Introduction to Survey Research: Guidelines and Common Practices

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Outline

• Hello!
• Disclaimer of deficiencies
• Introduction to survey research
  – Pros and cons
  – Sampling
  – Concepts in survey research
  – Quality measurement
• Survey design and examples
Pros and Cons
Survey Research

Pros
- Low cost in time and money
- Quick access to a large sample of potential participants
- Less pressure for an immediate response
- Anonymity is an option
- Standardisation of questions
- Analysis is straightforward

Cons
- Data quality (missing data and accuracy)
- Lack of control over context of answering and misunderstandings
- Literacy problems
- The need for brevity and simple questions
- People talk more than they write
Sampling

1. How big will your sample be, and why?
2. How will it be chosen, and why?
3. What claims will be made for its representativeness?
Concepts in survey research
Categorical versus Continuous

- Categorical variables: Discrete, or discontinuous data which varies in terms of kind rather than amount or quantity.
  - Gender, ethnicity, eye colour, and occupation.

- Continuous variables: Non-discrete data that varies in degree, level, or quantity.
  - Age, weight, and height.
Variable types

Observed versus Latent

• Observed variables: Data that can be directly observed and measured.
  – Gender, ethnicity, weight, and height.

• Latent variables: Data that cannot be directly observed and measured.
  – Motivation, attitudes, beliefs, and learning outcomes.
Latent variables are seen as composites or functions of inter-related indicators that reflect, or “tap”, the variables you are trying to measure (also known as scales or factors). This type of approach or model is called a reflective model (i.e., items reflecting a factor).
Latent variables

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Quality measurement

• Reliability and validity are central to the quality of measurement, analysis, and inferences.

• Reliability is to do with the data, whereas validity is to do with the interpretations or inferences drawn from the data.

• Reliable data leads to valid interpretations, but valid interpretations do not mean reliable data.
Reliability

• Does your questionnaire accurately and consistently capture data? Does it measure what you intend it to measure?

• Examples of reliability checks:
  – Test-retest reliability
  – Alternate forms reliability
  – Interrater reliability
  – Internal consistency reliability (Cronbach’s Alpha)
Validity

• Are your interpretations reasonable, sound, and accurately reflect the data you measured and analysed?

• Examples of validity checks:
  – Content validity: Does your data represent the full spectrum and content of the constructs?
  – Construct validity: How well does a measure conforms with theoretical expectations?
  – External validity: To what populations, settings, treatment variables, measurement variables does your conclusion apply or extend?
Survey design
Survey design

- Phases of instrument development – What happens:
  1. Before designing your questionnaire.
  2. After designing your questionnaire.
  3. After data collection.
• Before designing your questionnaire, contemplate the followings:
  1. What information do you need from your participants that will enable you to reach ‘closure’?
  2. What is it that you want to measure?
  3. How are you going to measure it?
  4. Are there any existing questionnaires that measure what you are interested in?

It all depends on your research question(s)!
Survey design

• Examples of research questions:

1. What is the relation between self-efficacy in reading and achievement?
2. Are there statistically significant differences in student ratings of their teachers by decile?
3. Does teaching experience (in years) predict secondary students’ achievement in maths?

• Questionnaires often contain two sections: Demographics, and items related to your construct(s) of interest.
Survey design

Demographics

• What demographic or background information do you need from your participants?
  – Gender, names, ethnicity, age, year level, qualifications, medical history, languages spoken, etc.

• Keeping a record of basic demographics is useful when running preliminary analyses as well as handling missing data.
Survey design

• If your participants are:
  – Different students; you assign each a unique student ID.
  – Different students from different classes; you assign each a unique student ID and a class ID.
  – Different students from different classes from different schools; you assign each a unique student ID, a class ID, and a school ID.

• This is very important for tracking students and for dealing with missing data.
Survey design

• Questionnaire items can either be created from scratch, adopted, or adapted from existing and well-established scales.

• Choosing to create questionnaire items from scratch requires more work to establish the reliability of the instrument and the validity of the data interpretations.
Guidelines

• Consider a minimum of five items per latent variable (see Costello & Osborne, 2005).

• Consider revising the wording of your items and how appropriate, clear, and relevant they are to your participants (e.g., simpler vocabulary for younger kids).

• Keep in mind cognitive fatigue – the longer it takes the more bored I get...

• Run pilot surveys and cognitive labs if possible.
Guidelines

• Consider the applicability and relevance of any questionnaire you use to your participants and research question(s).

• Note down indicators of good reliability and validity as reported:
  – Alpha coefficients (> .70).
  – Test-retest reliability.
  – Face and content validity.
  – Discriminant versus convergent validity.
  – Model fit indices.
Think about your participants

• How are your participants going to respond to your questionnaire items?

• Do you need open-ended questions?

• Do you need to pilot your tool?

• Worst case scenario: Where could things go wrong?

• Examples
Survey design

After designing your questionnaire: Code it.

- Assigning numeric values (often positive integers including 0) to questionnaire demographics and item responses that are non-numeric in nature.

- Coding should reflect mutual exclusivity; each numeric value/code represents a unique cell.
Survey design

Keep two clear codebooks

1. Your questionnaire coding system.
2. Items matched with their factors.

Example:

- **Factor 1: Maths anxiety**
  - Questionnaire items: 1, 4, 7, and 11.

- **Factor 2: Behavioural engagement**
  - Questionnaire items: 25, 31, 45, 47, and 50.
Code book

• **Gender:**
  • 0 = Male.
  • 1 = Female.
  • 2 = Gender Diverse.

• **Ethnicity:**
  • 1 = NZ European/Pakeha.
  • 2 = Maori.
  • 3 = Pasifika.
  • 4 = Asian.
  • 5 = Other.

• **Likert Scale:**
  • 1 = SD (Strongly Disagree).
  • 2 = D (Disagree).
  • 3 = N (Neither Agree or Disagree).
  • 4 = A (Agree).
  • 5 = SA (Strongly Agree).
## Before Coding Spreadsheet

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A more “realistic” Spreadsheet

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