

Chapter 3: Consciousness and the Two Track Mind

IV. Drugs & Consciousness

A. Introduction

Psychoactive Drugs

- Chemical substances that influence and effect the functioning of the nervous system; produce and detect the level of the synapses
- Prozac, Valium, coffee, nicotine, heroin, cocaine
- Addiction: a physical and psychological desire to seek out and take the drug
- Chronic consumption can lead to drug tolerance
- Neuro- adaptation: when you flood your brain with psychoactive drugs, it will do whatever it takes to adapt and adjust structurally and functionally to the drug
- May get rid of some receptors or make them less sensitive
- Liver becomes more efficient at breaking down alcohol, less of it gets to the brain (therefore, alcoholics needs more to get drunk)
- Withdrawal: unpleasant physical sensations that we experience when we stop taking a drug as well as intense cravings for the drug.
- Dependence: they need to drugs to continue functioning normally and avoiding withdrawal
- Psychological dependence: a mental craving for the drug
- Expectations: how a drug effects you is not limited to the chemical structure of the drug; your beliefs about the drug will determine how it effects you

Heaven to Hell

*Drugs may seem euphoric at first, but with repeated use the positive side effects are soon replaced with negative one

Depressants

Psychoactive drugs that depress and slow down the activity of the nervous system

Alcohol: oldest, and most widely available psychoactive drug (equal opportunity drug: enhances existing everyday tendencies; personality comes out)

Low doses vs large doses?

Depresses your frontal lobes: impulses, inhibition

Effects of low doses: relaxing, decreases tension/ inhibitions, impairs concentration, slows down reflexes, impairs reaction time, reduces coordination, impairs judgement

Medium doses: slurred speech, drowsiness

High doses: vomiting, breathing difficulties, drowsiness, unconsciousness, coma, death (more than 1400 college students every year die)

Affects memory (details in book)

Reduces self awareness

Shrinks brain (frontal lobes, hippocampus)

-Drinking while pregnant increases possibility of fetal alcohol syndrome

-Organ damage (liver, heart, stomach, etc.)

- Neuro (Gaba ago, Glutamate Ant, dopamine & endorphins: ago)

- Cortex, cerebellum, brain stem

- Adolescent brain & early 20s brain: the effects of alcohol are more devastating and longer lasting for this age group

B2. Barbiturates and Tranquilizers

Barb: promote sleep, reduce anxiety

Larger doses: loss of coordination, mental impairments, judgement impairment, depression

Tranquilizers: chemical structure is different, produces similar but less powerful effects.

Produces effects by agonizing gaba, making them more sensitive to alcohol

*Lethal additive effect (adding alcohol, etc.)

B3. Opiates

*Narcotics

- Opium, heroin, morphine, oxycontin
- Feelings of euphoria, contentment, relaxation, warmth, pain relief, effects neurotransmitters, agonize endorphins and gaba, increasing dopamine, brains stops making its own endorphins

C. Stimulants

- psychoactive drugs that enhance the activity of the nervous system
- heart rate increases, pupils dilate
- ex: caffeine, amphetamines

C1. Smoking

30% of all cancer deaths are related to smoking

85% of those who die from lung cancer are smokers

At the end of the century, 1 billion people will have died from smoking

In the US, it takes 50 billion dollars to treat people with smoking related disease

takes 3 billion to feed every hungry person in the world

Strong correlation between mental illness and smoking

Second hand smoking is even more dangerous than suspected

Pregnant women who smoke have higher rates of spontaneous abortion and prenatal death

- Smoking damages your DNA
- For every cigarette you smoke, you lose 12 minutes of life on average
- Pediatric disease
- Why don't they stop?
- It is HIGHLY addictive and "rewarding" because it affects a number of different neurotransmitters (acetylcholine, norepinephrine, dopamine)
- Dual- effect on the brain (if you feel sluggish, it will perk you up and vice versa)

C2. Cocaine

- A stimulant that is one of the most potent and addictive drugs
- intense euphoria, mental alertness, increased confidence (affects norepinephrine, serotonin, dopamine)
- Blocks re-uptake, agonist
- 15- 30 minutes--> crash
- Chronic permanent depression, dopamine receptors are shut down

- Formication: fear of bugs crawling under their skin, start picking their skin
- May engage in stereotyped behaviour: senseless behaviour they repeat for hours at a time
- Psychotic episodes
- Violence- aggression
- Convulsions
- Death
- A single dose can kill you, even your first one. You do not need to be a chronic user to die from it

C3. Ecstasy (MDMA)

>1914- ecstasy was prescribed as an appetite suppressant

>1970's- ecstasy given to people undergoing therapy

- A stimulant and a hallucinogen
 - Effects: euphoria, energized, connected, increases body temperature (kidney damage, heart failure), paranoia, nausea, confusion, vomiting, compulsion, cardiac arrest, death
 - Long- term effects: sleep disturbances, cognitive impairment, weaker immune system, higher risk for parkinson's disease, depression, hostility, impulsiveness, persistent anxiety, loss of ability to regulate heat, heart problems
 - Neurotransmitters it effects: dopamine, norepinephrine, affinity for serotonin: increases release of it, blocks the re-uptake of it, serotonin depletion
 - With continued use: significant damage of serotonin producing neurons
 - Human studies: 20- 60%, the higher the use, the more damage
- *pg. 97- 112 (study this for the midterm)

D. Hallucinogens

A.k.a psychedelics

- produce significant and serious distortions in perception and alter the way you think and feel
- "Mind- manifesting", "mind expanding"

D1. LSD (Synthetic)

- Derived from fungus that grows on brains, discovered by Hoffman
- 1938, tried to use for circulation etc.
- 1943, working in lab, feel dizzy after accidentally ingesting LSD
- Effects: Physical: blood pressure and heart rate increase, temperature may rise or decreases (chills), tremors, Emotional effects: several emotions at once, or may cycle from one extreme to the next
- Distorted perceptions and sensations (hence "mind- expanding"), distorted thinking (delusions), unpredictable effects
- Can influence the effects of serotonin (not sure yet)
- Even one grain of LSD can produce strong impulses, LSD the size of an aspirin can effect 3000 people

D.2. Marijuana (natural)

*study in book

- marijuana today is much different than the 60's, active ingredients now are at least 3 times higher
- Smoking it while under 16 or 18, you significantly increase your risk for developing schizophrenia

E. Influence on Drug Use

*Read in book

V. Near- Death Experiences

Experiences reported by people who have had a cardiac arrest or serious physical trauma that brought them close to death. The majority of people that report this report similar experiences. (Floating over their bodies, looking at themselves, tunnels, light, dead relatives, religious figures, angels, feelings of bliss, euphoria that have never been experienced before)

Occasionally report dark and cold places.

- Can be tracked as far back as the ancient Greeks
- Is it the afterlife or brain deprived of oxygen?
- Science tells us that near death experience most likely reflects physiological and biological experiences rather than something spiritual
- Cotard syndrome: believing you are dead when you are not without any near death experiences
- Out of body experiences are not just from near death, some people feel this way before falling asleep
- Parietotemporal junction
- Drugs (out of body experience can occur)
- Ghosts: Brain pathology, brain stimulation
- Positive emotions: not unique to near- death experiences (Ketamine (opoid) is an anaesthetic with these symptoms)
- Tunnel of light: artificially induced, seen before consciousness is lost, eye and brain, visual cortex
- Near- death experiences were reported when individuals were no where medically near death