

Chapter 2: Scientific Methods in Psychology

- Experimental Research Design
 - o A study in which at least one variable is dependent on the other
 - o A TRUE EXPERIMENT – Participants are RANDOMLY selected
 - o A QUASI-EXPERIMENT – No random assignment – aka natural experiments
 - o Pro: **ONLY** research design that gets causation
 - o Con: can be biased or influenced by experimenter's expectations. Manipulated variable may impact subject negatively
 - o Informed consent
 - Subjects advised exactly what to expect and you have to agree of your own free will
 - Regulated by the Institutional Research Board (IRB)
 - A university or other reputable institution appoints a panel to see if the experiment is ethical
 - Also regulated by:
 - American Psychology Association (APA)
 - o Creates Standards
 - IACUS
 - o Protects animals – need approval
- Meta-analysis **
 - o Small to medium effects predominate in studies of certain phenomenon
 - o Results of studies are combined and treated as one
 - o Provides information about the circumstance
 - o Studies not standardized
- Experimenter bias
 - o The researcher's unintended distortions of study procedures or results
 - o Human nature to unwittingly influence the study to expected/desired results occur
 - Ex. You think someone is some way so you act like they are
 - o Combating Experimenter Bias
 - Methods designed to counteract tendencies for bias:
 - Using observer to get an unbiased, outside opinion
 - Using a placebo control
 - o A sugar pill used to trick subjects (blind) or subjects and experimenters (double blind)
- Confound considerations
 - o Confound
 - Things you can't control that happen
 - o Ex. Sex, personality, distraction, temperature, sleep deprivation, etc.
- Statistical Confidence
 - o Do statistics agree with it??
 - o Is the range of answers too wide to really justify the experiment?
- Scripted Statistics
 - o Descriptive statistics are varied
 - o Mean, median, mode, range
 - o Measurement of variation
 - Standard Deviation

- Closer to score cluster; smaller deviation
- CONCEPT CHECK
 - o Which test did you do better on according to the class avgs and deviations?
 - Test #1
 - Your Score: 90
 - Class Avg.: 70
 - Standard Deviation: 20
 - Test #2
 - Your Score: 80
 - Class Avg.: 65
 - Standard Deviation: 5
 - o You did better on the second test
 - Why?
 - Your score – class avg. / standard deviation
 - Test #1: $90-70 / 20 = 1$ Standard Deviation
 - Test #2: $80-65 / 5 = 3$ Standard Deviations
- Infer
 - o Guess based on evidence
 - o Interpretational Statistics
 - Educated guess about large population based on smaller population
 - o Infer true mean based on sample means
 - Confidence intervals
 - 90 – Kind of accepted
 - 95 – Mostly accepted
 - 99 – Accepted Everywhere
- Probability Value
 - o Estimated how rare a score will be based on range in which the population totals
 - o Want $p < .05$
- Statistics and Conclusions
 - o Consistent, dependable, and large effects do not require statistics
 - o Scientists work with small and fragile effects or effects that only arise under a certain set of circumstances
 - To solidify you need a solid understanding of research design and statistics
- Studying “intangible” mental processes and complex human behavior is hard