

# States of Consciousness

# On the Nature of Consciousness

- Awareness of \_\_\_\_\_ and \_\_\_\_\_  
Stimuli
  - **Variations on levels of \_\_\_\_\_**
    - \_\_\_\_\_ – stream of consciousness
    - \_\_\_\_\_ – unconscious
    - Sleep/dreaming research

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- A family of practices that train \_\_\_\_\_ to heighten awareness and bring \_\_\_\_\_ processes under greater \_\_\_\_\_ control
  - \_\_\_\_\_ & \_\_\_\_\_ waves become more prominent
  - \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, oxygen consumption, & carbon dioxide elimination \_\_\_\_\_
  - Possible \_\_\_\_\_ long-term effects (but more research is needed!)

# Sleep

## The Sleep-Wake Cycle

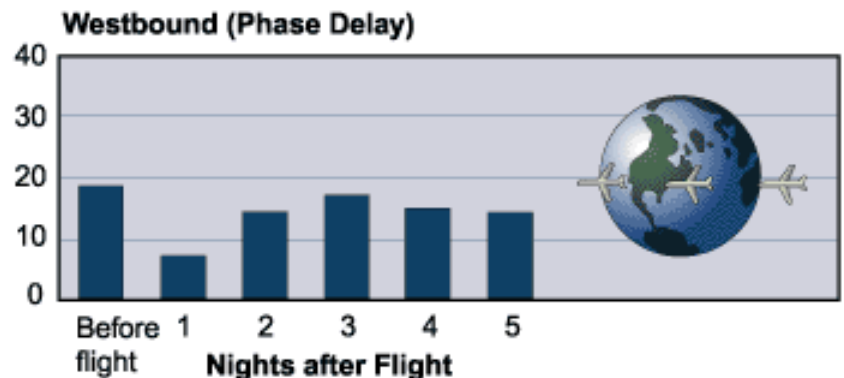
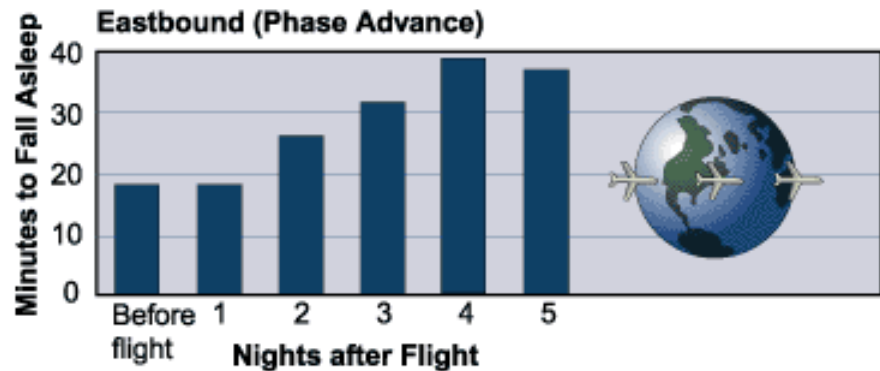
- \_\_\_\_\_ Rhythm
  - Any periodic fluctuation in a \_\_\_\_\_ organism.
- \_\_\_\_\_ Rhythm
  - A biological cycle that occurs approximately every \_\_\_\_\_ hours, e.g., sleeping and waking.

# Biological Rhythms and Sleep

- \_\_\_\_\_ **Rhythms** – 24 hr biological cycles
  - Regulation of sleep/other body functions
- \_\_\_\_\_ pathway of the biological clock:
  - Light levels → retina → \_\_\_\_\_ of hypothalamus → \_\_\_\_\_ gland → secretion of \_\_\_\_\_
- Ignoring circadian rhythms
- Realigning circadian rhythms

# Sleep \_\_\_\_\_ rhythm

- \_\_\_\_\_ from the suprachiasmatic nucleus of the \_\_\_\_\_
- Jet lag
- Shift work



# Your \_\_\_\_\_ Rhythm

- Your body roughly synchronizes with the 24-hour cycle of day and night through a biological clock called the \_\_\_\_\_ *rhythm*.
- *What is your \_\_\_\_\_ rhythm?*

The \_\_\_\_\_ :  
A Physiological Index of Consciousness

- \_\_\_\_\_ – monitoring of brain  
\_\_\_\_\_ activity
- Brain-waves
  - \_\_\_\_\_ (height)
  - \_\_\_\_\_ (cycles per second)
    - \_\_\_\_\_ (13-24 cps)
    - \_\_\_\_\_ (8-12 cps)
    - \_\_\_\_\_ (4-7 cps)
    - \_\_\_\_\_ (<4 cps)

