Qualitative Research Methods

Collecting and Analysing Qualitative Data
-
Crash Course

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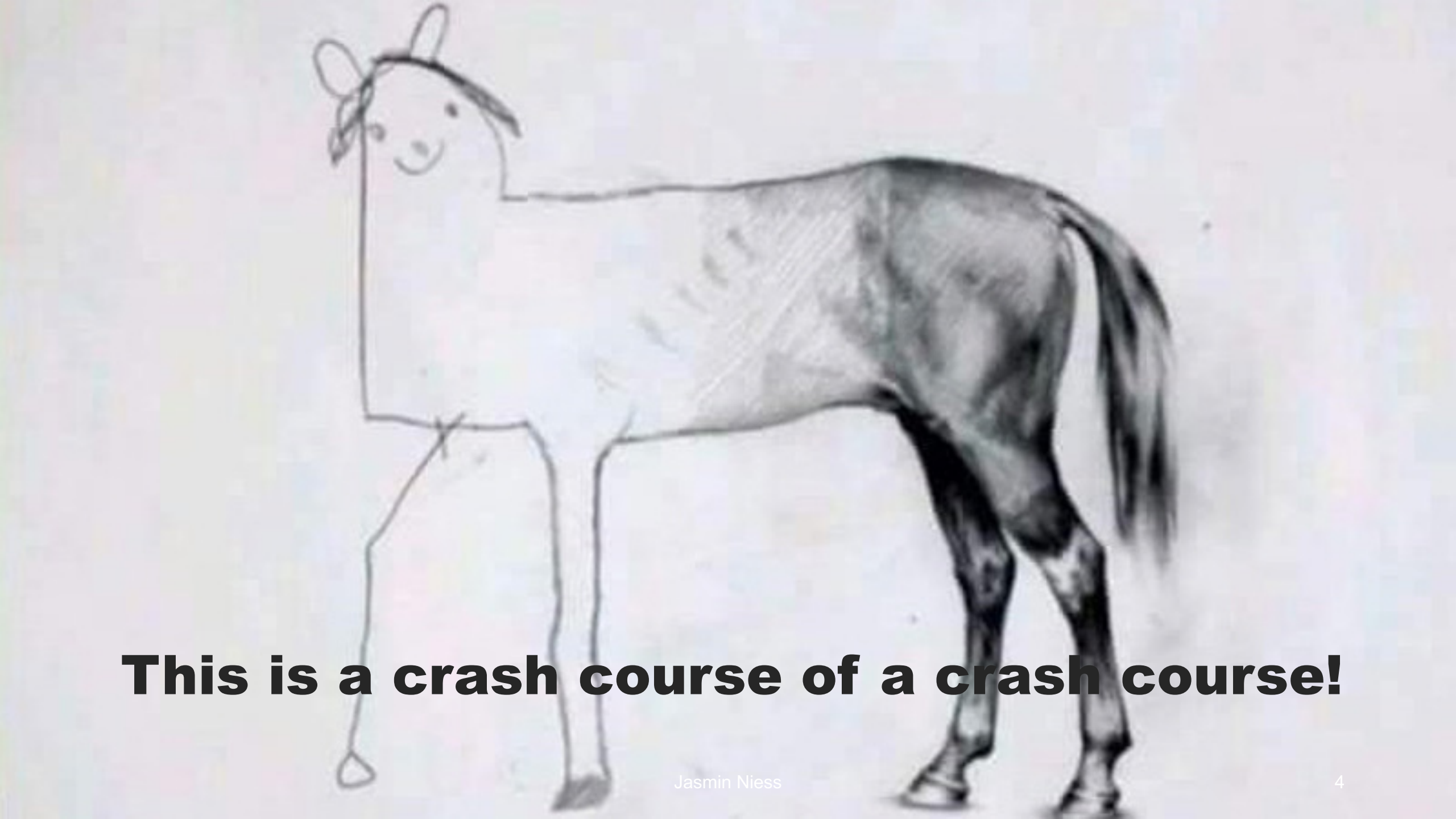
Design of Information Systems Group

01/2024

Big thanks to…

- Jonathan Lazar an colleagues
- Albrecht Schmidt and colleagues
- Pawel Wozniak
- Ann Blandford

…these slides are partly based on and inspired by their slides and figures



This is a crash course of a crash course!

