

Study guide for Exam 3
Fall, 2009

LECTURES

Experimentation

1. What is an experiment? What is the purpose of experimentation? What makes it different from other methods?
2. Know the basic terms of experimental design:
 - a. independent & dependent variables
 - b. manipulation/manipulated variable
 - c. experimental & control groups
 - d. confounding variables (subject & situational)
 - e. control/hold constant
 - f. blind & double blind
 - g. randomization
 - h. spurious relationship
 - i. internal & external validity
3. What are the criteria of causation, i.e., the conditions that must be met to conclude that X is a cause of Y?
4. Know how these designs meet the conditions of causation:
 - a. classical design
O X O
R<
O O
 - b. posttest-only/control group design
X O
R<
O
 - c. Why is the control group necessary in these designs?
5. How do we control subject variables? Situational variables?
6. How is randomization different from random sampling? Which is used for internal validity and which for external?
7. What's the difference between experimental & mundane realism?
8. What are the pros & cons of laboratory and field experiments? Which has the most mundane realism?

Quasi-experimental designs

1. How are quasi-experiments different from true experiments?
2. What is evaluation research? Why are quasi-experiments used so often in this type of research?
3. What is the nonequivalent control group design? How is it similar to & different from a true experiment?
4. What is matching? How is it similar to & different from randomization? Do we use it for internal or external validity?
5. What's wrong with a simple before-after design (O X O)? Why should you question the internal validity of the Teen Challenge evaluation I described in class?
6. What could be done to improve the Teen Challenge study?
7. Why can't you trust anecdotal evidence about the effectiveness of a social program?

Bivariate analysis

1. Know how to construct and interpret contingency tables depicting relationships between variables.
2. How is a contingency table similar to but different from a scatterplot?
3. Know these features of contingency tables: independent & dependent variables, rows & columns, cells & cell frequencies, marginal totals.
4. What is the simplest possible contingency table?
5. Be able to properly convert the cell frequencies in a contingency table to percentages, and to analyze the results. (Bring a calculator just in case)
6. Know the difference between linear & curvilinear relationships.

Multivariate analysis

1. Know how to read a multivariate table. Be able to identify independent, dependent, and control (test) variables.
2. What does it mean to hold constant or control a variable?
3. What are partial tables and how are they created?
4. Be able to identify replication and specification/interaction effects.

Using experimental logic to study causation with non-experimental data

1. Know how you can use partial tables to control confounding variables.
2. Why is controlling these variables called ex post facto matching?
3. How is this process similar to the nonequivalent control group design?
4. How do you know if the relationship is spurious?

READING

Chambliss & Schutt, Chapter 6 – causation & experiments

1. Understand the criteria of causation. All 5 are important but the first three are most fundamental.
2. Know how a controlled experiment meets the first three criteria of causation.
3. What's the difference between randomization and matching? Also note the difference between randomization & random sampling
4. What are quasi-experimental designs? Know the nonequivalent control & before-after designs, including multiple group, panel, and time series
5. Understand the threats to internal validity described in pp. 119-125. You only need to know the terms in the left-hand column of the box on p. 120.
6. Why do we use placebos and double blinds?
7. Know the three types of generalizability that we're concerned about with experiments. (These are generally considered matters of external validity)
8. What ethical issues are involved in experimentation? Is deception ok, and if so, when? What is a debriefing?

C&S, Ch. 8 – Data analysis

1. What is a secondary analysis?
2. What is a frequency distribution? Know how to interpret the various graphs used to depict them.
3. Know how a graph can be distorted to give a misleading image.
4. What are the 3 measures of central tendency? When would you use one as opposed to another?
5. What do measures of variation tell us? Why do we need to know this?
6. Know how we use cross-tabulation to show that two variables are related (i.e., how to read a contingency table).
7. What is a measure of association? How do you interpret one?
8. What does it mean to say a relationship is statistically significant?

9. What does it mean to control a third variable? How is this done in the table on p. 215? What are the independent, dependent, and control variables in this table? Be able to interpret the data. Do the results illustrate replication, specification/interaction, or spuriousness?
10. Understand the ethical rules concerning data analysis.

Eres #6 – “The spreading of disorder”

1. What theory was tested?
2. Was this a lab or a field experiment?
3. What kind of experimental or quasi-experimental design was used?
4. What are the independent & dependent variables?
5. How were order & disorder operationalized in these experiments?
6. How was the dependent variable operationalized? What measurement strategy was used in every experiment?
7. Was randomization used? If not, do you think the assumption of random selection is justified?
8. Did the results support the hypotheses?
9. What conclusions would you draw about the internal & external validity of this study?

Eres #7 – Babbie on quasi-experimental designs

1. Understand time-series and nonequivalent control designs.
2. Why is a time series design better than a simple before-after design?
3. If you were doing a time-series study to find out if passage of a motorcycle helmet law reduces accident deaths, what kind of finds would lead you to conclude that the law caused a reduction?

PRACTICE TABLES – to be handed out in class

You hypothesize that the more TV people watch, they more afraid of crime they will be. Table 1 shows your findings for your entire sample, whereas Tables 2 and 3 show what happens to the relationship when you control for income. Convert the cell frequencies to percentages and interpret the results. (Remember, you need to know which totals should equal 100%.) Do Tables 2 & 3 illustrate replication or specification?

ESSAY – refer to article handed out in class

Design rolled experiment to test the hypothesis that talking urinal cakes deter drunk driving.

1. What kind of design would you use?
2. What are the independent & dependent variables?
3. How would you manipulate the independent variable? How would you measure the dependent variable?
4. Who would your subjects be? Will they be randomly assigned?
5. What confounding variables might be a problem? How will they be controlled?
6. Will this study guarantee internal validity? External validity?

Explain how your study is both internally & externally valid.

