess to the truth. \_\_\_\_\_
- d. Maruhana causes impairment in immediate memory so that it is harder to remember things over short time intervals. \_\_\_\_\_
- e. Tolerance does not develop for the subjective effects of LSD. \_\_\_\_\_
- f. Penic reactions are more likely to occur with STP than with LSD. \_\_\_\_\_
- g. The effects of cocaine are mild and last 1-2 hours. \_\_\_\_\_
- h. Experiments have shown that there is little difference in chromosome damage produced by aspirin, chlorpromazine and LSD. \_\_\_\_\_

7. Define or explain:

- a. placebo
- b. LD50
- c. therapeutic index
- d. p.o.
- e. i.v.
- f. latent period
- g. double blind
- h. state-dependent learning
- i. synapse
- j. acetylcholine
- k. serotonin
- l. congener
- m. cirrhosis
- n. delirium tremens
- o. analgesic
- p. tolerance
- q. physical dependence

7. Define or explain (continued)

r. cross-tolerance

s. methadone

t. nalorphine

u. pentothal sodium

v. major tranquilizer

w. MDA

x. THC