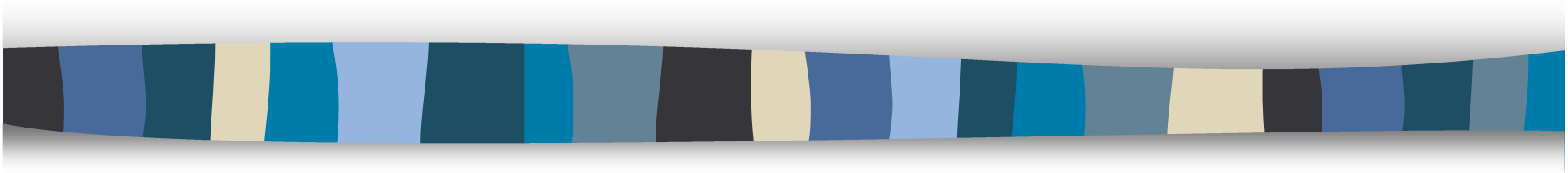
SEN-SRN Conversion Course

Research Module



Research Designs

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Lecture Overview

- Variables: Dependent and Independent
- Different study designs
  - Historical Study
  - Case Study
  - Survey
  - Experiment
  - Quasi experimental design
- Advantages and disadvantages of the designs

Variables

- The specific concept of any study
- Any factor that varies e.g. age, weight, temperature, values, stress, political beliefs.
- Something (a characteristic) that varies and has different values that can be measured
- Labelled as dependent and independent variables (the cause and effect)

The Dependent Variable

- The output or criterion variable
- The study variable under investigation
- The effect or outcome of an experimental procedure
- The variability of the dependent variable presumably ***depends*** on the cause or conditions that may be manipulated by the researcher.
- What the researcher measures after the subject have been exposed to the independent variable (the cause)

The Independent Variable

- The causes or conditions that are manipulated or identified by the researcher to determine the effects and outcomes (dependent variables)
- The input of the experiment
- It precedes the measurement of the dependent variable.

Historical Study Designs (1)

- Explains the past and its implications for the present and the future
- A systematic collection, evaluation and interpreting of evidence
- Sources include letters, maps, diaries, journals and public documents
- Two separate processes
- External criticism: for validity and genuineness
- Internal criticism: for accuracy of statements, any biases, ability to understand, based on primary sources

Historical Study Designs (2)

- *Advantage:*
  - Illuminates current question through intensive studies that already exists
- *Disadvantages:*
  - Investigator has to rely on already existing data
  - Data cannot be altered
  - Data may be incomplete and contain gaps
  - Cannot clarify any queries
  - Interpretation has to take the context, terms and ideas into consideration

Case Study Designs (1)

- In-depth analysis of a subject for investigation such as individual patient, a family, a hospital ward, a health care agency etc.
- The subjects are examined with respect to number of variables e.g. history, interactions, characteristics, etc.
- Useful to:
  - Gain insight into little-known problems
  - Provide background data for larger studies
  - Acquire rich descriptive examples

Case Study Designs (2)

- *Advantages:*
  - Stimulate insight and suggest hypothesis
  - Can provide information on less obvious problems
  - Most valid for psychotherapy, medicine
- *Disadvantages:*
  - Poor generalizability (not necessarily representative of a larger population)
  - Gathered data may not be enough
  - Not suitable to determine cause and effect
  - Usually based on interviews and observation, therefore subject to the investigator's bias

Surveys (1)

- Surveys are designed to collect information regarding prevalence, distribution and interrelations of variables within a population.
- Surveys can be:
  - Cross sectional
  - Longitudinal
  - Sample survey or census
- Surveys collect information on:
  - What people do and how they behave
  - People' knowledge
  - Opinions, attitudes and values

Surveys (2)

- *Advantages:*
  - Can gather large amount of data
  - Minimal expenditure of money and time
  - Easier to evaluate
  - Can apply standardised scales and questionnaires
- *Disadvantages:*
  - Possibility of low response rate (impersonal approach)
  - Questions may be confusing to respondents
  - Need to develop system to tackle large amount of data
  - Data collected may be superficial
  - Unable to determine cause and effect

Experimental Research (1)

- Can identify causal relationship
- Active researcher involvement who decides:
  - Inclusion / exclusion criteria
  - Size & length of intervention
  - Establish parameters
- A high degree of control
- First used in laboratories, now applied to every sector, especially health science
- Depends on internal and external validity
- Internal validity: degree of effect on the independent variable on the dependent variable
- External validity: generalizability

Experimental Research (2)

Characteristics

- ***Prospective***: Examination of presumed causes and **follow up** to observe presumed effects
- ***Manipulation:*** Doing something to at least one group of subjects. The experimenter varies the independent variable and observes the effect on the dependent variable (pre-test, post-test). Problems of contamination effects
- ***Experimental control:*** Experimenter controls manipulation & randomization. Using a control group to compare results with the experimental group
- ***Randomization:*** Every subject has an equal chance of being assigned to a group. Best possible method of having equal groups but no guarantee.

Experimental Research (3)

- *Advantages:*
  - Most powerful research to establish cause and effect
  - Most precise, rigor, and control properties
- *Disadvantages:*
  - Some variables are not feasible or ethical to use
  - Possible in labs but may not be applicable to real world
  - In practice, variables are complex, multidimensional, and holistic.

Quasi-experimental Research

- Used when no complete control of the subjects is possible
- Lacks at least one of the components of the experimental method: i.e. control, manipulation or randomization.
- Use some form of comparative group
- Greatly effects the validity of the causal interpretation – makes results plausible.
- *Advantages:*
  - May be more practical and feasible than experimental design study, especially when impossible to control and randomise
- *Disadvantages:*
  - Cannot test causal hypothesis
  - Do not ensure external generalizability
  - Lack intensity of control