Qualitative Research Methods

Collecting and Analysing Qualitative Data
-
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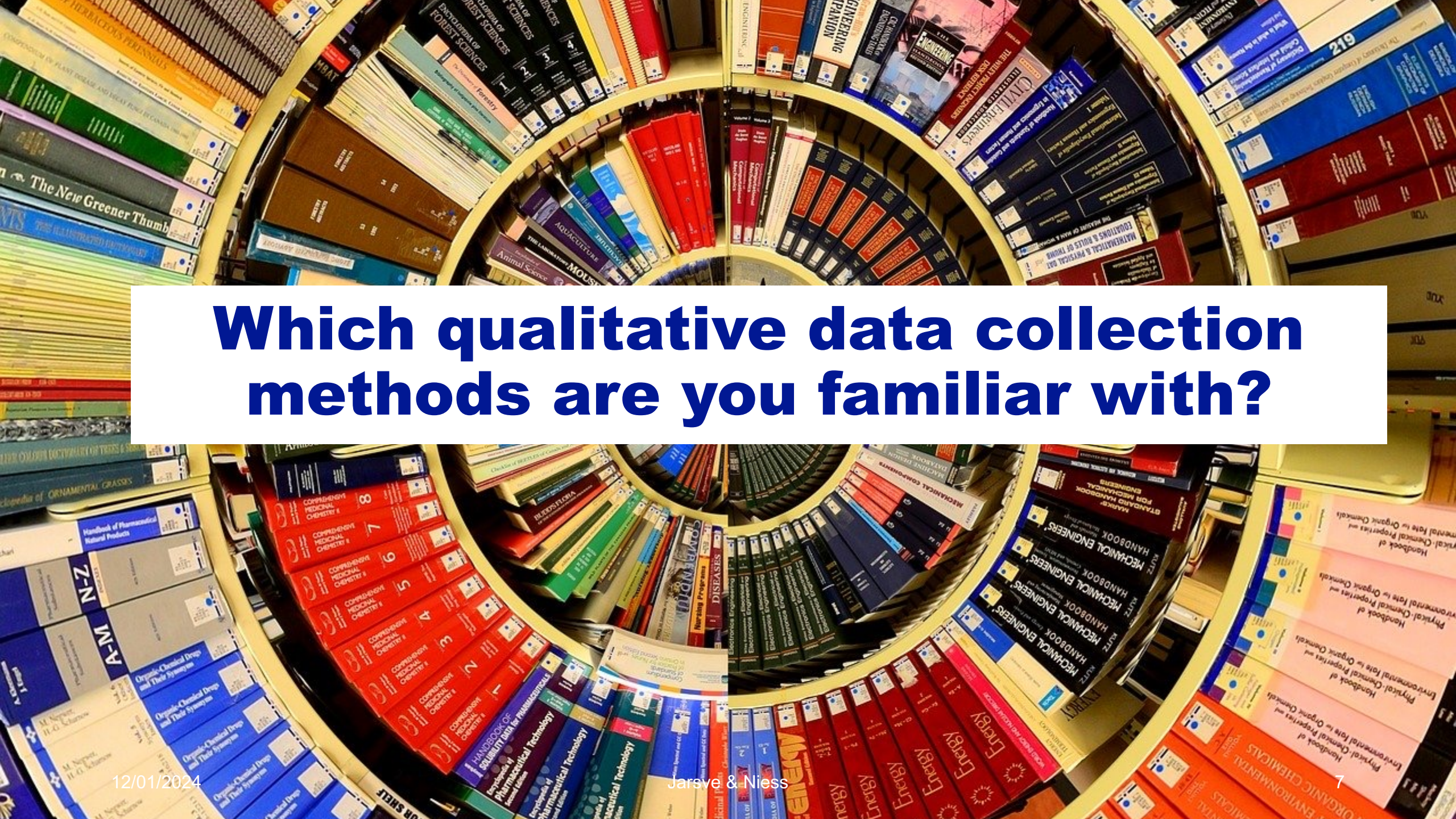
Learning goals

- Understand that there are different approaches to collect and analyse qualitative data
- Remember different types of qualitative data collection methods
- Understand that there are different types of qualitative data analysis methods and know where to find details about them



Which qualitative data collection methods are you familiar with?

