

CONSCIOUSNESS- ALTERING DRUGS

Seven Observations on Altered States of Consciousness (Andrew Weil):

1. We are born with a desire or urge to experience altered states.
2. Individuals experiment with methods or techniques of changing consciousness.
3. Altered state experiences are normal and we all experience them.
4. Individuals may not always be aware that they are experiencing an altered state.

Seven Observations on Altered States of Consciousness (cont'd):

5. Altered states flow naturally from the waking state.
6. Drugs may elicit altered states but do not cause them.
7. Altered states are beneficial and we need to make greater use of their potential.

TAXONOMY OF STATES OF CONSCIOUSNESS

- States of consciousness contain an element of variability - individual differences will always exist.
- Consciousness is not a single state or level. Various hierarchies can be constructed.
- Each state of consciousness may consist of many levels.
- Altered states of consciousness must contain an element of pleasure. ...(?)...
- Altered states of consciousness *may be* dictated by the right hemisphere of the brain.

PSYCHOACTIVE DRUG: a compound which can be ingested or injected, and that, by virtue of its chemical structure, brings about changes in consciousness or affects mood.

- Aside from REM sleep (dreaming), the most dramatic altered states of consciousness are those produced by psychoactive drugs.
- These drugs can vary considerably both in chemical structure and in their effects on awareness and mood.

Ray and Ksir (1987) proposed four basic principles that apply to all psychoactive drugs:

1. Every psychoactive drug has multiple effects.
2. The effects of a psychoactive drug depend on the amount of drug taken.
3. The effects of a psychoactive drug depend in part on the user's history and expectations.
4. The psychoactive drug is, by itself, neither "good" nor "bad." It is not the drug, but the use to which it is put, that is labeled.
example: morphine

Interaction Model

Tart (1975) explained that the psychological effects of drugs depend on more than just their neurophysiological effects.

Drug effects are produced by an **interaction** between pharmacological drug factors (type, dose) and several nondrug factors, including:

- Long-term personal factors (personality, culture, attitudes, knowledge, beliefs, learned drug skills)
- Immediate personal factors (mood, expectations, desires)
- Situational or experimental factors (physical and social setting, formal instructions, implicit demands)

PHARMACOLOGY OF NEUROTRANSMISSION

- Practically all of the drugs that act upon the central nervous system, and thereby affect consciousness and behavior, do so by somehow influencing some aspect of the neurotransmission process.

According to Leavett (1995), interference may take place on one of eight ways:

1. Interference with the synthesis of the neurotransmitter, decreasing the amount of the NTS available at the presynaptic site.
2. Interference with the release of the NTS.
3. Acting as a false transmitter by replacing the normal NTS in the presynaptic neuron. The effects may not be similar to those of the normal NTS.
4. Replacement of the normal NTS at the postsynaptic site, thus preventing the action of the normal NTS.

5. Destruction of the normal NTS.
6. Interference with the reuptake process at either the presynaptic or extraneuronal sites, or both.
7. Interference with the sensitivity of the receptor cell.
8. Destruction of neural tissue - a neurotoxic agent.

SIX CLASSES OF PSYCHOACTIVE DRUGS

1. Sedative-Hypnotic or CNS Depressants
2. Behavioral/CNS Stimulants and Convulsants
3. Narcotic Analgesics (Opiates)
4. Antipsychotic Agents
5. Clinical Antidepressants
6. Psychedelics and Hallucinogens

Key points (Julien 1997):

- The action of psychoactive drugs is seldom restricted to a single functional or anatomical subdivision of the brain.
- Although a psychoactive drug might have a single effect on a specific neurotransmitter, a variety of effects can be expected because the neurotransmitter is involved in many different functions.
- Psychoactive drugs simply modify ongoing behavioral or physiological responses; they do not create new responses.

1. Sedative-Hypnotic or CNS Depressants

Serve to reduce behavioral output and level of consciousness.

- **Bromides:** Sleep inducing. Introduced in 1850s.
- **Barbiturates** - Introduced in 1903, now more than 2,500 substances. Most popular are short-acting drugs like pentobarbital (Nembutal), Tuinal, and secobarbital (Seconal).
- **Benzopiazepines:** Librium (clordiazepoxide); Valium (diazepam)
- **Oxycodone:** (Percodan; OxyContin) A semi-synthetic opioid analgesic, used primarily in the treatment of pain.
- **Quaalude:** (methaqualone); meprobamate (Miltown, Equanil)

1. Sedative-Hypnotic or CNS Depressants (cont'd)

- **DXM:** (Robo; DM) dextromethorphan hydrobromide.
- **Anesthetic Gasses and solvents:** (ether, chloroform, etc.)
 - Nitrous Oxide: (Laughing Gas) An anesthetic gas best known for its use in dentistry and as a whipped cream propellant. Its effects are short lasting.
- **Inhalants:** (Gasoline; Acetone; Mineral Spirits; Freon; Glue) There is no such thing as safe use of volatile solvents, aerosols or other street inhalants. Their psychoactive effects are due mainly to nerve and organ damage
- **Alcohol:** Used in many cultures. Alcohol limits consciousness by attacking and numbing the higher brain centers.