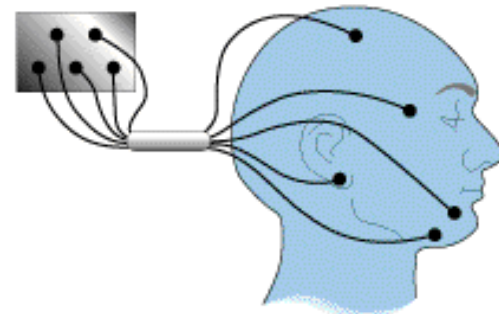
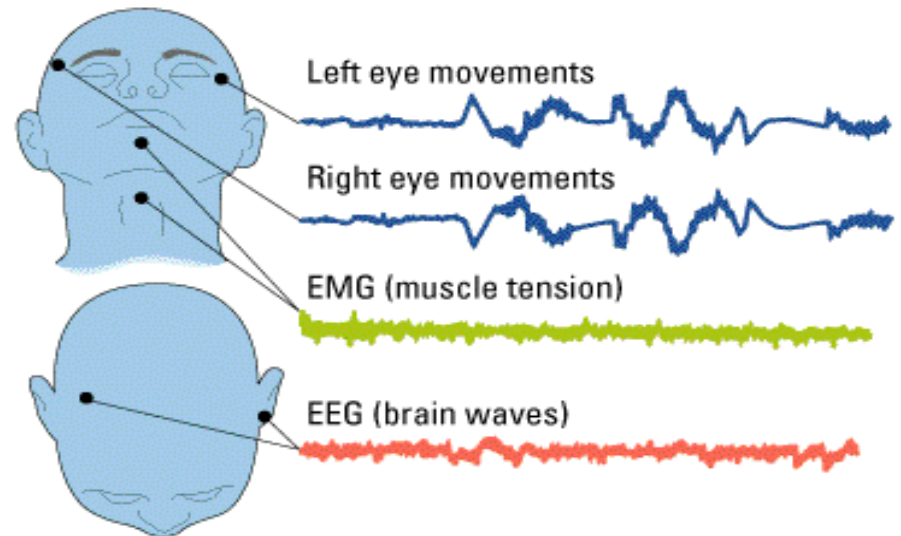




# Sleep

## Measuring Sleep

- Electrodes measure
  - \_\_\_\_\_
- EMG measures
  - \_\_\_\_\_
- EEG measures
  - \_\_\_\_\_
- A camera may also record \_\_\_\_\_.

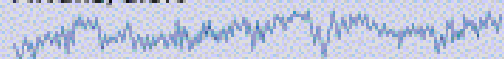


# Sleep

## Stages of Sleep

### Presleep

Awake, alert



Beta waves

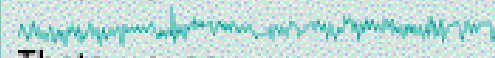
Awake, relaxed (hypnagogic state)



Alpha waves

### Non-REM

Sleep stage 1



Theta waves

Sleep stage 2



Spindle (burst of activity)

