Mood Disorders

Chapter 15

Major Depressive Disorder

- Feel sad & helpless every day for several weeks
- Little energy, feel worthless, contemplate suicide, trouble sleeping & concentrating
- 2x women > men
- Can happen across lifespan

Major Depressive Disorder

Genetic Evidence

- Runs in families
- Adopted children resemble biological parents
- Higher risk if parents have severe, long lasting depression before age 30
- Huge sex difference, but hard to explain
  - Questionable effects from hormones
  - No differences in social influences (unreported cases)
  - No isolated gene for depression

***Although depression is genetically influenced, most depression cases are episodic.

Major Depressive Disorder

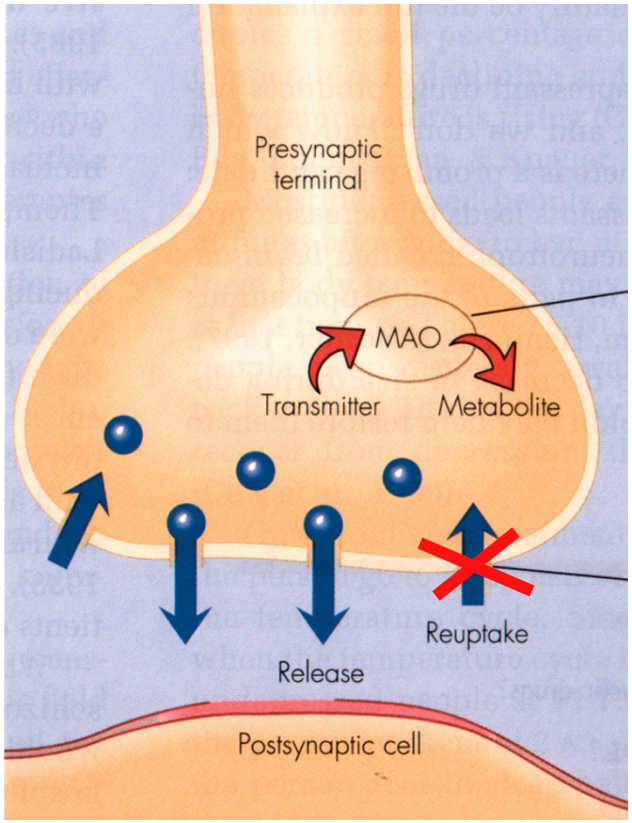
Neuroanatomical and Physiological Bases

- Lateralization effects
  - Happy mood elicits high activity in left prefrontal lobe
  - Depressed mood elicits activity in right prefrontal lobe
  - Left hemisphere damage correlates with depression
  - Right hemisphere damage correlates with mania

Depression Treatments

Antidepressant Drugs

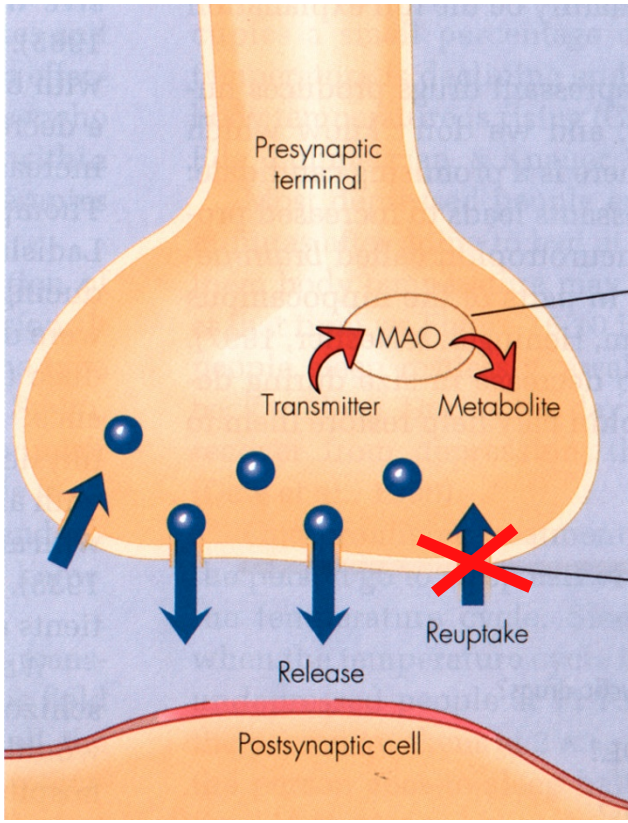
- Tricyclics (e.g., Tofranil)
  - Prevent reuptake of serotonin or catecholamines
  - Major side effects:
    - histamine receptors - drowsiness
    - acetylcholine receptors - dry mouth, difficulty urinating
    - sodium channels - heart irregularities



