



Ch. 13 Experiments and Observational Studies

Key words:

- factor:** The explanatory variable (independent)
- response variable:** The variable that is being measured (dependant)
- subjects:** Humans who are experimented
- experimental unit:** Other individuals being tested (animals)
- levels:** The specific value that the experimenter chooses for a factor
- treatment:** The combination of specific levels from all factors that a unit receives

- **Four principles of Experimental Design:**

- 1.) **Control:** we control sources of variation other than factors we are testing
- 2.) **Randomize:** allows us to equalize the effects of unknown sources of variation
- 3.) **Replicate:** the ability to repeat an experiment
- 4.) **Block:** we can reduce variability due to difference among the blocks

- **Experiments also consist of:**

- 1.) **Blinding:** *Single-blind*=When all of the individuals in one group are blinded (either the participants or the researcher)
Double-blind=When everyone in both groups are blinded (both the subjects and researcher)
- 2.) **Placebos:** A “fake” treatment that looks just like the treatments being tested
Placebo Effect= the tendency of human subjects to show response when given a placebo
- 3.) **Blocking:** *Randomized block design*= randomization that occurs only within blocks
Matching= subjects are paired because they are similar in ways not under the study

- **Observational Studies:** Researchers don't assign choices; they simply observe them

- 1.) **Retrospective Study:** when subjects are selected and then their previous conditions or behaviors are to be determined
- 2.) **Prospective Study:** when subjects are followed to observe future outcomes