Sleep stage 3



Sleep stage 4



Delta waves

### REM

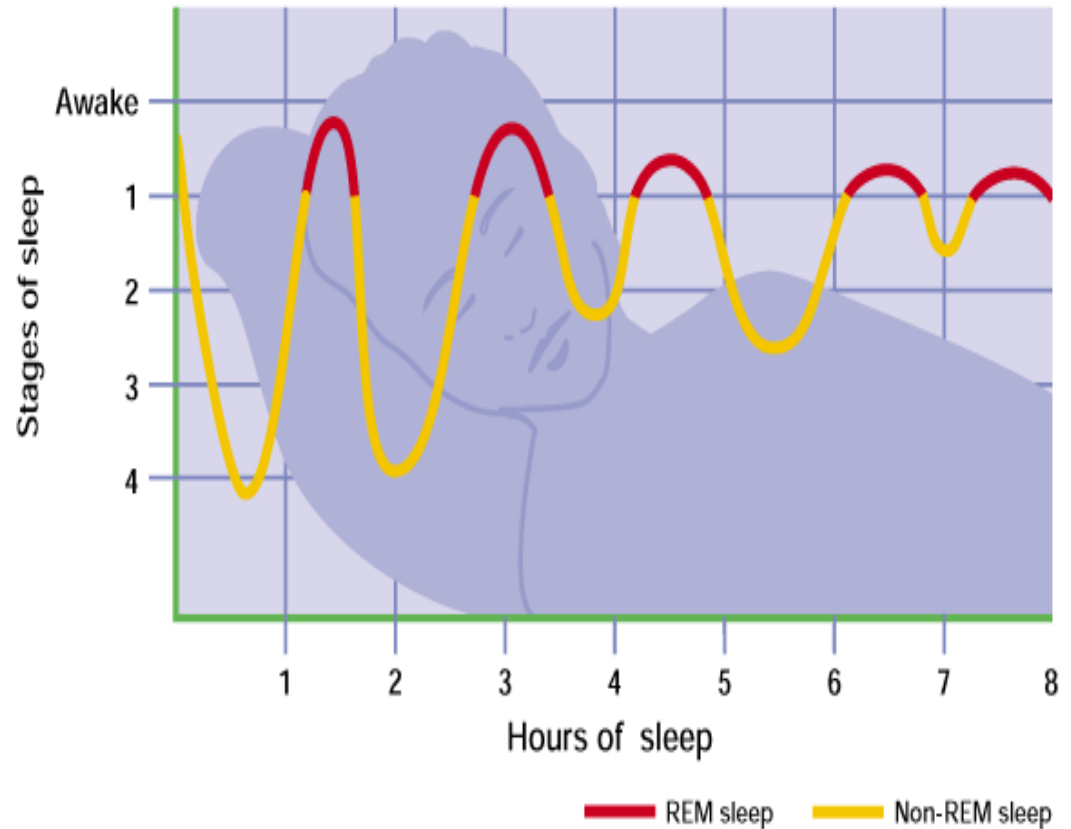
REM stage



# Sleep

## A Typical Night's Sleep

- Typically 4-5 episodes of \_\_\_\_\_, (\_\_\_\_\_) sleep per night occur.
  - Later episodes are longer and farther apart.
- Most “\_\_\_\_\_” (\_\_\_\_\_) occurs early in the night.



# Sleep

## Night Work, Sleeping, and Health

- \_\_\_\_\_ (rotating day and night shifts) is more dangerous than night work.
- About \_\_\_\_\_ traffic accidents a year are \_\_\_\_\_ related.
- Those who drive in the middle of the night take \_\_\_\_\_.
  - **Brief episodes of sleep that occur in the midst of a \_\_\_\_\_ activity.**

