

HEST 5001

Lecture 4: Research Methods and reliability / validity

Philosophies / Paradigms / Dilemmas

Positivism / Subjectivism / Critical realism / Postmodernism

Methodological Criteria

Internal validity / External validity / Reliability

Research Strategies / Designs

Experiments / Surveys / Action research / case studies / ethnography / grounded theory / phenomenology / mixed methods

Research Methods

Questionnaires / interviews / observations / documents

Data Analysis

Inferential statistics / descriptive statistics / content analysis / thematic analysis / discourse analysis / interpretive phenomenological analysis

Methods

- Questionnaires
- Interviews
- Observation
- Documents

Questionnaire

- Could be:
 - (i) Door-to-door
 - (ii) Postal
 - (iii) Site-based
 - (iv) Telephone
 - (v) Internet

Features of questionnaires

- Be designed to collect information which can be used subsequently as data for analysis
- Consist of a written list of questions
- Gather information by asking people directly
 - (Denscombe, 2007:153-154)

Questionnaires appropriate when:

- Large numbers of respondents in many locations
- Straightforward information, relatively brief and uncontroversial information is required
- *Social climate is open* enough to allow honest answers
- Standardized data from identical questions
- Respondents can be expected to read and understand the questions

Questionnaires appropriate when:

With postal questionnaires:

- Time allows for delay:

Production, piloting, posting etc

- Resources for printing, postage and data preparation

Advantages of questionnaires

- Economical
- Easy to arrange (compared to interviews)
- Standardized answers; little scope for data to be affected by “interpersonal factors”
- Pre-coded answers
- Data accuracy, especially internet survey, or optically read

Disadvantages of questionnaires

- Pre-coded questions can be frustrating, and thus deter people from answering. May affect response rate!
- Pre-coded questions can bias the findings towards the researchers way of seeing things
- Questionnaires offer little / no opportunity to check the truthfulness of the response

Questionnaire design

Information

Sponsor

Purpose

Instructions (return etc)

Confidentiality

Voluntary

Thanks

Instructions

Example

Specific instructions (e.g. tick box / circle answer)

Questionnaire design (2)

- Keep the questionnaire as short a possible
- Wording of questionnaires is one of the most difficult features of questionnaire design – also the most important to get right!

University Hospitals of Leicester NHS Foundation Trust

1000 Your Questionnaire

Please answer the following questions

1) What is your sex? Male Female

2) What is your date of birth? Day Month Year

3) What is your profession?

4) What is (was) the full title of your current (or last) job? (Please tick one box only) Skilled non-manual Unskilled Professional Partly skilled Managerial

5) How would you describe your education? (Please tick one box only) 15 or over 16 17 18 19 or over 20 or more

6) How old were you when you finished full-time education? (School or college, whatever you last attended full time) 16 or under 17 18 19 or over 20 or more

7) a) Do you smoke cigarettes at all nowadays? Yes No
 b) If yes, about how many cigarettes a day do you usually smoke now? 1-5 6-10 11-15 16-20 20 or more

8) Please indicate how many times you have visited your GP in the last 2 years: 1-3 Times 4-6 Times 7 Times, or more

9) Please indicate how many times you say your health has on the whole been: None Fairly good? Not good?

For the following questions, please indicate how you feel following your brother or sister's heart attack

10) In the months following your brother or sister's heart attack, did you seek your family doctor or a health professional specifically to discuss any concerns you might have had as a consequence of this? Yes No

11) If yes, I found the consultation with my family doctor very helpful

12) Did you seek information about practical aspects of heart disease from any of the following sources? (Please tick all that apply) Family doctor Television Radio Health professional Magazine Public Library Stroke Other health care professionals British Heart Foundation Literature

13) Are you available for understanding your brother or sister's heart attack? Strongly disagree Tend to disagree Neither Tend to agree Strongly agree

14) If your brother or sister had a heart attack, would you say you smoke more, less or about the same? Strongly disagree Tend to disagree Neither Tend to agree Strongly agree

10) Please indicate how much you agree or disagree with each of the following statements by ticking the box that best represents your views

	Strongly disagree	Tend to disagree	Neither	Tend to agree	Strongly agree
a) Diabetes increases the risk of heart disease	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Genetic factors increase the risk of heart disease	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Stress or worry increases the risk of heart disease	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) Eating fatty foods increases the risk of heart disease	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) Smoking increases the risk of heart disease	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f) Lack of exercise increases the risk of heart disease	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g) High blood pressure increases the risk of heart disease	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h) Chance or fate is involved in the development of heart disease	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i) Being overweight increases the risk of heart disease	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
j) High cholesterol increases the risk of heart disease	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

