

I. **PSYCHOACTIVE DRUGS** Psychoactive drugs cause psychological changes by altering the functioning of the brain. Psychopharmacology is the study of psychoactive drugs.

A. **Psychopharmacology**

Psychoactive drugs or substances influence the interaction between neurotransmitters and receptors. These drugs get into the brain through the blood supply when they pass the blood-brain barrier. Drugs that act as agonists mimic the effects of neurotransmitters, whereas those acting as antagonists prevent neurotransmitters from binding with receptors and inhibit neurotransmitter activity.

B. **The Varying Effects of Drugs**

Substance abuse is the self-administration of drugs in ways that deviate from either medical or social norms. Psychological dependence occurs when a person continues to use the drug to gain a sense of well-being even when the drug produces adverse consequences. Physical dependence or addiction exists when there is an altered physiological state in which continued use of the drug is required to prevent the onset of withdrawal syndrome. Tolerance may develop with prolonged use of a drug.

1. *Expectations and Drug Effects.* People who think they have taken a drug but really haven't may display the effects of the drug because they expect to be affected by it. The learned expectations regarding a drug's effect vary from culture to culture.

C. **Depressants**

Depressants reduce central nervous system activity. Many depressants increase GABA neurotransmitter activity.

1. *Alcohol.* Alcohol has an impact on the dopamine, norepinephrine, serotonin, endorphin, and GABA neurotransmitters. Genetics influences people's tendency toward alcohol dependency.
2. *Barbiturates.* Also called downers or sleeping pills, barbiturates cause relaxation, some euphoria, and diminished attention, among other effects.
3. *GHB.* GHB is a naturally occurring substance similar to GABA, and has recently become a popular "club drug".

D. **Stimulants**

Stimulants increase behavioral and mental activity.

1. *Amphetamines.* Commonly known as uppers or speed, amphetamines increase the release, and decrease the removal, of norepinephrine and dopamine at synapses, resulting in increased receptor activity. Amphetamines stimulate the brain and sympathetic nervous system, raising heart rate and blood pressure and constricting blood vessels. In some extreme cases, abuse of these drugs produces symptoms very similar to paranoid schizophrenia.
2. *Cocaine.* This drug's effects are similar to but more rapid than those of amphetamines. Additionally, the effects of cocaine are short-lived, which may help explain why this drug is especially addictive both psychologically and physiologically.

3. *Caffeine*. This drug decreases drowsiness, makes thought more rapid, increases physical work capacity, and raises urine production. Caffeine can cause physical dependence.
4. *Nicotine*. This drug stimulates the autonomic nervous system. Regular nicotine use can cause psychological and/or physiological dependence.
5. *MDMA*. Also called Ecstasy, MDMA is similar to both stimulants and psychedelics. It increases the activity of dopamine neurons. Although MDMA doesn't appear to be physically addictive, it does cause permanent brain damage and can lead to panic disorder.

E. Opiates

Opiates, which include opium, morphine, heroin, and codeine, cause sleep and pain relief. These drugs are quite addictive and act as agonists for endorphins.

F. Hallucinogens

Hallucinogens, sometimes referred to as psychedelics, cause a loss of contact with reality and induce changes in emotion, perception, and thought.

1. *LSD*. Lysergic acid diethylamide (LSD) is one of the most powerful psychedelics. LSD is not addictive, but tolerance does develop.
2. *Ketamine*. Ketamine is used in veterinary medicine, and has hallucinogenic properties when used in humans. Its use can lead to enduring memory impairment.
3. *Marijuana*. The active ingredient in cannabis sativa is tetrahydrocannabinol (THC).