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Observations and conversations

Importantly

These methods are often used to understand user needs and how people use a system, but they are also evaluation methods

Part 1

Observation

Observation

Not just “stand back and watch”

Goal – see situations with “new” eyes

Record only what you see, don’t interpret

- Less biased

Try to broaden scope of observations

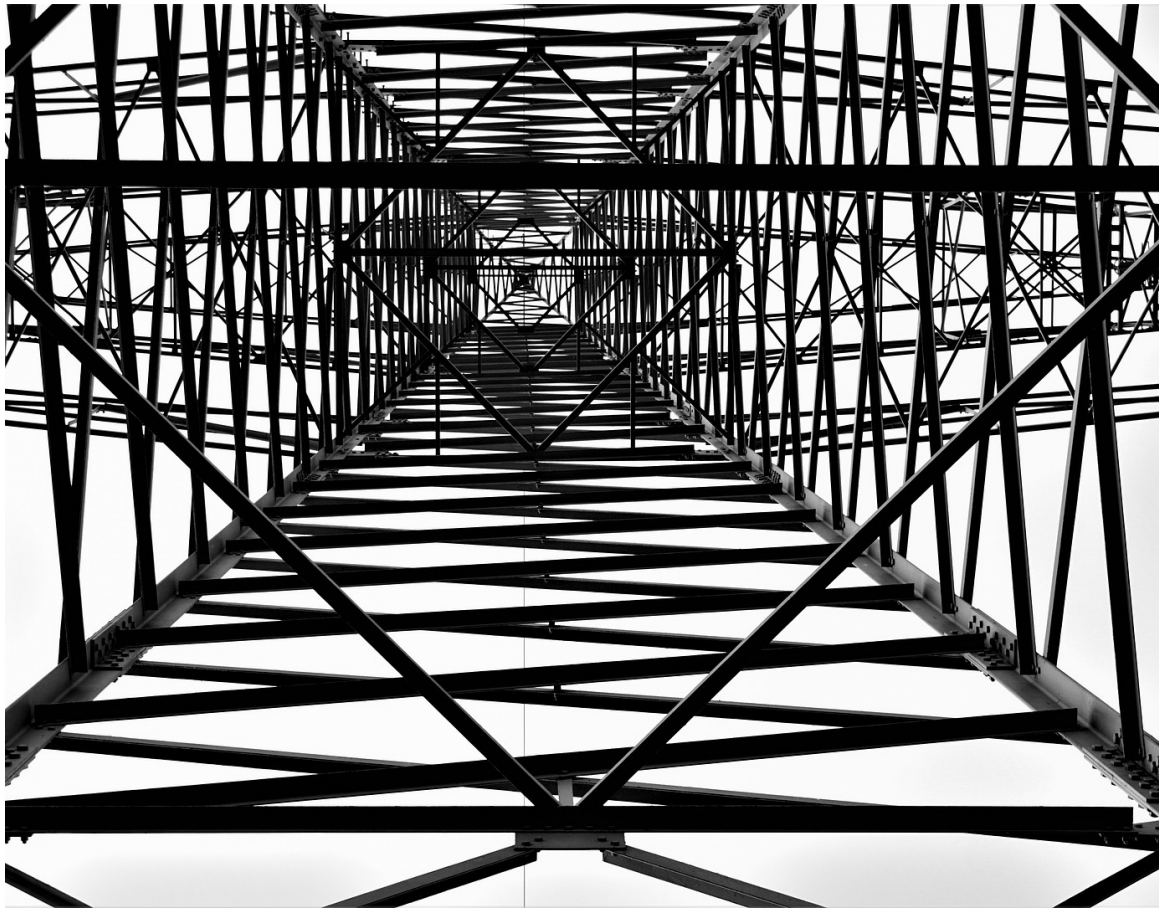
- “Is there anything I’m missing?”

Skill that takes time and practice

Frameworks to guide observation

- The Goetz and LeCompte (1984) framework:
  - Who is present?
  - What is their role?
  - What is happening?
  - When does the activity occur?
  - Where is it happening?
  - Why is it happening?
  - How is the activity organized?

- Minimal set to observe
  - The person. Who?
  - The place. Where?
  - The thing. What?