11) Of the following 10 factors, please pick the 5 that you think are the most important in increasing the risk of heart disease. Please list them in the order that best represents how important you think they are (with 1 being the most important)

- Diabetes
- Genetic factors
- Stress or worry
- Eating fatty foods
- Smoking
- Being overweight
- Lack of exercise
- High blood pressure
- Chance / fate
- High cholesterol

1 1) _____

2 2) _____

3 3) _____

4 4) _____

5 5) _____

13) a) More people die from cancer than heart disease

b) A man over age 65 is much more likely to die from heart disease than a woman over age 65

c) Having a parent with heart disease increases my risk of developing the disease

d) Having a brother or sister with heart disease increases my risk of developing the disease

14) Compared with other people of your age and sex, what do you think are the chances of you getting the following diseases in the next 15 years?

	Very low	Low	Average	High	Very high
a) Heart disease	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Stroke	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Cancer	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

15) Do you think it is possible for you to do anything to reduce your risk of the following diseases?

	Yes, definitely	Yes, maybe	No, probably not	No, definitely not
a) Heart disease	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Stroke	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Cancer	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

16) Which one of the following illnesses do you fear most? (please tick one box only)

Heart disease

Stroke

Cancer

12) Please list any other things that you think are important risk factors for heart disease:

Summary advantages / disadvantages of questionnaires

Advantages	Disadvantages
Wide coverage Cheap Pre-coded data Eliminate effect of personal interaction with researcher	Poor response rate Incomplete or poorly completed answers Limit and shape nature of answers Cannot check truth of answers

References: Questionnaire-Survey

- Nazroo, JY (1997) *The Health of Britain's Ethnic Minorities* Policy Studies Institute
- Beishon, S et al (1995) *Nursing in a Multi-Ethnic NHS* London: Policy Studies Institute

Methods

- Questionnaires
- Interviews
- Observation
- Documents

Features of interviews

- There is consent to take part, (not done in secret)
- Words are “on the record”
- Agenda set by researcher
 - (Denscombe, 2007:173- 174)

Interviews appropriate when:

- Opinions, feelings, emotions and experiences
- Sensitive issues
- Privileged information

Pragmatic considerations:

- Direct access to participants
- Viability (cost travelling time)

Types of interviews

- Structured interviews
- Semi-structured
- Unstructured
- One-to-one (individual)
- Group interviews
- Focus group

Skills for interviewing

- Attentive
- Sensitive to participant
- Tolerate silences
- Able to use prompts
- Good at using probes
- Good at using checks
- Non-judgemental
- Facilitating focus groups – allow equal say!

Recording interviews

- Field notes
- Audio recording

Advantages of interviews

- Depth of information
- Insights
- Equipment
- Participants' priorities
- Flexibility
- High response rate
- Validity (direct contact with participants)
- Therapeutic for participants

Disadvantages of interviews

- Time consuming
- Data analysis
- Reliability
- Interviewer effect
- Inhibitions
- Invasion of privacy
- Resource intensive

References: unstructured interviews

- Dyson, SM (2005) *Ethnicity and Screening for Sickle Cell & Thalassaemia* Oxford: Elsevier
- Culley, L (2001) Caribbean Nurses and Racism in the NHS In Culley, L and Dyson, SM (Eds) *Ethnicity and Nursing Practice* Basingstoke: Palgrave

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Types of observation

- Direct observation
- Participant observation

Advantages of observation

- Direct data collection
- Systematic and rigorous
- Efficient
- Pre-coded data
- Reliable

Disadvantages of observation

- Behaviour not intentions
- Systematic and rigorous
- Efficient
- Pre-coded data
- Reliable

References: Observation

- Davis, A (1982) *Children in Clinics*
- Strong, P (1979) *The Ceremonial Order of the Clinic*
- Bowler, I (1993) *Study of Midwives*
- Dyson *et al* (2007) Do midwives ask or assign ethnicity at ante-natal screening clinic?