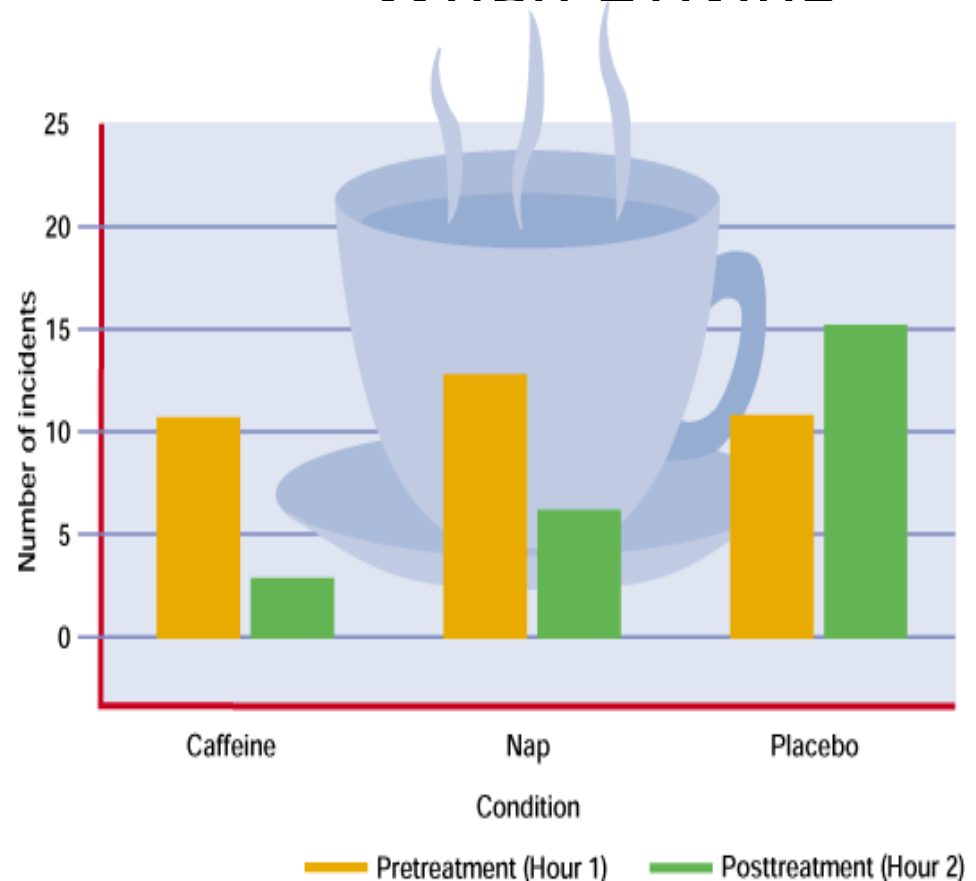
# Sleep Deprivation

- **Complete** \_\_\_\_\_
  - 3 or 4 days max
- **Partial** \_\_\_\_\_ **or sleep** \_\_\_\_\_
  - impaired attention, reaction time, coordination, and decision making
  - accidents: Chernobyl, Exxon Valdez
- **Selective** \_\_\_\_\_
  - REM and slow-wave sleep: rebound effect

# Sleep

## How to Stay Awake When Driving

- Participants drove two hours in a \_\_\_\_\_.
- During a \_\_\_\_\_, they drank caffeine, or a placebo, or took a nap.
- Both caffeine and nap \_\_\_\_\_ the number of traffic incidents during the \_\_\_\_\_ hour.



## Sleep Problems

- \_\_\_\_\_ – difficulty falling or staying asleep
- \_\_\_\_\_ – falling asleep uncontrollably  
– Affects animals and humans
- \_\_\_\_\_ – reflexive gasping for air that awakens person
- \_\_\_\_\_ – sleepwalking