2. Behavioral Stimulants and Convulsants

Serve to excite the Central Nervous System, which results in an increase in the user's behavioral activity and in the production of a heightened level of arousal.

- **Amphetamines & Methamphetamine:** (Meth; Speed; Crystal; Glass; Crank) Benzedrine, Dexedrine, Methedrine. Strong physical and mental stimulants, available in both prescription and street forms.
- **Cocaine:** acts both as a local anesthetic and as a CNS stimulant. Works as a stimulant by inhibiting the active reuptake of norepinephrine in the brain and peripheral nervous system.

2. Behavioral Stimulants and Convulsants (cont'd)

- **Caffeine:** coffee, tea, cola drinks, chocolate
- **MDMA:** (Ecstasy; E; X; XTC; Rolls; Beans; Adam) 3,4-methylenedioxymethamphetamine.
- **Nicotine:** (tobacco) Native to the Americas, tobacco has a long history of use as a shamanic inebriant and stimulant.

3. Narcotic Analgesics (Opiates)

Create both a sedative and an analgesic action.

Analgesic effects may be created by interacting with receptor sites for endorphins (Natural opiate substances created by the body). The action is like a lock and key mechanism.

- **Opiates:** Opium (active ingredients: morphine; codeine)
- **Heroin:** (semi-synthetic derivative of morphine)
- **Synthetic Opiates:** Percodan and Demerol (meperidine), Methadone (dolophine).

4. Antipsychotic Agents

Used to treat individuals who are already exhibiting hallucinations or altered states. Permit the individual to return to a normal, nonaltered, waking state of consciousness.

- **Antipsychotic Tranquilizers:** Thorazine (chlorpromazine)
- **Antimanic Agents:** Eskalith (lithium carbonate)

5. Clinical Antidepressants

- **Monamine Oxidase Inhibitors (MAOIs):** (Nardil, Parnate) Inhibit naturally occurring enzymes in the human body. This inhibition leads to increased levels of chemicals such as the neurotransmitters serotonin and dopamine. By slowing their metabolism, MAOIs also allow chemicals such as DMT to become active when taken orally.
- **Tricyclic Compounds:** (Tofranil, Elavil) The exact mechanism of action is not well understood, however it is generally thought that tricyclic antidepressants work by inhibiting the re-uptake of the neurotransmitters norepinephrine and serotonin by neurons.

6. Psychedelics and Hallucinogens

The category contains a number of drugs that vary considerably in their chemical structure. Most produce their effect by changing the synaptic transmission process.

- **Psychedelic** literally means "mind manifesting" or "mind expanding"
- **Hallucinogenic:** Drugs which have the ability to induce or alter visual, auditory, somesthetic perceptions for which there is no appropriate external stimulus.

Tart (1972) distinguished between minor and major psychedelics:

- **Minor:** the effects are felt to be under a fair amount of volitional control by most individuals who use the drugs.
- **Major:** produce hallucinations at normal "social" doses.

Minor Psychedelics:

Cannabis Drugs (marijuana and hashish
- use dates back to at least 2737 B.C.)
resemble a recently discovered (1992)
natural substance in the brain called
anandamide.

- **Main active ingredient: delta-9-THC**

Major Psychedelics:

Serotonin Psychedelics are structurally similar to the NTS serotonin. Includes two classes of compounds:

1. Tryptamine-based:

- **LSD (Acid)** d-lysergic acid diethylamide.
- **Psilocybin:** (Shrooms, Magic Mushrooms)
- **DMT:** (N; N-DMT; Dimitri)
- **Ayahuasca:** (Huasca; Yage; Brew; La Purga)
- **5-MeO-DMT (DiPT):** (5-MEO)

2. Phenethylamine-based:

- **Mescaline or Peyote:** (*Lophophora williamsii*) Peyote is a small, spineless cactus that contains mescaline as its primary active chemical. It has a long history of use among the natives of northern Mexico and SW United States.
- **2C-B** (Nexus, Bees, Venus, Bromo Mescaline) 4-bromo-2,5 dimethoxyphenethylamine. A synthetic psychedelic that first gained popularity as a legal Ecstasy replacement in the mid 1980s. It is known for having a strong physical component to its effects and a moderate duration.

Atypical Psychedelics:

- **Salvia Divinorum** (Shepherdess' Herb; Maria Pastora; Yerba de Maria; Sally-D) A perennial herb found in the Sierra Mazatec region of Mexico.
- **Psychedelic Anesthetics - PCP:** (Angel Dust) phencyclidine. Originally used as a horse tranquilizer, PCP has powerful psychedelic properties and is know for its dissociative effects at higher doses. Does not resemble any known NTS. Mechanism unknown.
- **Deliriants:** Included in this group are such plants as deadly nightshade, mandrake, henbane and datura, as well as a number of pharmaceutical drugs
- **Amanita mushrooms** contain the psychoactive chemicals *ibotenic acid* and *muscimol*. Some are deadly poisonous while others are edible.

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