Participant observation

“By participant observation we mean the method in which the observer participates in the daily life of the people under study, either openly in the role of the researcher or covertly in some disguised role, observing things that happen, listening to what is said, and questioning people, over some length of time”

(Becker & Green, 1957: 28), cited in Denscombe

Advantages of participant observation

- Basic equipment (self)
- Non-interference
- Insights
- Ecological validity
- Holistic
- Participants' point of view

Disadvantages of participant observation

- Access
- Commitment (demanding method)
- Danger
- Reliability (dependence on self)
- Representativeness of the data
- Deception

Participant Observation

- To avoid changing what people do by joining in their activities to a certain extent whilst still observing them
- By participating to increase the possibility of accurately describing

References: Participant Observation

- Jeffery, R (1979) Accident & Emergency
- Paterson, E (1984) Hospital kitchen maids
- James, V (1984) “A postscript to Nursing” Palliative care
- Rosenhan, D (1974) “On being sane in insane places”

Documents

- Government publications and official statistics
- Newspapers and magazines
- Records of meetings
- Letters and memos
- Diaries
- Website pages and the internet

Official Statistics/Documents

- Secondary Sources: exist prior to, and for reasons other than, the research

Official Statistics/Documents

- May be only available source of data
- Readily available (time and money)
- Trends over time (rates of disease and level of deprivation)
- Comparisons between different groups, different societies, historical comparisons
- Before and after (legislation)
- Collected with a completely different purpose in mind
- Categories may not be comparable
- Categories may reflect politics of society
- Three stages removed: how accurately do they reflect events?

References: Official Statistics

- Townsend, P et al (1988) *Inequalities in Health: The Black Report and the Health Divide* Penguin.
- Durkheim, E (1970 [1897]) *Suicide* Routledge & Kegan Paul

References: Documents

- Plummer, K (2001) *Documents of Life*
- See content analysis reading list

- Dixon-Woods et al (2007)

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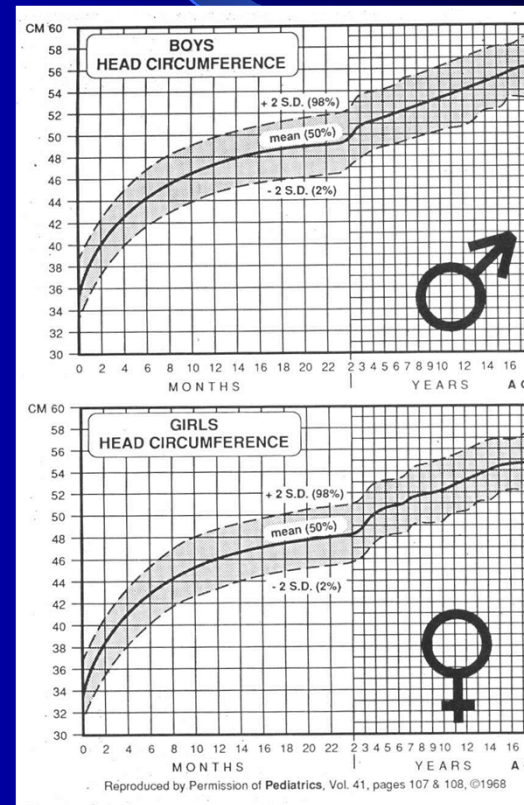
Research Methods

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Data Analysis

Inferential statistics / descriptive statistics / content analysis / thematic analysis / discourse analysis / interpretive phenomenological analysis

Measuring Brains



Methodological Criteria

- **Validity:** are we measuring what we claim to measure; describing what we claim to describe?
- **Reliability:** to what extent can the research be repeated (by another researcher and/or at a different time) and the same result found?
- **Generalizability (External validity):** to what extent can we generalize our findings beyond the immediate sample?

Invalid



Unreliable



Internal validity and reliability

- Stopped
- Valid (twice a day) but not reliable



Internal validity and reliability

- Ten minutes slow
- Reliable (but reliably wrong, never valid)



	Positivism	Subjectivism
Internal validity*	Phrase concepts in terms that can be observed and measured in order to hypothesize about causal relationships between variables	Descriptions of how social life is “achieved” Understand meanings of social world
Reliability*	Imposing structure / control on social world – reduce variability	Understand that the production of knowledge, and the effects of the researcher
Generalizability*	Sampling population to make statistical claims	Small world research. Generating, rather than testing theory

*denotes items usually part of the Positivist paradigm

Lincoln, Y.S. and Guba, E.G. (1985)

- **Internal validity**, which Lincoln and Guba translate as truth value, is replaced by the concept of **credibility** – whether or not the participants studied find the account true.
- **External validity**, or the extent to which findings are more generally applicable, is replaced by fittingness or **transferability**, which is based on the idea that accounts may be transferable to other specified settings through the provision of thick description about both the sending and the receiving contexts.
- **Reliability**, or the consistency of findings, is replaced by the notion of **dependability**, which is achieved through an auditing process called an ‘audit trail’, in which the researcher documents methods and decisions, and assesses the effects of research strategies, rather than being concerned about replication.
- **Objectivity**, or a concern with neutrality, is replaced by **confirmability** – the extent to which findings are qualitatively confirmable through the analysis being grounded in the data and through examination of the ‘audit trail’.

