What are Psychoactive drugs?

There are several classes of psychoactive drugs:

I. Sedative hypnotics and antianxiety drugs
Most common are:
1. ______ (everything that contains ethyl alcohol).
2. _______________ (ex., pentobarbital).
3. ________________ (ex., valium, librium).
   - they are also known as “_________________”.

Behavioral effects:

Characteristics of sedative-hypnotic drugs:

Tolerance:

Cross-tolerance:

Target of sedative-hypnotic & antianxiety drugs:

Because of their different actions, these drugs should never be taken together. Combined doses can cause coma or death.
II. Antipsychotic drugs: __________________________

Most common are:
1. __________________ (ex., chlorpromazine - Thorazine)
2. __________________ (ex., haloperidol - Haldol)

- they are also known as “______________”

One mechanism of action: __________________________

III. Antidepressant drugs: __________________________

Most common are:
1. __________________ (MAOI)
2. __________________ (ex., imipramine - Tofranil)
3. __________________ (SSRIs, ex., fluoxetine - Prozac)

Mechanisms of action:
- MAOIs block the breakdown of __________
  (especially __________________________)
- Tricyclics and SSRIs block __________
  (especially __________________________)
IV. Opiates (analgesics): 
- high potential for addiction (see next section)
Most common are:
1. __________________ (morphine, codeine)
2. __________________ (heroin)
3. __________________; made in the body = endorphins (enkephalins, dynorphin)

Mechanism of action: all work by binding ______ ______ in the nervous system (____, ____ , and ______ subtypes of opiate receptors)

V. Stimulants: 

Several classes of stimulants:
1. __________________ (ex., cocaine, “crack”, amphetamine)
2. __________________ (ex., pentylenetetrazol)
3. __________________ (ex., caffeine)
4. __________________ (ex., lysergic acid diethylamide[LSD], mescaline, marijuana, psilocybin [from some mushroom])

Varied mechanisms of action.

WHAT IS DRUG ADDICTION (DEPENDENCE)

Addiction: (<L addicere) “to sentence”
Someone addicted to a drug is, in a way,

Important concepts:
Drug tolerance:
- __________________: reduced sensitivity to a drug that results from the increased ability of the body to metabolize the drug
- __________________: a change that takes place in nerve cells in which the activity of neurons adjust to the excitatory or inhibitory effects of a drug (ex., receptor downregulation)
- __________________: behavior change acquired through associative learning
**Physical dependence**: ______________________
________________________________________
________________________________________

**Withdrawal syndrome**: ____________________
________________________________________
________________________________________

- physical dependence was originally thought to be responsible for addictive behavior
- however, if true, treating addicts until physical withdrawal is over should treat addiction; it does not

**Psychological dependence** is the most important factor in addictive behavior - produces “compulsive” drug taking behavior

**Sensitization**: ____________________________
__________________________________________

- for example, the behavioral activity of animals in response to repeated injections of amphetamine increases over time

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**Learning** and conditioning produce _________
- associative learning= ______________________:
__________________________________________

- if high drug dose taken somewhere else, can be lethal

Siegel injected morphine in rats for several days in a very distinct environment
- on the last day he compared the lethal effects of a large dose of morphine in animals placed in the same distinct context where they had received prior morphine injections or in a context where they had not received morphine
- many rats receiving morphine in the new context did not survive the higher dose.

- produces _____________________________:
__________________________________________

- if eliminate cues associated with drug, can reduce addiction (ex., Vietnam vets.)

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Mechanisms of drug dependence

Reinforcement:

- important factor in producing addiction

Addictive drugs have reinforcing effects:
- they activate reinforcement mechanisms
- reinforcement strengthens behavior just preceding it

Discovery of Reinforcing Brain Stimulation:
(Olds & Milner, 1954) Classic study

Electrodes implanted in medial forebrain bundle (MFB)
- rats found to press a lever thousands of times an hour to receive electrical stimulation

Neural System of Reinforcement

- system starts in a collection of neurons called __________, which contains ________ as a neurotransmitter
- most important projections of VTA axons to __________ (dopamine receptor antagonists in this region block MFB self-stimulation)
- blockade of dopamine receptors in nucleus accumbens can also block drug taking behavior in rats
REINFORCEMENT & THEORY of ADDICTION

A reinforcer need not be ____________________ in order to reinforce and produce a response:

Substance abuse progresses such that ____________ of drugs are required to produce a pleasurable effect, and are eventually incapable of producing pleasurable feelings.

So why do people keep taking these substances?

Theory of __________________________: __________________________

- these sensitized cues “replace” the primary effect of the drug (associated with dopamine release in ______________________)

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