Methodology

Learning Development Service
Leonie Maria Tanczer, MSc.
Why
...because most students end up like this:
Who are you?

- Schools / Subjects
- Concerns
- Expectations
- Stage
Workshop Structure

1. The **purpose** of a method section
2. What is **methodology vs. method**
3. How to find the appropriate method for your research: **Epistemology**
4. Methods **you may use**
   - **Qualitative** research
   - **Quantitative** research
5. How to **write up** your methodology
Dissertation
What is a dissertation?

Oxford English Dictionary

• “An extended scholarly essay, [usually] based upon original research, submitted for a degree or other academic qualification.”

More generally:

• A focused ‘essay’, typically about 10,000-20,000 words in length;

• An independent piece of work that demonstrates the candidate’s ability as a competent researcher with advanced knowledge on a specific topic.
Hourglass
Purpose
What is the aim?

A complete description of the methods used enables the reader:

• To evaluate the **appropriateness** of your methods
• To evaluate the **validity** of your results
• To evaluate the **reliability** of your results
• To permit the **replication** of your research
• To enable a **comparison** of your research
Not sure what this means?

(Gardiner & Kearns, 2010)

<table>
<thead>
<tr>
<th>Literature Review</th>
<th>What I read</th>
</tr>
</thead>
<tbody>
<tr>
<td>Methodology</td>
<td>What I did</td>
</tr>
<tr>
<td>Result</td>
<td>What I found</td>
</tr>
<tr>
<td>Discussion</td>
<td>What I reckon</td>
</tr>
</tbody>
</table>
Methodology vs. Method
Definition

Method

• Describes in detail how the research was conducted
• Refers to the various ways, techniques or processes in which data is collected and analysed

Methodology

• Different types of studies will rely on different methodologies
• Refers to the general approach taken to the research process
• It is the discipline, or body of knowledge, that utilizes these methods
Example

Methodology

• **Ethnography**: considers a bounded population and inquires into how they go about their day-to-day lives, and the meaning they attribute to these experiences

Method

• collecting **artefacts**
• writing **field notes**
• conducting interactive **interviews**
Epistemology
# Premises: Paradigm

*(Halperin & Heath, 2012)*

<table>
<thead>
<tr>
<th>Ontology</th>
<th>Epistemology</th>
<th>Methodology</th>
</tr>
</thead>
<tbody>
<tr>
<td>What <em>exists</em>?</td>
<td>What sort of knowledge of it is <em>possible</em>?</td>
<td>What <em>strategies</em> can we use to gain that knowledge?</td>
</tr>
<tr>
<td>What is the nature of the social world?</td>
<td>How <em>can we know</em> about it?</td>
<td></td>
</tr>
</tbody>
</table>

Epistemology

- Epistēmē: knowledge
- Logos: study of
- Is the study/philosophy of knowledge
- The basis of your methods and the assumptions about reality underlying your analysis
- The theory of knowledge, especially with regard to its methods, validity, and scope, and the distinction between justified belief and opinion
Questions Asked in Epistemology

• What can we know?
• How can we know it?
• Why do we know some things, but not others?
• How do we acquire knowledge?
• Is knowledge possible?
• Can knowledge be certain?
• How can we differentiate truth from falsehood?
• Why do we believe certain claims and not others?
Whether you consider data as...

- **Factual account** of events (e.g., description of actual events)
- **Description of participant’s** subjective experience (e.g., emotions)
- **Piece of situated language** (e.g., how people are using language)
- ...
Epistemology

- **Empiricism** (such as Hume, Locke): knowledge is obtained through experience
- **Rationalism** (such as Descartes, Leibniz, and Spinoza): knowledge can be acquired through the use of reason
- **Constructivism** (such as Vico, Piaget): knowledge is a compilation of human-made constructions
Epistemological Continuum

On the basis of this you choose your theory and methods
Activity

• Fill in the hand-out
  – What are you planning to do?

  What is the aim of your research?

  What are you planning to do to achieve this aim (e.g., data collection method, data analysis method etc.)?

  How could the aim of your research be achieved otherwise (i.e., consider other methodologies)?
Subject-Specific Methods
Ethics!