Types of Validity 1

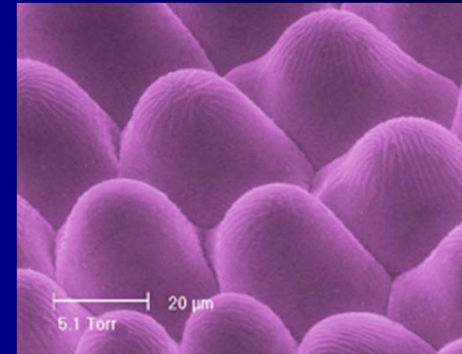
- **Conclusion validity** The degree to which the conclusions reached by researchers about the relationships between variables within their data are reasonable.
- **Consequential validity** The degree to which the results are commensurate with the purposes to which the results were supposed to be applied.
- **Construct validity** The degree to which conclusions can legitimately be made from the indicators of the study to the theoretical concepts that those indicators are held to represent.

Types of Validity 2

- **Content validity** The extent to which the research concepts or measures incorporate all aspects that should be included and none that should not be included.
- **Convergent validity** The degree to which concepts that should in theory be closely associated are actually observed to be closely associated.
- **Criterion validity** The degree to which a research concept accurately reflects relevant criteria external to the original context of the research.

Types of Validity 3

- **Ecological validity**
The extent to which results can be applied back to a context where the research has been disembedded from the context.



Types of Validity 4

- **External validity** The extent to which the results of the study can be statistically generalized beyond the context of the original study.
- **Face validity** The extent to which the measurement indicator 'looks right' or is intuitively appealing to the user or research participant. This kind of validity is treated sceptically by many researchers.

Types of Validity 5

- **Sample orientated validity** Concerned with types of validity that relate to whether ideas are appropriately grouped together
- **Sign orientated validity** Concerned with types of validity that relate to whether proxy indicators are a good representation of a theoretical construct
- **Statistical conclusion validity** The degree to which conclusions, based on your statistical choices of sample size and significance level set, are correct.

Types of Validity 6

- **Catalytic validity**
- 'Catalytic validity points to the degree to which research moves those it studies to understand the world and the way it is shaped in order for them to transform itResearch that possesses catalytic validity will not only display the reality-altering impact of the inquiry process, it will direct this impact so that those under study will gain self-understanding and self-direction.'

(Kincheloe & McLaren, 2000: 297)

