

****Exam 3: Tuesday 4/15 in class****

The exam will consist of:

□□25 multiple choice questions (2 pts each = 50 pts)

□□15 points short answer

□□10 points short essays

Total: 75 points

****Pay close attention to recommendations regarding research methodology, or the pros and cons of various approaches discussed in class!!****

This is what you need to know for the exam:

3-25-14: Causation and Experimental Design

Know what a causal effect is

- Change in one variable leads to change in another variable, all other things being equal

Know and understand the three key criteria for establishing causality: association, time order, and non-spuriousness; be able to read a study abstract and describe how well the study meets these criteria

- Association- between the two variables
 - Most published studies will have association
- Time order- the independent variable must come first and be established
 - Cross-sectional studies are not good at having time order
 - If you only get a snapshot of a family you don't know what happens before or after
- Non-spuriousness- a third variable or "nuisance" variable cannot be explaining the association

Understand what makes a study a true experiment: random assignment

- Random assignment to experimental and control groups is key
 - Establishes non-spuriousness
 - Only thing that differs between the two groups is experimental manipulation
 - Establishes time-order
 - Researcher controls how and when the manipulation is administered

Know the difference between random assignment and random sampling

- Random assignment- how individuals are assigned to groups
- Random sampling- every aspect is based on random chance

Know the problems with experiments:

- Self-fulfilling prophecy- positive staff expectations create positive outcomes
- Placebo effect- the treatment only working because participants believe the treatment can work
- Hawthorne effect- the experimental group feels special

Know what process analysis is and why it is used

- Periodic measures taken to determine whether a treatment is being delivered as planned (Fidelity checks)
 - Usually in a field experiment
- To prevent the self-fulfilling prophecy, placebo effect, Hawthorne effect

Know the characteristics of non-equivalent control group and before-and-after designs quasi-experiments

- Non-equivalent control group

- o No random assignment
- o Matching can help create a similar comparison group
- Before and after designs
 - o No comparison group
 - o Multiple assessments before and after the treatment/intervention

Know the threats to causal validity in experiments and quasi-experiments and in which designs these problems are most likely to exist: selection bias, mortality, testing, maturation, and regression

- Threats to causal validity
 - o Noncomparable groups
 - Selection bias (more likely casual validity)
 - Mortality (differential attrition) (more likely casual validity)
 - o Endogenous change
 - Testing- taking a pretest can help posttest (quasi experiment- before and after)
 - Maturation- developmental change (more likely quasi experiment— before and after)
 - Regression-extreme scores become less so (more likely quasi experiment—before and after)
 - (for all endogenous change. not a problem if there is a control group)
 - o History
 - Influence of external events
 - Particular concern for before and after designs also for treatments done at multiple sites
 - o Contamination
 - When control and experimental groups affect each other