• Need ethical approval by your school when working with humans or animals

• Think of ethical or legal dilemmas which can arise from your research i.e., confidentiality, anonymity, informed consent
  – Eight Steps in Making Ethical Decisions

• Research / participant relationships
  – Care for participants e.g., vulnerable participants
  – Care for researchers
Qualitative Data Collection Methods

- Interviews
- Dairies
- Focus Groups
- Participant Observation
- Field Notes
- Photos
- Murals
- Policy Documents
- Twitter Feeds
- Newspapers
- Blogs
- Speeches
- ...
Qualitative Data Analysis Methods

• Thematic Analysis
• Content Analysis
• Grounded Theory
• Narrative Analysis
• Discourse Analysis
  – Critical Discourse Analysis
• Interpretative Phenomenological Analysis (IPA)
Thematic Analysis

• Method for identifying, analysing and reporting patterns within data
• No epistemological restrictions
• Very loose and flexible
• Identify themes inductively or deductively or mixed
• Themes: semantic (what: surface) or interpretative (interpretation: depth) or mixed
• Specific form: Thematic network analysis
Phases of Thematic Analysis - Process:

1. Familiarising with the data
   – Transcribing, reading, taking down ideas

2. Generating initial codes
   – Coding features i.e., identifying patterns

3. Searching for themes
   – Turn codes into potential themes i.e., higher order; less descriptive

4. Reviewing themes
   – Check if themes work with coded extracts

5. Defining and naming themes
   – Refine the specifics of each theme i.e., say about your whole data set

6. Writing report
   – Select exemplifying extracts which back up argument
Thematic Analysis
(Miltner, 2011)

<table>
<thead>
<tr>
<th>Data Extract</th>
<th>Coded for</th>
</tr>
</thead>
<tbody>
<tr>
<td>JT: I, I have two Twitter accounts, one that’s locked and private where I swear, and I really say, that’s me; the other one is my public face, because I have quite a high-profile Job I need to maintain that, so I have to use techniques like that, I won’t really say, “I’m having a really shit day” on that account, I have to do it, sort of through subtext. (p. 72)</td>
<td>Talks about privacy</td>
</tr>
<tr>
<td></td>
<td>Two faces and two identities</td>
</tr>
<tr>
<td></td>
<td>Techniques to deal with pressure</td>
</tr>
</tbody>
</table>
Thematic Analysis


Qualitative Content Analysis

• Method to analyse **textual information systematically** – concerned with the **latent content**
• Expose **meaning, motives, opinions and purposes** embedded within the text (rather realist)
• Establishes **categories** (inductive, deductive) to examine the material (can involve counting!)
• Categories have to be sufficiently precise to enable different coders to arrive to **a similar result** with the same body of material
Phases of Content Analysis - Process:
(Halperin & Heath, 2012)

1. Select particular texts relevant to your research question
   – Sample texts if there are too many to analyse completely

2. Construct/define a coding frame / categories that fit(s) both the theoretical considerations and the material
   – Topics of interests that you will search for in the material

3. Choose a recording unit (unit of content)
   – A single word or symbol, a sentence or paragraph, theme, character, item

4. Create a (a) coding protocol, (b) code for each variable/theme/topic, (c) mark the text with codes
   – Pilot and revise the coding frame and explicitly define the coding rules

5. Examine the data for patterns and insights relevant to key research issues
   – Data is analysed either to describe target variable(s) or identify themes and relationships
## Qualitative Content Analysis

*(Mayring, 2000)*

<table>
<thead>
<tr>
<th>Category</th>
<th>Definition</th>
<th>Example</th>
<th>Coding Rule</th>
</tr>
</thead>
</table>
| **C2: middle self confidence**        | Only partly or fluctuating conviction to have successfully coped with the situational demands | "Quite often I found it hard to manoeuvre through the problems, but finally I made it." (13, 45) | If not all aspects of definition point to "High" or "low"
|                                       |                                                                           | "Time by time everything got better, but I couldn't tell if it was me or the circumstances." (77, 20) |                                                                                                 |
Qualitative Content Analysis


Grounded Theory

- Concerned with **how meaning is constructed** in talk
- Is a **method** (process) and a **product** (theory is grounded in your data): positivist & inductive
  - Bottom-up
- Wants to move beyond particular cases to make broader **generalisations** about social processes
- Aims to construct **formal theories**
- Emphasises **processes and action**
Phases of Grounded Theory - Process:

1. **Research Question**
   - determine what you are interested in; general topic of interest you don’t need to do all the reading to completely know everything about the topic

2. **Data collection and coding**
   - Usually (but not necessarily) qualitative data; data driven coding method
   - Coding has 2 stages: **Open Coding** (break up data into bits) and **Focused Coding** (go away from the descriptive to a more analytical, abstract level)
   - Memo writing

