Depression

Diathesis-stress model of mental disorders
- **Diathesis**: Set of risk factors
- **Stress**: Set of trigger factors
- The disorder arises when both are present

Depression
- A mood disorder:
  - Disabling sadness, hopelessness, apathy
  - Loss of pleasure, motivation
  - Disturbances of sleep, diet, other bodily functions
- Lifetime prevalence:
  - 7%-12% in men
  - 20%-25% in women

Cognitive factors
- Example: Negative *explanatory style*
  - Attributing bad experiences to internal, global, and stable causes
  - Internal: *It’s my fault, not someone else’s*
  - Global: *I do everything wrong like this*
  - Stable: *It’s always been this way and always will be*
- One intervention: *cognitive-behavioral therapy*
  - Designed to change patterns of thinking and behavior

Possible biological factors
- Unknown factors treated through electroconvulsive therapy (ECT)
  - Used as a last resort for intractable depression
- Excessive activation in specific brain areas
  - Experimental treatment: Deep-brain stimulation
- Serotonin imbalance
  - Treated with drugs like Prozac
  - But there are questions about efficacy
Area 25

Deep brain stimulation (Mayberg, Lozano, et al., 2005)

How it might work

• Stimulating white matter can *deactivate* nearby grey matter
• Area 25 is connected to other brain regions:
  – frontal lobes (cognition), hypothalamus (appetite), brain stem (sleep), insula (emotion, pain)
• Mixed results since the 2005 studies
  – In trials with sham-stimulation controls

Challenges in evaluating depression therapy

• Placebo effects
  – *Placebo*: An inert or sham treatment that helps anyway because the patient believes it will help
  – Can alleviate negative cognition
• Spontaneous remission
  – Depression is cyclical, and can lift by itself
  – If Bob starts treatment when he is depressed, and gets better, was it the treatment, or remission?

Regression to the mean

• Spontaneous remission is an example of *regression to the mean*
• Regression to the mean occurs when:
  1. A group is defined by extreme values on a variable, and
  2. That group is measured on the same variable again, later
  An important confounding variable

Regression to the mean

• Students who perform poorly on a test are selected for a remedial education program
  – The group’s mean score improves on a later test
  – Possible explanations:
    • The program worked
    • Some students had a bad day on the first test
Regression to the mean

- Students who perform well on a test are admitted to a selective college
  - In college, they show a sophomore slump
  - Explanations:
    - Early success reduces subsequent effort
    - Some students had a good day on the test

Regression to the mean

- An instructor notices a pattern: People she singles out for praise go on to screw up
  - Explanations:
    - Praising people causes them to try less hard
    - People who earned praise were having a good day

Evaluating antidepressants

(Kirsch & Sapirstein, 1998)

- Research question: How big is the drug effect, relative to spontaneous remission and placebo effects?
  - Used meta-analysis: A study of studies
- 19 pharmacological studies, each with:
  - Pre/post, double-blind design
  - Placebo control group
- 19 psychotherapy studies, each with:
  - Pre/post design
  - A wait-list or no-treatment control group

### Depression score

<table>
<thead>
<tr>
<th>Pre-treatment</th>
<th>Post-treatment</th>
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<tbody>
<tr>
<td>Spontaneous remission (25%)</td>
<td>Spontaneous remission (25%)</td>
</tr>
<tr>
<td>Placebo effect (50%)</td>
<td>Placebo effect (50%)</td>
</tr>
<tr>
<td>Drug effect (25%)</td>
<td>Drug effect (25%)</td>
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</tbody>
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- The active drug accounted for only 25% of total improvement in active drug conditions
  - The rest was spontaneous remission or placebo
- Kirsch attributes the 25% to publication bias
  - Studies that don’t show results don’t get published