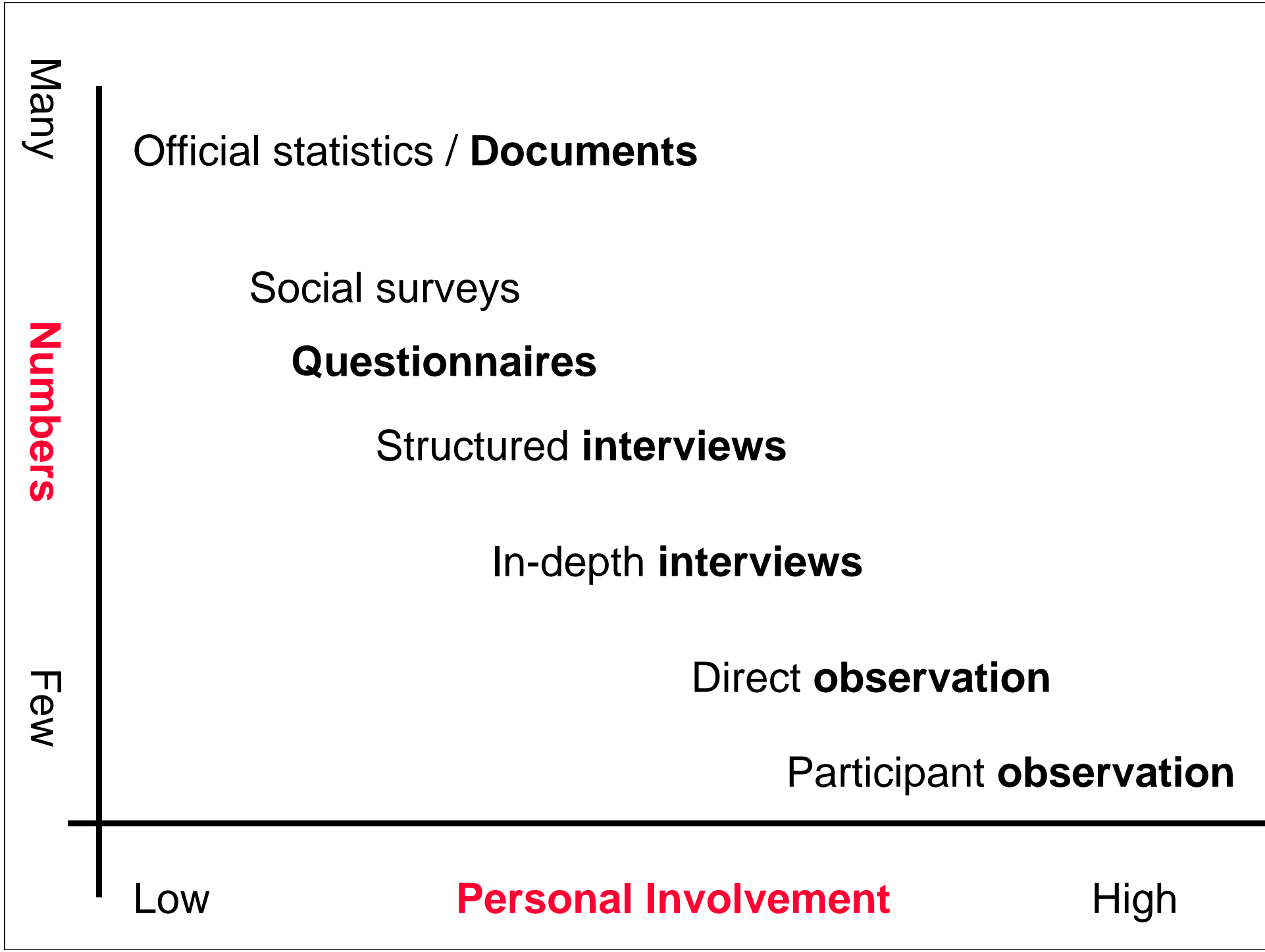


Reliability

- **Temporal stability** Under this criterion, a test is reliable if the same form of a test is given on two or more separate occasions to the same group of participants yields the same result. Repeated measurements may require costly and time consuming visits to field settings, where it may not be easy to locate the original respondents anyway. Repeated testing is also likely to change the participants.
- **Form equivalence** This is based on the idea that two or more different forms of test, based on the same content can be used.
- **Internal consistency** This relates to tests, measures and questionnaires with large number of items. We can correlate the items together in various ways so as to see whether they are related. This principle underlies measures of internal reliability such as Cronbach's Alpha, or Split-half.

Internal Validity

- Are we measuring what we claim to measure, describing what we claim to describe?



Many

Numbers

Few

Official statistics / **Documents**

Social surveys

Questionnaires

Structured **interviews**

In-depth **interviews**

Direct **observation**

Participant **observation**

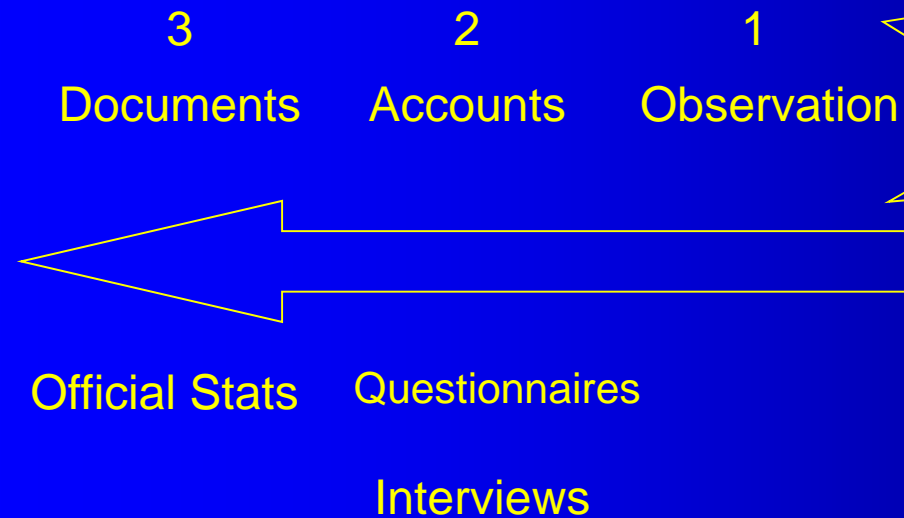
Low

Personal Involvement

High

Internal Validity

Number of logical stages removed



What is Happening?

Internal Validity