3. **Theoretical Sampling**
   - Based on categories emerged from analysis we go back to the data and look for specific samples (going back and forth) // **Axial** and **Theoretical Coding**

4. **Saturation**
   - You keep collecting data until the analysis settles down; when you reach a point where nothing can be added anymore
   - Saturation = idea of stopping point rather than a pre-determined sample size
# Grounded Theory

*(Sbaraini, Carter, Evans, & Blinkhorn, 2011)*

<table>
<thead>
<tr>
<th>Transcript</th>
<th>Open Coding</th>
<th>Focused Coding</th>
<th>Theoretical Coding</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Q:</em> What did you take into account when you decided to buy this new technology? <em>R:</em> What did we... we looked at cost, we looked at reliability and we sort of, we compared a few different types, talked to some people that had them. <em>Q:</em> When you say you talked to some people who were they? <em>R:</em> Some dental colleagues. There's a couple of internet sites that we talked to some people... people had tried out some that didn’t work very well. <em>Q:</em> So in terms of materials either preventive materials or restorative materials; what do you take in ac account when you decide which one to adopt? ...</td>
<td>Deciding to buy based on cost, reliability Talking to dental colleagues on internet sites Comparing their experiences Looking at literature Doing my own little research</td>
<td>Seeking out evidence Gathering and comparing peers’ evidence to reach a conclusion</td>
<td>The process of making sense of evidence and construction of knowledge</td>
</tr>
</tbody>
</table>
Grounded Theory


Narrative Analysis

• Is a way to describe the **structure of stories** through the analysis of particular **narrative segments** e.g., form and function / what and how

• Is concerned with **action** and examines the **activities** that are performed when people talk with one another and how these stories make use of a **cultural context** and accounting **practices**

• Is concerned with the **local context** of narrative e.g., why a patient and doctor shape their remarks to the context/setting/position of a medical setting

• Constructivist: Language not understood as directly mirroring an underlying reality but rather as a **social tool**

• Specific Form: **Biographic Narrative Analysis**
Narrative Analysis
(Silverman, 2011)

• **Key Questions a researcher should ask about narratives:**
  - What is the content of the story you are examining?
  - Who are the principal agents?
  - How is the story told (*structure and sequence*)?
    - In what kind of story does a narrator place him/herself?
    - How does she/he position her/himself to the audience and vice versa?
    - How does she/he position characters in relation to one another, and in relation to her/himself?
      - How does he/she position him/herself to him/herself, that is, make identity claims?
  - What purpose does the story serve (*functions*)?
  - In what place or setting is the story told (*context*)?
  - Does the story have a clear culmination with a moral, as in a fairy tale, or does it follow a different pattern (*issues of genre*)?
Narrative Analysis

Critical Discourse Analysis

• CDA has a very "linguistic" outlook (which prevents incorporating linguistic and nonlinguistic dimension)
  – Talk is a social action – therefore we analyse their talk, not the person

• Seeks to expose connections between language, power, inequality, and ideology and how they manifest
  – Discursive power – control over a discourse by e.g., a powerful group
    – is crucial for this method

• Explore the relationship between discourse and reality in a particular context

• Discourse is socially constitutive as well as socially conditioned (constructivism)
Critical Discourse Analysis

• **Preferred Topics** (Blommaert & Bulcaen, 2000)
  – Political discourse
  – Ideology
  – Racism
  – Economic Discourse
  – Media language
  – Gender
  – Education
  – Literacy
Phases of CDA – Process:
(Halperin & Heath, 2012)

1. Establish a covarition or association between discourse and context
   - Historical and social context i.e., local/micro (task, situation, source, message, channel and intended audience of communication) vs broad/macro (cultural norms, assumptions, knowledge, believes, values) context
   - E.g., Text: Newspapers, Discursive Practice: Pressures on journalists, Context: Existence of racism (= Social, political, economic context)

2. Provide details of the process through which the power of a discourse has demonstrable effects
   - Articulation (process through which meaning is produced) and interpellation (acceptance of subject position)
## Critical Discourse Analysis