Depression Treatments

Antidepressant Drugs

- SSRIs (Selective Serotonin Reuptake Inhibitors)
  - Examples
    - Fluoxetine (Prozac)
    - Sertraline (Zoloft)
    - citalopram (Celexa)
    - Fluvoxamine (Luvox)
    - Paroxetine (Paxil, Seroxat)
  - Similar to tricyclics
    - specific to serotonin reuptake
  - Nausea, headache, nervousness

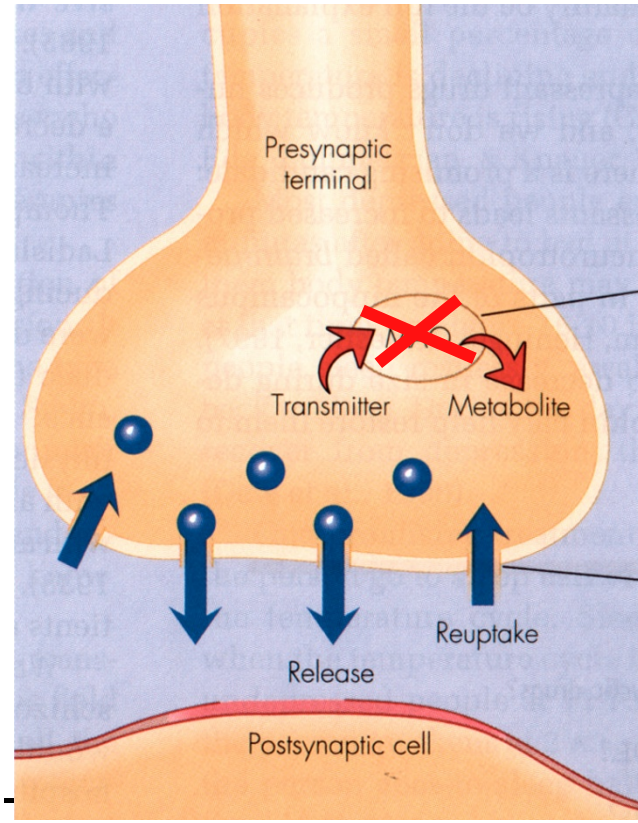


(more mild side effects)

Depression Treatments

Antidepressant Drugs

- MAOIs (Monoamine oxidase inhibitors)
  - Example: phenelzine (Nardil)
  - Blocks enzyme monoamine oxidase (MAO)
  - MAO inactivates catecholamines and serotonin in axon terminal
  - Avoid foods containing tyramine (e.g., cheese, raisins, liver, pickles) > can lead to death (increased BP)



Why don't antidepressants cure all depressive disorders??

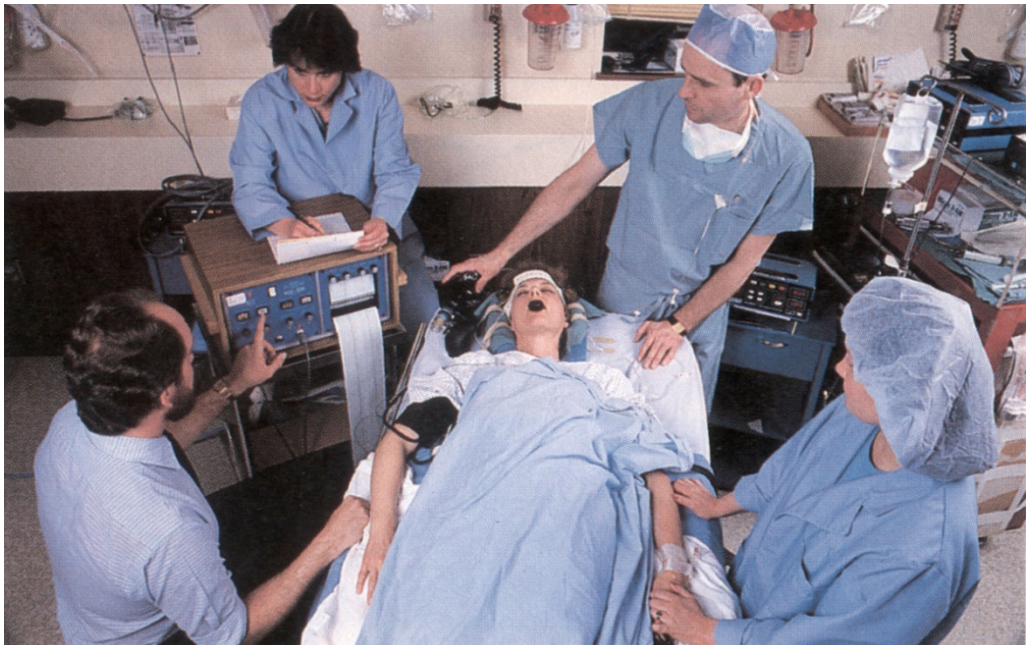
- Physiological Confounds
  - Mood = combination of transmitters
  - Time course between behavioral and physiological effects
  - Mechanisms of long-term effects not well characterized
  - Placebo effects
- Other factors
  - Depression may be due to different factors in different people
  - Environmental influences