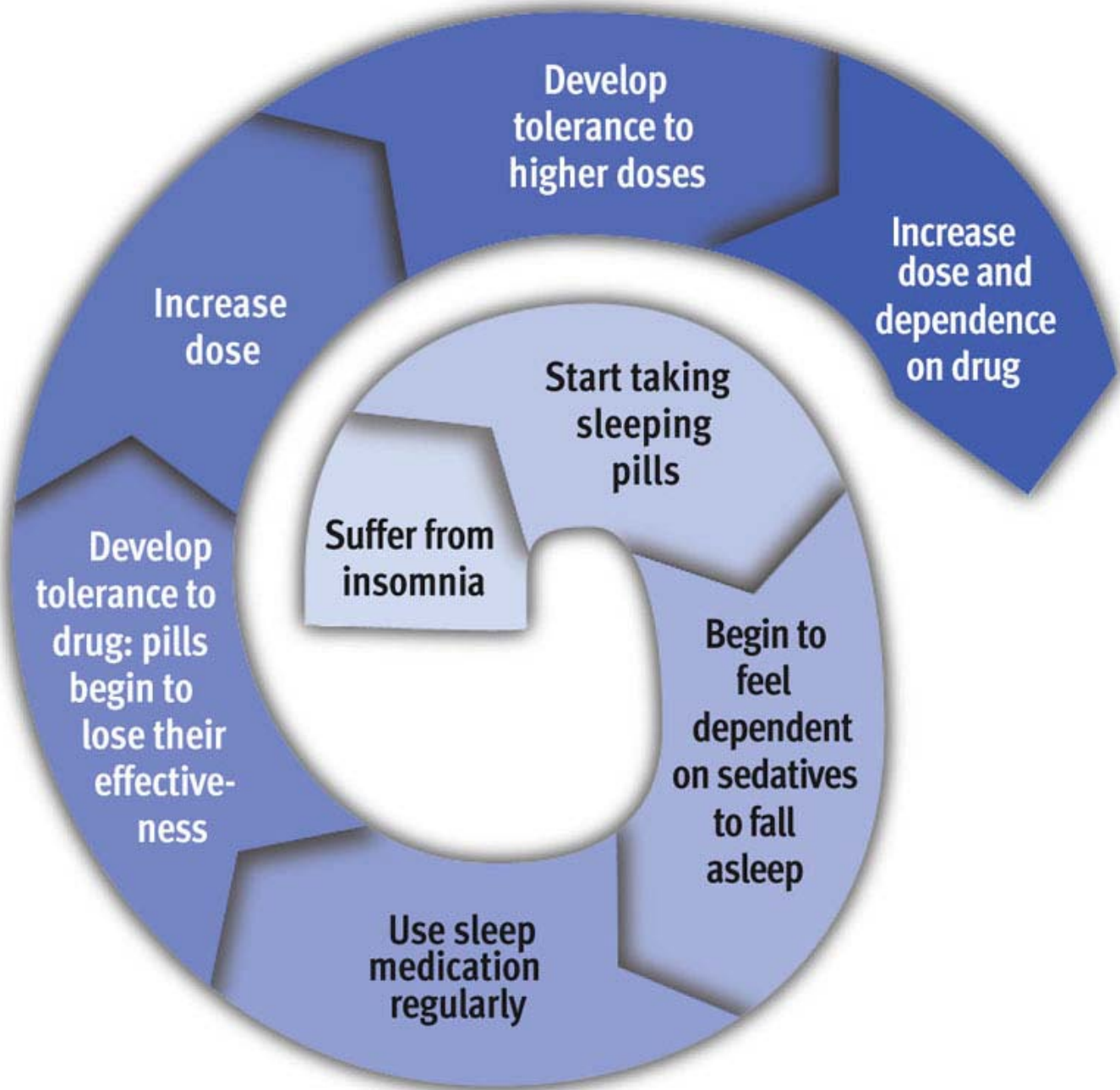


Figure 5.6 The vicious cycle of dependence on sleeping pills



# The Nature and Contents of Dreams

- \_\_\_\_\_ – mental experiences during sleep
  - Content usually \_\_\_\_\_
  - Common themes
  - Waking life spillover – day residue
- Western vs. Non-Western interpretations

# Research on Dreaming

**Dreams as wish fulfillment  
(Freud)**



The day residue shapes dreams that satisfy unconscious needs.

**The problem-solving view  
(Cartwright)**



We think through major problems in our lives.

**Activation-synthesis model  
(Hobson & McCarley)**



A story is created to make sense of internal signals.



**Figure 5.8 Three theories of dreaming**

\_\_\_\_\_ : Altered State of Consciousness or Role Playing?

- \_\_\_\_\_ = a systematic procedure that increases suggestibility
- **Hypnotic** \_\_\_\_\_ : individual differences
- **Effects produced through** \_\_\_\_\_ :
  - \_\_\_\_\_
  - Sensory \_\_\_\_\_ and \_\_\_\_\_
  - \_\_\_\_\_
  - \_\_\_\_\_ suggestions and amnesia