<table>
<thead>
<tr>
<th>Linguistic Features</th>
<th>Examples</th>
<th>Micro / Meso / Macro</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Active or Passive voice</strong></td>
<td>Hacktivists <strong>attacked</strong> the US government.</td>
<td><strong>Micro:</strong> use collective nouns and passive voice</td>
</tr>
<tr>
<td><strong>Naming</strong></td>
<td><strong>Jeremy Hammond</strong>, a member of LulzSec...</td>
<td><strong>Meso:</strong> Article was from the New York Times.</td>
</tr>
<tr>
<td><strong>Pre-modifiers</strong></td>
<td>The <strong>Chinese</strong> hackers... The <strong>Russian</strong> attackers...</td>
<td><strong>Macro:</strong> Securitisation of hacking and hacktivism</td>
</tr>
<tr>
<td><strong>Indirect quotes</strong></td>
<td>Hackers must be stopped, <strong>said the Obama administration.</strong></td>
<td></td>
</tr>
</tbody>
</table>
Critical Discourse Analysis

Interpretative Phenomenological Analysis (IPA)

- To explore in detail participant’s *lived experiences* and examine how participants *make sense* of their personal and social world
  - What is the point of view of the participant?
  - What is the person trying to achieve?
- Often used when people are *transitioning or dealing with problems* e.g., motherhood, sexuality, identity
- Research question informs interview schedule
- **Critical realist** epistemology (between positivist and constructivist)
Phases of IPA – Process:

1. Read and re-read your data, make notes of initial observations and thoughts (left hand margin)
2. Identify and label characterising text sections (right hand margin)
3. List themes and see how and if they relate to each other
   - Eliminate and/or combine themes (magnet metaphor)
   - Label clusters
   - Produce a narrative account of the interplay between researcher’s interpretation and participant’s accounts
4. Create a table of themes
   - Do not aim for homogenity. Negative case analysis adds richness
### Interpretative Phenomenological Analysis (IPA)

(Mulveen & Hepworth, 2006)

<table>
<thead>
<tr>
<th>Notes</th>
<th>Extract</th>
<th>Label</th>
<th>Theme</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comparison</td>
<td>I am going to try to match that starting with my weigh-in tomorrow. We are the same height, but you have far more restricting mojo than I. I was 106.6 this morning. Share everything you do with me!!! . . . Don’t worry, this is not a ‘challenge’. (p. 292)</td>
<td>Support</td>
<td>Social support</td>
</tr>
</tbody>
</table>
Interpretative Phenomenological Analysis (IPA)


Supporting Software

- NVivo
- Atlas.ti
- Nudist
- Dedoose
- Transana
- Textometrica
- ...

Book suggestions >>>>>>
Quantitative Methods
Rene Verheesoon, MSc.
Quantitative Data Collection Methods

• You may use the **same qualitative data** as outlined earlier, but you would **quantify** it

• Can be extended to:
  – Surveys
  – Experiments
  – Clinical trials
  – **Networks** etc. Online Networks
What is Quantitative Research?

- **Quantitative research** refers to the systematic empirical investigation of social phenomena via statistical, mathematical or numerical data or computational techniques (Given, 2008)

- It is using **statistics** to test your hypothesis
Some Quantitative Analysis Methods

- Chi Square
- Correlational design
- Factor Analysis
- Analysis of Variance
- Linear Regression
- ...

Learning Development Service

Queen's University Belfast
Statistical Design

- **Null Hypothesis vs Alternative Hypothesis**
- **H0 (Null Hypothesis)**: There are no differences
- **Ha (Alternative Hypothesis)**: There is a significant difference
- Testing the likelihood of finding your data (or more extreme data) given that **H0 is true**. If this probability is low enough, we can conclude that it was no coincidence that these results were obtained and we reject H0, usually at $p<0.05$
Research Design

• Research question (**Hypothesis**)  
• Research design (**Methodology**)  
• Can a statistical method answer this question?  
• Think about which design to use **BEFORE** collecting your data.  
• Power analysis!
Research Design

- Quasi-experiment
- Experiment
- Longitudinal Design
- Counterbalancing
- Fatigue effects
- Floor- and Ceiling effects
- Use a pilot study!
Using a Questionnaire

• Creating a new one or using an existing survey
• Look at **measurement levels** levels, this will decide which statistics you can use (parametric vs non-parametric).
  • Nominal, Ordinal, Scale
  • 7-point Likert-scales
  • Multiple responses
  • Age; Ordinal or Scale?
Validity and Reliability

• **Validity**: Are you measuring what you intended to measure?

