Psychology 211 - Research Methods for the Behavioral and Social Sciences

Notes on Content for Research Design, Methodology & Data Analysis Plan

Please see the Chapter III section of the outline I provided for your research proposal. You can find this in Unit 7 and in the handouts section of the course.

Methodology

There are 2 critical questions to be addressed in the methodology: how data will be collected and how will data be analyzed?

This chapter tells in great detail, how you are going to answer your research questions. In a description of the methodology, the goal is to make it possible for someone else to do exactly what you want to do without having to consult you further. Your goal is to show whomever reviews your plan that you know exactly what you need to do and that you are capable of doing it. In addition, you should show that you have carefully conducted your research to see what and how other researchers have approached similar topics. You have examined and learned from their methodologies, including learning about the obstacles, surprises and suggestions for future approaches that these researchers have provided. You have then also gone into the mechanics of research books, manuals, etc. to read on particular research techniques that you could apply and selected the best approach for your study.

Therefore, in this section you need to discuss some of the following:

The data needed. What observations or measurements do you need to make in order to answer your question of address your hypothesis? If you plan to use focus groups, exactly what questions will you ask and your rationale? How will you compile and evaluate all the answers in order to make some sense out of them? Will all your subjects be asked the same questions?

How will you obtain the data? Who will be your subjects? How will you select and recruit them? Why have you chosen these subjects rather than others? Will you divide your subjects into groups? Where will data collection take place? What happens to a typical participant from the moment he or she is involved in the research until the research is complete? You should also describe any equipment or special materials you will need to collect your data. Further, if you are using focus groups, there is a literature and methodology for conducting focus groups. What does the literature reveal about techniques to be used in focus groups. This section should also include an overview of this particular methodology.

Data Collection Instruments. What instrumentation is required for data collection? Will you develop an independent instrument? Will you look for a standardized instrument already been tested? Will you partially develop an instrument and borrow items for an existing instrument or set of instruments? Can you show a draft of the data collection instruments?

If you are developing a survey: Do you include a title for your survey? Do you include an introduction to the survey that tells the subject about the nature of the survey and that all
responses will be held strictly confidential and anonymous? Can you group the items by content and provide a subtitle for each group? Do these categories correspond to your research questions? Within each group of items, can you place items with the same format together? At the end of the survey, can you indicate what respondents should do next? Have you prepared an informed consent form, if needed?

Sampling Design: Specify sampling design plan and rationale for choice of sampling plan. See handout on sampling designs.

Field Testing of Instrument: Have you conducted a field-test of the instrument on similar participants? Did you ask questions of the participants about the clarity and validity of the instrument? (You can ask for my handout on how to field-test instruments.) Did you modify the survey instrument based on the results of the field-test?

Data Analysis

How will the data be analyzed? What will you do with the observations/numbers/answers that you gathered from each participant in order to address your research question/hypothesis? This is not simply an exercise in naming off statistical tests. You need to describe exactly what numbers will be processed by which tests, and why; and what should come out of the other end of your tests. Be careful to emphasize the purpose of the analysis, not the analysis itself. For example, do not write “a t-test will be used to see if the groups are different.” But rather, write something like, “the mean response times of each group will be compared, using a t-test, to see if the experimental group responded more quickly…”

You may need to justify your choice of analysis procedure if your data are amenable to more than one type of analysis. Do not confuse graphs and tables—which are extremely useful data display devices with data analysis.

Internal and External Validity

The *internal validity* of a research study is the extent to which its design and the data it yields allow the researcher to draw accurate conclusions about cause-and-effect and other relationships within the data. To ensure internal validity or a research study, you need to take the necessary precautions to eliminate other possible explanations for the results observed. See Leedy and Ormrod (2010) pages 97-101 to learn more.

*External validity* in a research study is the extent to which the results can be applied to situations beyond the study itself. To state in a different way, the extent to which the conclusions draws can be generalized to other contexts. See Leedy and Ormrod (2010) pages 99-100, on common strategies that enhance external validity, especially the use of a representative sample, use of real settings and replication of research.

Expected Results and Future Directions

What do you expect will happen? What results do you think you will get? Also try to anticipate possible flaws, confounds, limitations, etc., inherent in your planned research. Perhaps time limitations restrict your ability to follow your subjects’ performance over the long term, and perhaps meaningful differences
between groups may not emerge for a year or so. Perhaps you assumed that your test or measurement technique is sensitive to the phenomenon you want to measure, but what if it isn’t? Be sure to examine all of the assumptions inherent in your research, and consider the possibility that they could be wrong.

**Ethical Considerations**

What are the important ethical considerations that must be taken into account in your study?

**Summary**