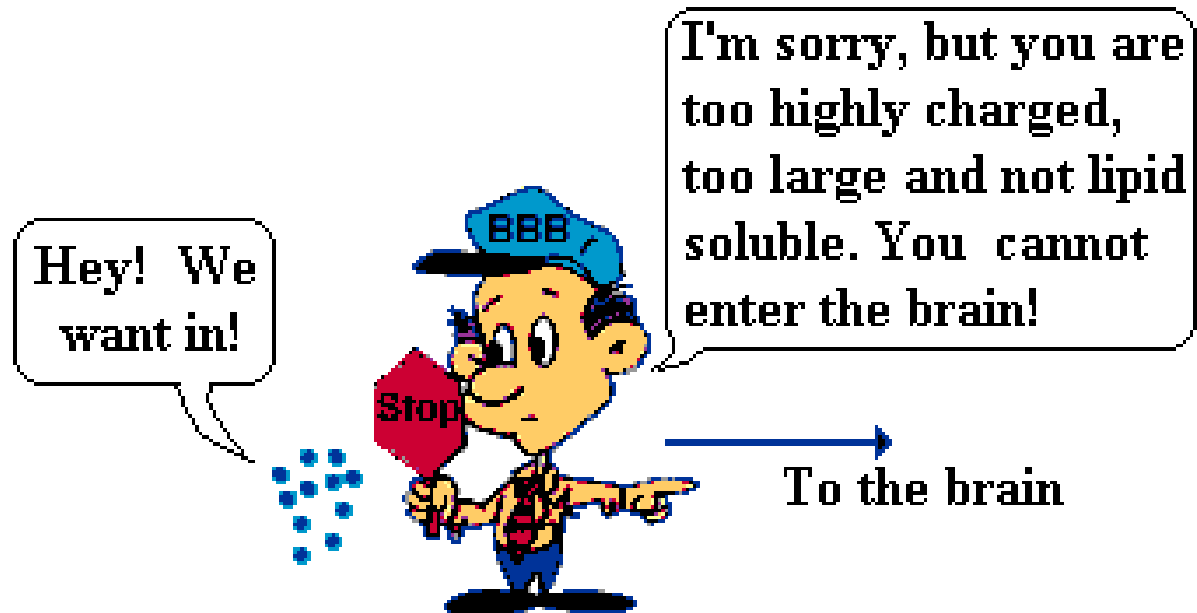
# Drugs & Behavior



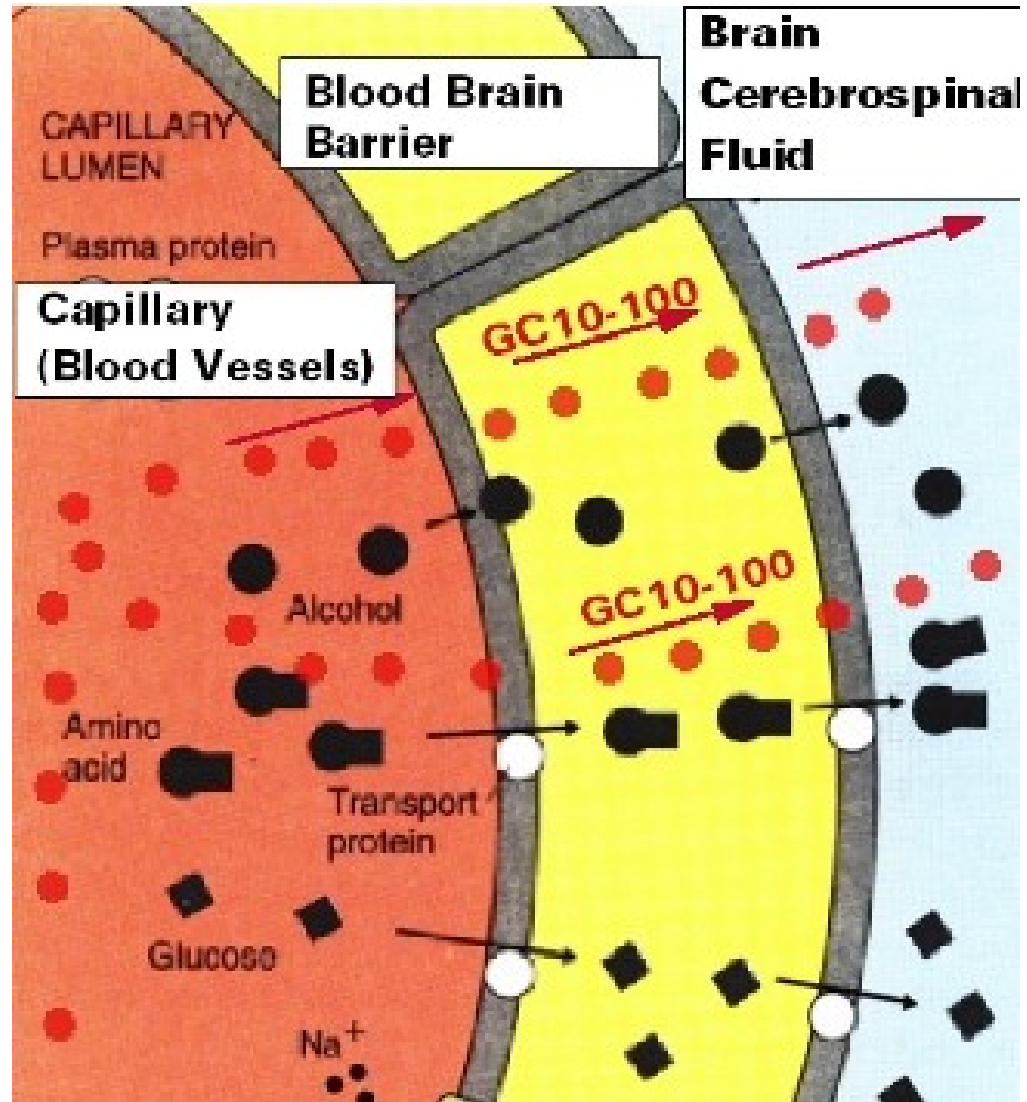
- The study of psychoactive drugs
- \_\_\_\_\_ drugs – Drugs that affect the \_\_\_\_\_, and bring changes in \_\_\_\_\_ and other \_\_\_\_\_ processes
- A “drug” is a chemical not normally needed for physiological activity that can affect a body upon entering it

# Psychopharmacology

- \_\_\_\_\_
  - Drugs must cross a \_\_\_\_\_ in the brain's \_\_\_\_\_ that limits which substances can enter the brain from the bloodstream