• **Reliability**: Are your results reproducible? To what extent can I predict future results?
Sampling

• **Generalizability:**
  – The college sophomore problem

• **Selection bias:**
  – Make sure to use a representable sample
Supporting Software

• IBM SPSS Statistics
• LISREL
• Stata
• R
• Gephi
• ...

STASTISTICS?
YOU'VE GOT A BE KITTEN ME.
Identify subsections

• Conventional and expedient to divide the method section into labelled subsections
• Include in these subsections the information essential to comprehend and replicate your research
• Be very specific and rigorous – insufficient detail leaves the reader with questions
• However, too much detail burdens the reader with irrelevant information
• Consider using appendices for more detail
Possible sections: Qualitative

- Participant / Subject Characteristics
  - Sampling Procedures
- Research Design
- Data Collection Procedure
- Paradigm
- Data Analysis
- Data Analysis Procedure
Possible sections: Quantitative

• Participant / Subject Characteristics
  – Sampling Procedures
  – Sample Size, Power, and Precision

• Measures and Covariates

• Research Design

• Experimental Manipulation or Interventions
Building on the SIA (Reicher et al., 2010), the discourse of politically motivated hackers as part of their own perception and self-categorisation as hacktivists is analysed. A social psychological perspective is adopted to analyse how male and female hacktivists approach this stereotype in their talk and sense-making. Especially the self-categorisation of females towards the social and political hacktivist-identity, despite its male-only stereotype, is going to be evaluated. Based on this theoretical underpinning and the social psychological research on online collective action and stereotypes, the research aims to demonstrate (a) that societal gender stereotypes about hacktivists are existent within the community, (b) how hacktivists relate to this dominant representation, and (c) whether societal stereotypes about the male-only perception of hacktivists affect their own talk and sense-making.

Method

Participants and Sampling

A gender-equal, self-selected sample of $N = 10$ hacktivists ($n = 5$ females, $n = 5$ males), all of whom self-identified as hacktivists, were interviewed. The researcher enlisted participants through a recruitment email that was sent to (a) IT-related mailing lists known by the researcher, (b) Web 2.0 presence of hacktivists and hacktivist collectives, and (c) personal contacts of the researcher or contacts identified through media and/or online coverage. Thereafter, participants were recruited using snowball sampling (Biernacki & Waldorf, 1981). The researcher had no personal connection to any of the participants before the interview.

All participants used term hacktivist as self-identification, and reported to be a currently ($n = 8$) or previously ($n = 2$) active hacktivist. The sample was distributed in $n = 7$ participants from the United States of America, one of whom is now living in the Netherlands, $n = 2$ participants from the United Kingdom, $n = 1$ participant from Israel, who is no longer living there. Further demographic information is not given due to the discourse analytic point of view which abstains from constructing identities through the provision of such information (Willig, 2008), and the vulnerability and identity protection of this group.

Research Design

The research is a qualitative study using semi-structured interviews. The guidelines for the interview agenda given by Willig (2008) were considered to structure the interview. A mixture of descriptive, structural, contrast and evaluative questions was used (Spradley, 1979). The interview comprised nine open questions with prompts and lasted approximately one hour. The interviews were audio-recorded and thereafter transcribed verbatim, including linguistic (e.g., speech errors, pauses, interruptions) and non-linguistic features (e.g., audible intake of breath, delay, hesitations). The interview transcripts are not included in the appendix to insure protection of anonymity.
Activity

• Fill in the **hand-out** (qualitative; quantitative)
  – Which issues should be mentioned when and why (i.e., order)?

1. Central Research Question(s) / Arguments?

2. Participants / Material used i.e., documents etc.?

3. Sampling Procedure i.e., random, self-selection?
Top Tip! Find a Model Paper.

• Look for literature in your area of interest / your discipline

• Read them to get a sense of the types of methods you might want to apply in your own research or ways to organize your method section

• If you are unsatisfied with the existing literature e.g., due to methodological gap, you might want to explore research in other disciplines
Things to consider

• Epistemology
• Method
• Data
• Ethical concerns
• Scope of the study (time, money, accessibility)
• Your funder / supervisor
• Your future (research interest)
For further reading

• International Journal of Social Research Methodology
• International Journal of Qualitative Methods
• Journal of Mixed Methods Research
• ... & subject-specific [method] journals
Writing Style “Bible”
We can help you develop your academic skills.

Workshops / Resources

Contact us:
028 9097 3618
lds@qub.ac.uk
www.qub.ac.uk/lds
References