

Advanced Research Methods Notes

Week 1: Introduction to Advanced Research Methods

How is this unit relevant?

- Psychology is evidence based; you need to be able to evaluate the evidence
- The interpretation of research must be viewed in light of the design and analysis
- Skills needed for you to design, use, and interpret your own surveys (in future study or practice)

Introduction to non-experimental (correlational) research

- Fundamental concepts
- Correlational designs
- Analysing correlational research
- Correlation, causation, and prediction

Fundamental concepts

- Experimental designs
 - involve manipulation and control of factors to allow causal conclusions
 - Characterised by:
 - controlled manipulation of IV to assess its impact on the DV
 - Random assignment
 - Control of extraneous variables
 - Theoretically strong causal explanation
 - It's not the statistics that are used that define it as experimental but rather the logic of the research design itself
 - Experimentation is not always possible due to reasons like when the IV is a person variable like self esteem which cannot ethically be manipulated
- Non-experimental designs
 - Measure variables of interest and ascertain relationships, which can be:
 - Positive: variables covary together
 - As one gets larger so does the other
 - Ie age and wisdom
 - IQ and academic performance
 - Negative: variables covary in opposite directions
 - As one gets higher, the other gets lower
 - Increase in one leads to decrease in other
 - Ie alcohol and inhibition
 - No relationship: variables covary independently
 - Perfect: one variable predicts another with 100% accuracy
 - Ie amount of tickets sold at a theatre and number of people at the film
 - Characterised by:
 - Correlational research design
 - Measuring participant on a variable of interest and seeing how they are related
 - Often called correlation designs
 - Process of pattern detection

- Purpose of a correlation is prediction

Correlational designs

- These simple bivariate correlations (relationships between two variables) illustrate the concept, but we usually need to know the role of many variables together
- More complicated correlational designs employ partial relationships (that is, remove the part of the relationship that is related to some other factor/s)
 - E.g., you may think that IQ is important in predicting academic performance, but you would need to account for things like stress, coping, study habits, and interest in the topic
- We can hope to identify most important variables driven by theory, previous research and common sense

Analysing correlational research

- Usually involve correlation statistics, obviously!
- Can also use ANOVA, but the IV (grouping variable) is a subject variable
- ...these are correctly called subject variable or natural group designs not quasi experiments
- Aim: to understand the proportion of variance in a given variable explained by other variable/s
- when the IV is a subject variable (a characteristic of individuals that hasn't been manipulated ie gender)

Correlation and causal inference

- Most extreme weakness of correlational designs is that they do not allow causal inference hence why it is considered inferior
- Avoid terms like “effect”, “impact”, “influence”
 - Use “relationship”, “association”...
 - Relationship and association are the only appropriate terms!!!!
- IV and DV, used for convenience, but also imply causation
 - Correct terms are “predictor” and “criterion” (or “outcome”) variables

Correlation and prediction

- Prediction is not the same as causation – prediction is not necessarily explanation
- Consider the term “variance explained”; implies knowledge of a cause/effect relationship. Better to think of it as “variance predicted”
- Care with prediction – based on populations, rather than particular individuals
- Cannot use term explanation because it implies understanding of causation. More appropriate to use term variance predicted
- To assume age causes growing wisdom would be a mistake, life experience would be a better explanation. So use of age is good for prediction but not explanation

Introduction to survey method

- Data for non-experimental research often collected using a survey instrument
- The most common form of survey instrument used in psychology and social science is a QUESTIONNAIRE
- Surveys are methods for gathering data on variables of interest from a sample of participants
- Identifying patterns of relationships amongst variables of interest

Questionnaires in behavioural research

- Used to measure individuals on a variable of interest
- Used in surveys and as a measure of latent variables
 - psychological scales, or psychological instruments
 - Manifest variables - directly observable ie height
 - Latent variables- not directly observable but can be inferred from an indicator ie self Esteem
- Ask questions and make inferences
- Assumptions underlie our use of questionnaires, generally:
 - Assumptions that may not be tenable
 - Have implications for validity of data
 - Assumptions include (from Foddy, 1993):

Questionnaire assumptions

1. The researcher has clearly defined the topic about which information is required.
 - Unfortunately, researchers often have not defined their topic sufficiently.
 - Not usually true, researchers often have a vague topic - have not adequately identified theoretical parameters
2. Respondents have the information that the researcher requires.
 - It is hard to give a valid answer to many questions: “How often in the past week, month, etc. have you felt sad, happy, anxious?”
 - Data does not speak for itself, it must always be interpreted
3. Respondents are able to access the required information under the conditions of the research situation.
 - The context in which you give someone a questionnaire influences the quality of information they can give. E.g., if they are busy, distracted, bored, etc.
4. Respondents can understand each question as the researcher intends it to be understood.
 - We all have a different personal context. For instance, what one person considers to be “an appropriate level of explanation”, may be entirely different to another.
5. Respondents are willing (or, at least, can be motivated) to give the required information to the researcher.
 - This can obviously be a problem when attempting to gather sensitive information or politically correct
6. The answers that respondents give to a particular question are more valid if they have not been told why the researcher is asking the question.
7. The answers that respondents give to a particular question are more valid if the researcher has not suggested them to respondents.