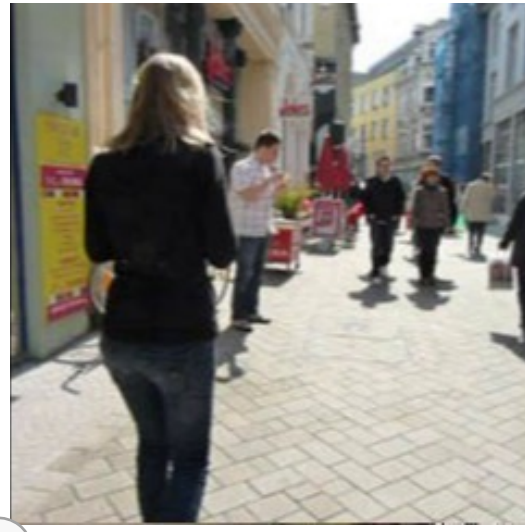
Video observation

Capturing behavior and context with cameras

- Provide information about the user context

Following a user with a camera

- Captures everything, even details you haven't considered before your observation
- Can be obtrusive, which might lead to behavior change user behavior when the subject feels be observed obtrusively
- Attracts attention of passing-by peoples and might change their behavior

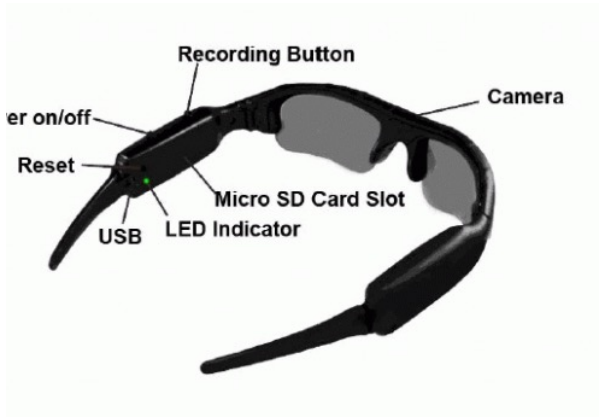


Video observation

Camera attached to the user may be useful

- Many cameras = many perspectives = many information
- Neck-lace camera, camera embedded into glasses, etc.
- Allow the observer to see “through the eyes” of the user

Microsoft SenseCam

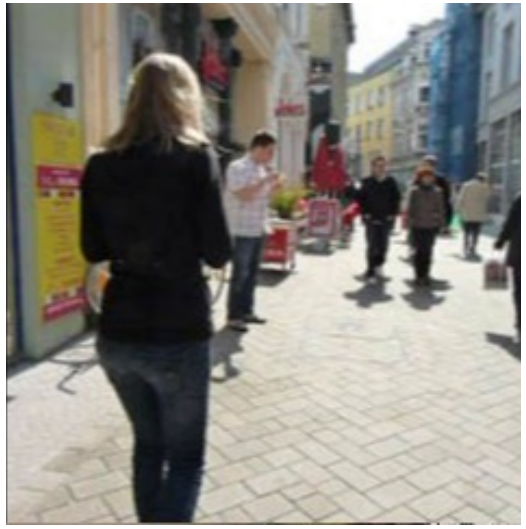


Video Glasses

Video observation

Analysis of raw material is very time consuming!

- Multiple hours for 1h recording
- Automatically annotate video recordings (E.g. time stamps, possibly triggered by events)



Watch whole video

+

Annotate with the help of a software

=

Data

Sensor-based observation

Sensors

- Provide a truly objective measure
- Sensors are everywhere (think about mobile phones, sensors in home automation, etc.)
- Sensors emerge into the background (i.e., they are pervasive), thus they are quite unobtrusive

Examples

- GPS (location, orientation, …)
- Accelerometer (activity, device posture, …)
- Microphone (environmental noise level, …)

Part 2

Diary studies

Diary studies

- Asks people to keep a diary, or journal, of their interactions with a computer system, any significant events or problems during their use of a system, or other aspects of their working life.

- A diary typically asks a user to record the date and time of an event, where they are, information about the event of significance, and ratings about how they feel, etc.

- An interesting alternative for making diary entries is to give users a tape recorder (or a mobile phone...) and a list of questions, so that users don't need to write things down as they encounter them.

Data collection

How will the diaries be recorded?

- Paper?
- Electronic?
- Voice recording?
- Pictures?
- Smart phones? Tablets?

