

ESP 178 Applied Research Methods

Research Proposal Stage 3: Conceptualization and Research Design

Due: 2/21
Length: 3-4 double-spaced pages
Grade: 10% of total course grade

Purpose: Putting newly acquired knowledge to use in refining your research question and the conceptualization of your variables and in developing an initial research design.

Background: The work you've done on your research proposal so far provides the basis for developing a research design, that is, a plan for addressing the question you have posed. Your question points to a particular type of study, whether exploratory or explanatory. Your question points to a target population, the group of people you would study to address your question. Your question also points to the kinds of questions you would ask these people and the way you might go about asking them. The research design is critical to your final proposal: not only must you convince the potential funder that the question is important, you must convince the funder that you've got a sound approach to answering the question.

Task 1 - Question: State your research question one more time, in one sentence. Specify whether this is *primarily* an exploratory or explanatory study.

Types of questions...

Explanatory	Does A cause/influence/affect B?	Does living on a cul-de-sac lead to more outdoor play for kids?
Exploratory	Why? How? What factors?	Why don't your kids play outside?

Task 2 - Model: Draw the core of your conceptual model one more time, with dependent variable, independent variable(s), and key control variables. Indicate the unit of analysis for this study (remember: unit of analysis is generic, e.g. individuals, or households). Think about including an independent variable that can be influenced by policy or programs, if the goal is to change behavior.

What exactly is "unit of analysis" again?

Unit of Analysis	Generic unit	individual, household, city
Target Population	Specific group of units	students at UC Davis households in Davis cities in California

Note: For policy purposes, conceptual models are most interesting if they have an independent variable that can be influenced by policy.

Task 3 - Design: Decide on a research design – e.g. cross-sectional, longitudinal, experimental. For experimental, describe the treatment, the treatment and control groups, and before and after

measurement. For non-experimental, describe how you will handle the dimension of time (e.g. cross-sectional, longitudinal, etc.).

What type of design to use when...

Cross-sectional	To test conceptual model; if variables of interest don't offer possibility of treatment (e.g. gender, age)
Longitudinal	To look for changes; if you expect the independent variable to be changing enough over some period of time that you will see a change in the dependent variable
Experimental	To test the effect of a treatment, either something you control ("intervention study") or something someone else controls ("natural experiment")

Notes on Design:

- Cross-sectional studies are used first to test and refine the conceptual model; the conceptual model then provides the basis for the design of a treatment/intervention.
- Experimental studies must have a clearly defined treatment or intervention that is both feasible and promising.
- Cross-sectional studies do not have a treatment and they do not have a treatment and control group; if you don't have a treatment, it's a cross-sectional or longitudinal study

Task 4 – Internal Validity: Briefly describe potential issues related to causal (internal) validity with your design. For non-experimental designs, look at the criteria for internal validity. For experimental designs, look at threats to internal validity.

What type of internal validity to worry about when...

Non-experimental	5 criteria for internal validity: association, nonspurious, time-order, causal mechanism, context
Experimental	Takes care of association, nonspurious, time-order, BUT 5 threats to internal validity: selection bias, endogenous change, history effects, contamination, treatment misidentification

Note: Spuriousness applies to relationship, not to variable – relationship is spurious if relationship between IV and DV is due to variation in third variable.

Task 5 - Variables: Define your variables, the method of data collection for each, the measure, and the type of measure, *using the following table format* (examples given):

Variable	Definition	Method	Measure	Type
Cul-de-sac (IV)	Whether households lives on cul-de-sac or not	Observation	Lives on cul-de-sac – yes/no	Nominal
Kid's play (DV)	How frequently kids play outside in neighborhood	Survey	How many days in the last week did your children play outside somewhere in the neighborhood?	Ratio

Task 6 – Measurement Validity and Reliability: Describe key reliability and validity issues in measuring your dependent variable using your proposed data collection method. Describe how you would test for reliability (i.e. consistency) and validity (i.e. accuracy) for your dependent variable.

Notes on Measurement Validity and Reliability:

- Measurement validity isn't only about whether respondents lie on the survey; responses may be inaccurate for lots of unintentional reasons.
- Measurement reliability is about the consistency of responses for specific individuals on specific questions; re-tests are usually for a subset of the original sample and must be within a short time frame (e.g. 2 weeks) so that nothing changes in reality.
 - o Do not confuse test-retest reliability with a *longitudinal study*, in which surveys are repeated after a long period of time and the expectation is that there will be changes during this period.
 - o Do not confuse test-retest reliability with *convergent validity*, in which a survey includes two or more different questions that measure the same variable and the responses are compared for consistency.

Task 7 – Sampling Plan: Describe a sampling plan for this study. Define your target population (i.e. which specific units you would like to study, e.g. households or individuals in Davis). Suggest a possible sampling frame (if one exists) to match this target population (e.g. phone listings, addresses, membership list for an organization, etc.). Choose an appropriate sampling technique (e.g. simple random, stratified, judgmental, etc.). Propose an appropriate sample size.

What kind of sampling to use when...

Cross-sectional	Draw random sample; sample size ≥ 400 (number matters, not share of population)
Longitudinal – repeat cross-sectional	Draw random sample; sample size ≥ 400 (number matters, not share of population); repeat same process for second survey
Longitudinal – fixed panel	Draw random sample; sample size ≥ 400 (number matters, not share of population); repeat second survey with same sample.
True experimental	Draw sample (doesn't have to be random), randomize to treatment and control groups; sample size can be smaller
Quasi-experimental	Treatment and control groups pre-determined and can't be randomized; draw random sample from each; sample larger than for true experiment

Task 8 – External Validity: Discuss strengths and weaknesses of your choice, including implications for generalizability, both from sample to population and from this population to others.

Write-up: In your write-up, devote a paragraph of about $\frac{1}{4}$ to $\frac{1}{2}$ of a page to each of these tasks; more or less depending on need. Keep your write-up short and to the point.

Review: what type of validity to worry about when...

Measurement validity	Survey questions	Are responses accurate?
External validity	Sampling	Can sample be generalized to population?
Causal (or internal) validity	Design (cross-sectional, experiment)	Is the observed relationship really a causal relationship?

Suggestions:

- Aim for an “elegant” design – don’t make it more complicated than it needs to be.
- In choosing a data collection method and sampling plan, think both about the best way to address your question and what might actually be feasible.
- If you are thinking about a data collection method other than a survey, you may need to read ahead in Schutt.
- Come talk to me or to the TA if you are not sure how to handle any of these tasks.
- For this assignment, the ideas are more important than the writing, but you must express your ideas clearly enough that I understand them.

Grading:

I will grade your assignment based on how complete, clear, and convincing your proposed design is – is the design appropriate, are the variables defined, does the sampling plan make sense, does the discussion show a reasonable grasp of validity and reliability issues.

Next up: Development of a data collection instrument, plus pretesting and an administration plan.