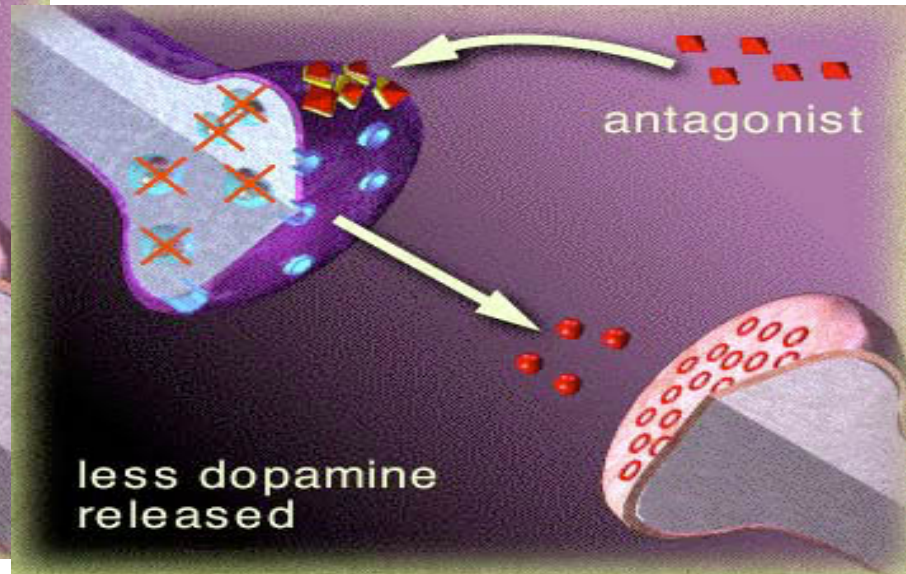
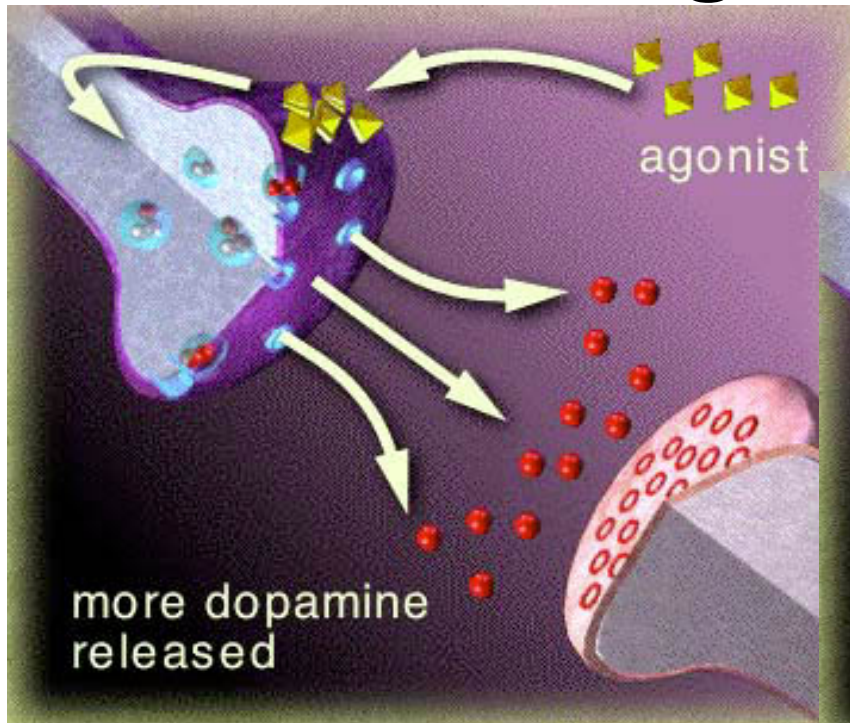


# Blood-brain barrier





# How drugs interact with the brain...

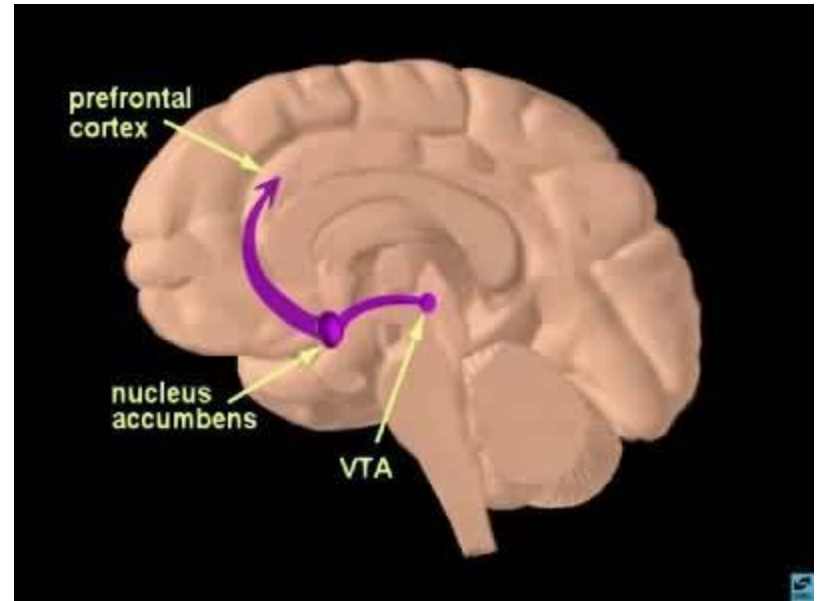


- \_\_\_\_\_ drugs alter \_\_\_\_\_ interactions.
- \_\_\_\_\_ block normal neurotransmitter-receptor binding without stimulating the receptors.