If a specific technology is being studied in a diary study, you may want to use a different, common technology for the diary recordings

- Use whatever is most natural for the participants

Pros and cons of diary studies

Pros

- Cheaper than location-based ethnography
- Long term observation
- Very good to investigate context of use

Cons

- Depends on the user's motivation (might decrease early)
- Hardly to find out, if diary is complete or what is missing (can be not very reliable)

Part 3

Interviews

Ask the users

Direct conversations as tools for data collection

- Understand requirements, needs, problems

Interviews – one at a time

Focus groups – multiple people at a time

Ask the users

Applications of interviews

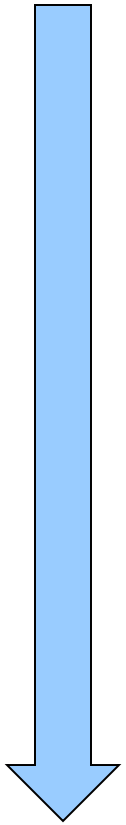
- Initial exploration
- Requirements elicitation
- Evaluation and Subjective Reactions

Types of interviews

Fully Structured

Semi-Structured

Unstructured



Less structure:
greater difficulty in conducting and interpreting interview,

but

more opportunity for insight

Interviews

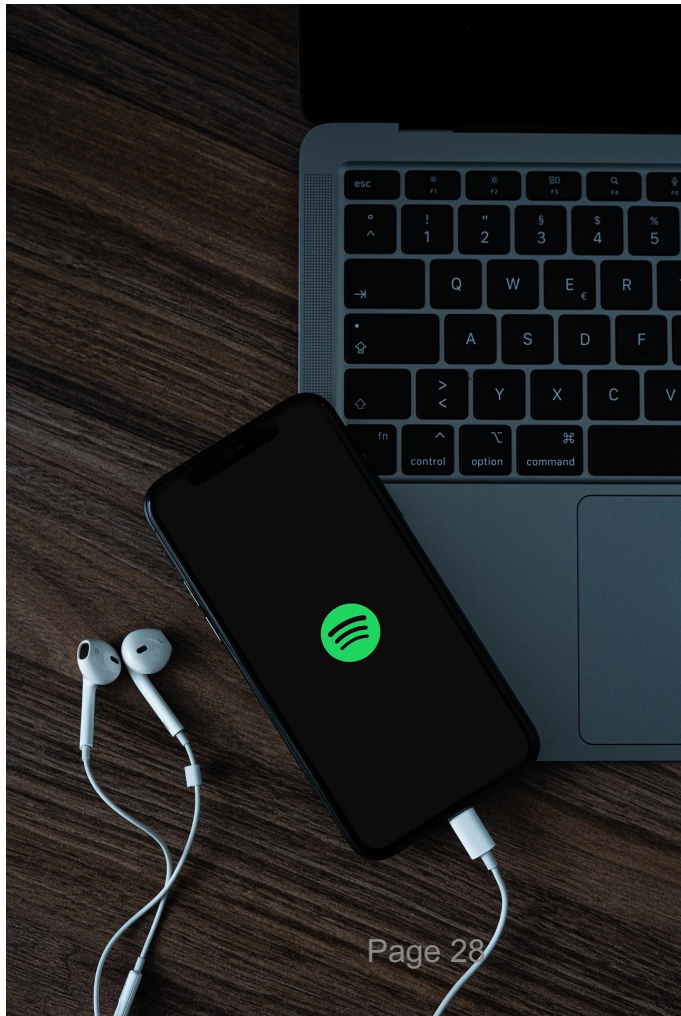
Structured, semi-structured, open interview

- The more open, the more dependent on the skills of the interviewer
- The more structured, the less context information
- Structured interviews are more easy to interpret

Use of scenarios or prototypes can be very helpful

Examples

- Interview users about users' music listening habits



Interviews – Pros and Cons

Pros

- Simple, efficient and practical way of getting data about things that can‘t be easily observed (e.g. feeling and emotions)
- High validity (in depth information and meaning behind actions may be revealed
- Complex questions and issues can be discussed / clarified
- Easy to record interview

Cons

- Dependent on skill of the interviewer
- Interviewer may give out unconscious signals influencing answers
- Difficult to analyze and generalize, specifically if interview is unstructured

Things to remember about interviews

- Preparation, preparation, preparation
- Respect the user – they are giving you their time
- Have a data collection method
- It’s easier to do with a friend
- Give your users time to think
- Never push them too far
- Take time to nod (and breath)

Part 4

Focus Groups

Focus groups

Informal group gathering

- 4 to 12 people
- Focus on a specific topic
- Group discussion as means of communication

Why?