****ONLY 2/3 of patients show benefits from antidepressants

Other Depression Treatments

Electroconvulsive Therapy (ECT)

- Electrically induces seizure
- Patients who don't respond to drugs



Depression Treatments

Electroconvulsive Therapy (ECT)

- Usually every other day for 2 weeks
- Memory problems
  - limited with right hemisphere shock
- Downfall: huge relapse effect (50%)

Bipolar Disorder

- Fluctuations between mania and depression
  - Mania: extreme activity, excitement, loss of inhibitions
  - Fluctuations may vary
  - Ages may vary
- Possible genetic effect
- Treatments
  - Lithium (a salt)
    - Mechanism not well understood (possibly 2nd messengers).
    - Dose important: too high may be toxic.
  - Anticonvulsant drugs (like valproic acid, or Depakene)
    - blocks 2nd messenger systems

Seasonal Affective Disorder (SAD)

- Depression during particular season (winter)
- Occurs in areas near the poles
  - However subtle effects in moderate climates
    - Depressed patients: phase-advanced
    - SAD patients: patients phase-delayed
- Related to circadian rhythms (different to depression)
- Treatment: very bright lights 1+ hrs/day

Schizophrenia

“Roses are red,

Violets are blue,

I’m schizophrenic,

and so am I”

-anonymous

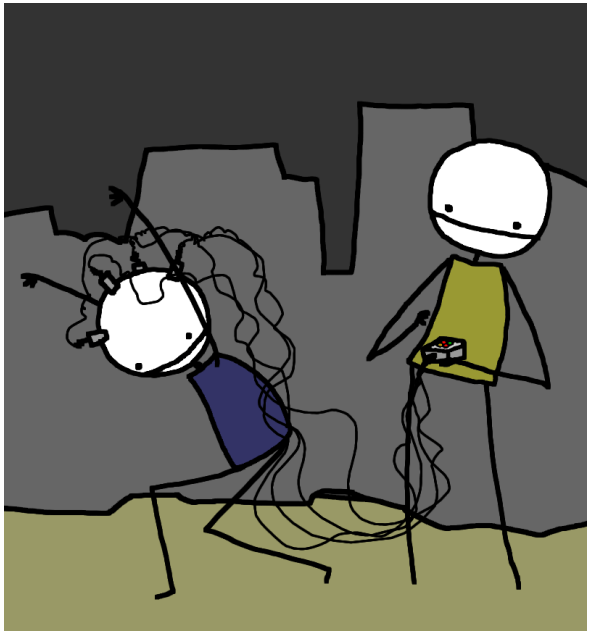
Schizophrenia: "Shattered Mind"

- Gross distortions of *thoughts* and *perceptions*
- loss of contact with reality
- *NOT* multiple personalities

Schizophrenic Symptoms

Five major symptoms:

1. Incoherent thinking
2. Delusions
3. Hallucinations
4. Disturbance of Affect
5. Bizarre behavior

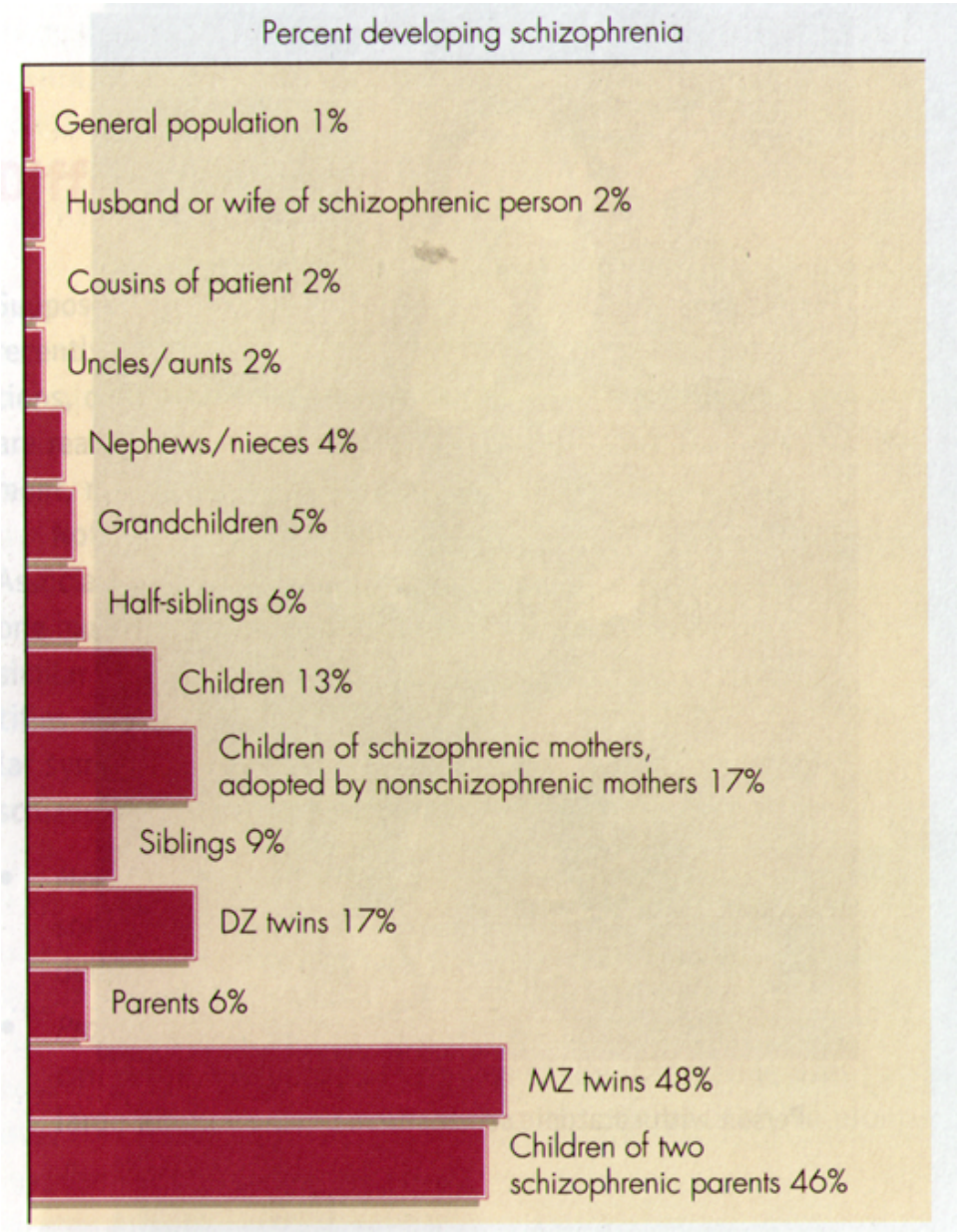


Schizophrenia

- 1% Americans exhibit over lifetime
  - Most common in United States
- # men = # women
- Average age of onset:
  - Men = 18 to 25 yrs old
  - Women = 26 to 45 yrs old
- Can be chronic or acute
  - more acute, more likely a recovery can occur.
- Diagnosed through differential means

Risk for Schizophrenia

Possibly influenced heavily by genetic factors.



Neuroanatomical Hypothesis for Schizophrenia

- Various brain regions smaller in schizophrenics
  - Prefrontal cortex, hippocampus, amygdala, temporal cortex
  - Areas involved with emotion, coherent thought, perceptions
- Ventricles larger in schizophrenics
- Lateralization of schizophrenia
  - Lower activity of above regions on the left
  - Development of larger areas (including planum temporale) on right.
  - Differences do not progress

Question: If this is so, then how come we don't see symptoms earlier???

Dopamine Hypothesis of Schizophrenia

Rationale: Excess dopamine receptor activity at synapse

- Supporting evidence
  - Antipsychotic (e.g., Cholrpromazine) and neuroleptic drugs (e.g., Halperidol/Haldol)
  - Drugs ⇑ dopamine activity (cocaine, amphet., meth., LSD)
- Downside
  - Time course discrepancies
  - Receptor differences questionable.

Glutamate Hypothesis of Schizophrenia

Rationale: deficient activity at glutamate synapses in the prefrontal cortex and hippocampus

Supporting evidence

- Antagonistic effects between
  - Glutamate and dopamine
    - Supported by antipsychotic drugs
- Phencyclidine effects (inhibits glutamate) closer to schizophrenia
  - Produce little effects in prepubescent monkeys; huge effects later on.
  - Produce specific and long-lasting effects (compared to drugs to stimulate dopamine).

- Downside
  - Glutamate treatment will overstimulate cells to death