Experiments & Observational Studies

Chapter 13
Observational Studies vs Experiments

Observational studies

- No treatment is assigned - self selection!
- Researchers merely observe a characteristic in the subjects
- Prospective vs Retrospective:
  - Prospective - pick subjects, then follow them & observe behavior for some time
  - Retrospective - pick subjects, then look up information from past records

Experiments (or experimental studies)

- A treatment is assigned (hopefully RANDOMLY)
- Researchers observe the response and measure the effect
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Observational Study or Experiment??

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Probably Observational Study - they didn’t assign people to either drink 19 cups of tea a week, or to not drink tea… Prospective - picked people and followed their activity for 3 years (ish)
Observational Study or Experiment??

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(Science News, July 20, 2002)
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To research the effects of “dietary patterns” on blood pressure in 459 subjects, subjects were randomly assigned to three groups and had their meals prepared by dieticians. Those who were fed a diet low in fat and cholesterol lowered their systolic blood pressure by an average of 6.7 points when compared with subjects fed a control diet.
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Experiment - subjects were randomly assigned to three groups!
Tests of gene therapy on laboratory rats have raised hopes of stopping the degeneration of tissue that characterizes chronic heart failure. Researchers at the University of California, San Diego, used hamsters with cardiac disease, randomly assigning 30 to receive the gene therapy and leaving the other 28 untreated.

Five weeks after treatment the gene therapy group's heart muscles stabilized, while those of the untreated hamsters continued to weaken.
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Experiment - hamsters were randomly assigned to either receive gene therapy or not
The **ONLY** way to show **CAUSE & EFFECT** is with a randomized experiment!
(i.e. random assignment of subjects to treatments)
Read Chapter 13, pgs 293 - 295 in your textbook for more information and examples!