# The “Reward Pathway”

- Three brain components:

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_



# Substance Abuse

- The use of psychoactive drugs in ways that deviate from \_\_\_\_\_
- Psychological \_\_\_\_\_
  - When a person uses a drug \_\_\_\_\_
  - Need the drug for a sense of \_\_\_\_\_ and is preoccupied with \_\_\_\_\_ of the drug it becomes unavailable
  - May occur with out without \_\_\_\_\_
- \_\_\_\_\_(addiction)
  - A \_\_\_\_\_ state in which continued drug use is needed to prevent a \_\_\_\_\_ syndrome

# Substance Abuse

- The use of psychoactive drugs in ways that deviate from cultural norms.
- Psychological dependence
- Physical dependence (addiction)

# Physical Dependence

- \_\_\_\_\_ Syndrome – Physiological and psychological disturbances resulting from a \_\_\_\_\_ of drugs
  - Include \_\_\_\_\_ for the drug and effects generally \_\_\_\_\_ those of the drug.
- \_\_\_\_\_ – Larger doses are needed to produce the same effect.





# Expectations & Effects

- The effects of drugs on behavior can be

- \_\_\_\_\_.
- \_\_\_\_\_ can form by watching \_\_\_\_\_ react to drugs.
- Drug effects \_\_\_\_\_ from one \_\_\_\_\_ to another.



“He’s at a very impressionable age.”

# Types of Drugs



- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_



\_\_\_\_\_

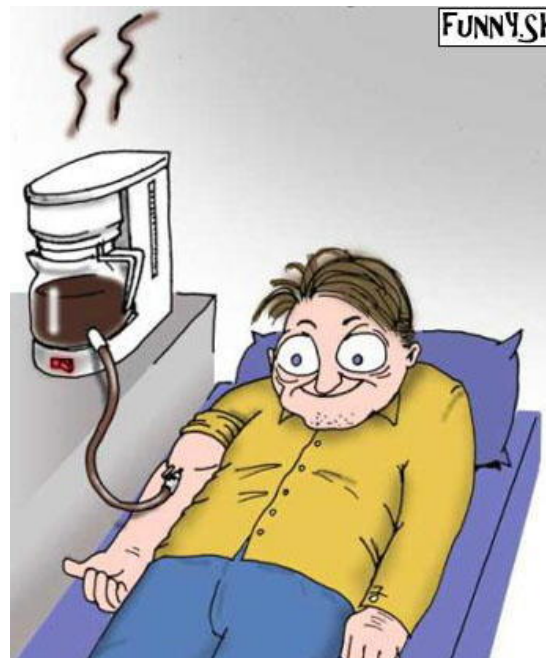


# Types of Drugs

- \_\_\_\_\_
  - Alcohol
  - Barbiturates



- \_\_\_\_\_
  - \_\_\_\_\_
  - Cocaine
  - \_\_\_\_\_
  - Nicotine
  - \_\_\_\_\_





# Types of Drugs

- \_\_\_\_\_
  - \_\_\_\_\_ activity of the CNS
  - \_\_\_\_\_ activity of GABA (\_\_\_\_\_ postsynaptic neuron activity)
  - \_\_\_\_\_ (i.e. Amytal)
    - “Downers” like sleeping pills cause sleepiness, mild pleasure, poor muscle coordination, and lowered mental concentration
- \_\_\_\_\_
  - \_\_\_\_\_ behavioral or mental activity (i.e. Ritalin)
  - \_\_\_\_\_ (“uppers” increase the release and decrease the removal of norepinephrine and dopamine at synapses)

# Drug Classes, cont'd...

- \_\_\_\_\_
  - Induce sleep and relieve pain
  - \_\_\_\_\_ is an active ingredient in opium and is used in pain relief
    - \_\_\_\_\_ is derived from morphine but is 3 times more potent
    - Stimulate receptors normally stimulated by \_\_\_\_\_, the body's naturally occurring painkillers
- \_\_\_\_\_
  - Produce a temporary loss of contact with reality and changes in emotion, perception, and thought
- \_\_\_\_\_
  - Reduce physiological symptoms associated with \_\_\_\_\_
  - \_\_\_\_\_ are the most typical \_\_\_\_\_, although alcohol (a depressant) can have similar effects

# The Addicted Brain