

Critical Thinking in Psychology
Exam 2 Study Guide
Spring 2015

There are 47 multiple-choice questions on this exam. There are conceptual questions, but also application-based questions. It's best to know the terms, but also be able to apply them in situations. Look to the book and powerpoints for examples.

Chapter 8

- When to use a scatterplot vs. when to use a bar graph:
 - **Scatterplot:** quantitative variables
 - **Bar graph:** one categorical, one quantitative
- How do we know when an association claim is being made vs. when a causal claim is being made
 - **Association claim:** A claim about two variables, in which the value (level) of one variable is said to vary systematically with the value of another variable.
 - **Causal claim:** A claim arguing that a specific change in one variable is responsible for influencing the value of another variable
- Know how the 4(?) validities pertain to bivariate correlations
 - **Statistical Validity:** What is the effect size? Is the correlation statistically significant? Could outliers be affecting the association? Is there restriction of range? Is the association curvilinear?
 - **Internal Validity:** Can we make a causal inference from an association? Directionality problem – unsure of which variable came first Third-variable problem – is there an alternative explanation for the association between the variables? Data can sometimes tell you, Spurious association – association is only there because of a third variable
 - **External Validity:** Important to know where they got their sample Sample size doesn't matter; How important is external validity? Depends on the priority of the research. Moderating variables – when the relationship between two variables changes depending on the level of another variable.
- What does the **probability p estimate** mean? The likelihood that the results were from a variable that wasn't controlled for
 - If a result has a $p = .02$.. what probability is that? 2%
- **Statistical significance result:** A conclusion that a result from a sample is so extreme that the sample is unlikely to have come from a population in which there is no association or no difference.
- **Outliers:** an extreme score (single or few cases) that stands away from the other results
- **Curvilinear results:** results that, when plotted, form a curve, not a straight line

- **Moderators:** when the relationship between two variables changes depending on the level of another variable
- **Restriction of range:** a situation involving a bivariate correlation, in which there is not a full range of possible scores on one of the variables in the association, so the relationship from the sample underestimates the true correlation

Chapter 9

- **Longitudinal design:** A study in which the same variables are measured in the same people at different points in time.
- **Autocorrelations:** A claim about two variables, in which the value (level) of one variable is said to vary systematically with the value of another variable.
- Define, and which one is sought out most from researchers
 - **Cross-sectional correlation:** In a longitudinal design, a correlation between two variables that are measured at the same time
 - **Cross-lag correlations (researchers most interested in):** In a longitudinal design, a correlation between an earlier measure of one variable and a later measure of another variable
- How to point out multiple regression from press headlines: controlling for, taking into account, correcting, adjusting for
- **Predictor variables:** independent variables
- **Criterion variables:** the variable in a multiple regression analysis that the researchers are most interested in understanding or predicting
- Why is multiple regression inferior to experiments? It does not establish causation
- **Mediators:** a variable that helps explain the relationship between two other variables
- **Third variables:** a situation in which a plausible alternative explanation exists for the association between two variables

Chapter 10

- Cohen's d benchmarks – what value is weak, moderate, and strong: can go above 1. Larger effect size= stronger causal effect, how far apart two groups are on the dependent variable, distance between group means and how much scores within the groups overlap
 - Weak: overlap in groups, .2
 - Moderate: .5
 - Strong: Independent variable caused dependent variable to change for more participants in the study
- which one is bad for experiments
 - **Systematic variability:** In an experiment, the levels of a variable coinciding in some predictable way with experimental group membership, creating a potential confound, bad

- o **unsystematic variability:** in an experiment, when levels of a variable fluctuate independently of experimental group membership, contributing to variability between groups
- **Selection effects:** a threat to internal validity that occurs in an independent-groups design when the kinds of participants at one level of the independent variable are systematically different from those at the other level How to control-
- **order effects:** When being exposed to one condition affects how participants respond to other conditions. How to control- counterbalancing
 - o **Types:** carryover, practice, fatigue
- **design confounds:** a threat to internal validity in an experiment in which a second variable happens to vary systematically along with the independent variable and therefore is an alternative explanation for the results. How to control-
- **Match-groups:** an experimental design technique in which participants who are similar on some measured variable are grouped into sets; the members of each matched set are then randomly assigned to different experimental conditions. Most helpful when the sample size is small
- Types of independent and within groups designs What kinds of threats to internal validity pertain to each design?
 - o Within groups
 - Participants are equivalent because they are the same participants and serve as their own control
 - Gives researchers more power to notice difference between conditions
 - Requires fewer participants
 - Threats to internal Validity: order effects
 - Types: concurrent-measures, repeated-measures
 - o Independent groups:
 - Different groups of participants are placed into different levels of the independent variable
 - Types: posttest-only, pretest/posttest
- What is **power**? Finding a difference between groups when the independent variable truly has an effect on the dependent variable

Chapter 11

- Main priority for experiments: internal validity
- Problem with one-group, pre-test/posttest designs: no control group
- Threats to one-group, pre-test designs and how to control for them
 - o **Maturation threat:** a threat to internal validity that occurs when an observed change in an experimental group could have emerged more or less spontaneously over time. Prevent: comparison group
 - o **History threat:** a threat to internal validity that occurs when it is unclear whether a change in the treatment group is caused by the treatment or by a historical factor or an event that effects