- Building understanding of technology characteristics or interactions with tech
- Generating ideas for a new product or a product improvement
- Comparison of two or more candidate designs for a product
- Explore and generate a hypotheses for a following study

Focus groups

What?

- Gather qualitative data from a group of people
- Get indication how people think and feel
- Collecting opinions, attitudes, feelings, perceptions, and ideas
- Get examples and rich descriptions
- Understand why people act or react in a certain way

Creating a focus group

Selecting people for a focus group

- Balance between similarity and productive heterogeneity
- Do not set up a group where everyone has the same views
- Diversity is useful, most of the time
- In general do not mix people that are at different levels in company hierarchy
- In general do not mix people that have very opposite views
- Too small groups do not generate a discussion, too large groups make it hard to involve all participants

Creating a focus group

Consider having different focus groups to get information from different angles

- For example: One with managers and one with sales staff
- Embrace different stakeholders and, perhaps, mix them
- An opportunity for people to meet in a new context

Expected group dynamics and behaviour should allow a constructive discussion

Planning a focus group

- Organize an appropriate location and time slot (1-3 hours)
  - Unobtrusive audio/video recording facilities
- Prepare a set of open-ended questions and discussion points
- Set questions that to allow group dynamics and spontaneity
- Remember about data collection
- Invite participants individually and explain the concept of the focus group and its purpose
- Prepare material that makes the discussion more tangible
  - e.g. product prototypes, concept video
- A detailed time plan is really helpful

Running a focus group session

- Moderator keeps the group focused and the discussion moving
- Start with an introduction and a warm-up exercise
- Explain the rules of the discussion (e.g. confidentiality)
- Start with simple non-controversial questions
- Pose open-ended questions
- Avoid question that lead to specific answers
- Allow for diverse opinions and for equal opportunities in the discussion
- Encourage each participant to express their own point of view
- Consensus between participants is not required
- Capture or record the session (video, audio, note taking)

Interviews vs. focus groups

- Interviews take time
  - Often 1 hour or more/response
  - Several hours for analyzing notes

- Focus groups
  - More people in less time
  - Up to 8-12 people at once (ideal number of participants depends on your research question (RQ); 4-6 participants make for a good group size for many HCI RQs)
  - Complex analysis process

Focus groups: pros and cons

- Pros
  - Broad range of viewpoints and insights
  - Each group will likely have at least one person who will stimulate others to talk
- Cons
  - Hard to manage group dynamics
  - Generally can't be fully structured
  - May need to ask fewer questions
  - Selection can be challenging

Part 5

Tips on how to conduct
focus groups and interviews

(Try to avoid) closed-ended questions

- You will get very specific answers
  - “On a scale of 1-10, 10 being best, how did you like the web page?”
  - Yes/No answers
- Easy to analyse, but may not be informative

Open-ended questions

- Example: “What did you think about the web page?”
  - Open questions invite elaboration, discussion
- Ask follow-up questions

Other guidelines

Simple questions – no jargon

Avoid compound questions with multiple parts

- Not ""“What were the strengths and weaknesses of the menu layout and the toolbar?”
- Ask two separate questions instead.
- Or four…

Avoid judgmental phrasing or tone

- Possible bias

Other guidelines

You're the host:

- build rapport
- Be friendly, respectful, nonjudgmental
- Listen carefully

Outline

- Briefly introduce research goals
- Complete paperwork (informed consent)
- Simple questions first, hard questions later

Other guidelines

What if they won't talk?

Fully-structured – not much to do

Otherwise

- Rephrase questions
- Dig deeper into specifics

Use props and probes to stimulate feedback

Focus groups – ask for dissenting or concurring feedback

Closing it out

- Ask for any final comments
- Provide more detail about research goals
- Brief summary of findings
- Turn off recording devices
  - Interviewees might make additional useful comments
  - Ask before including these comments in analyses
- Say “thanks!”
- Reflect and summarize notes immediately

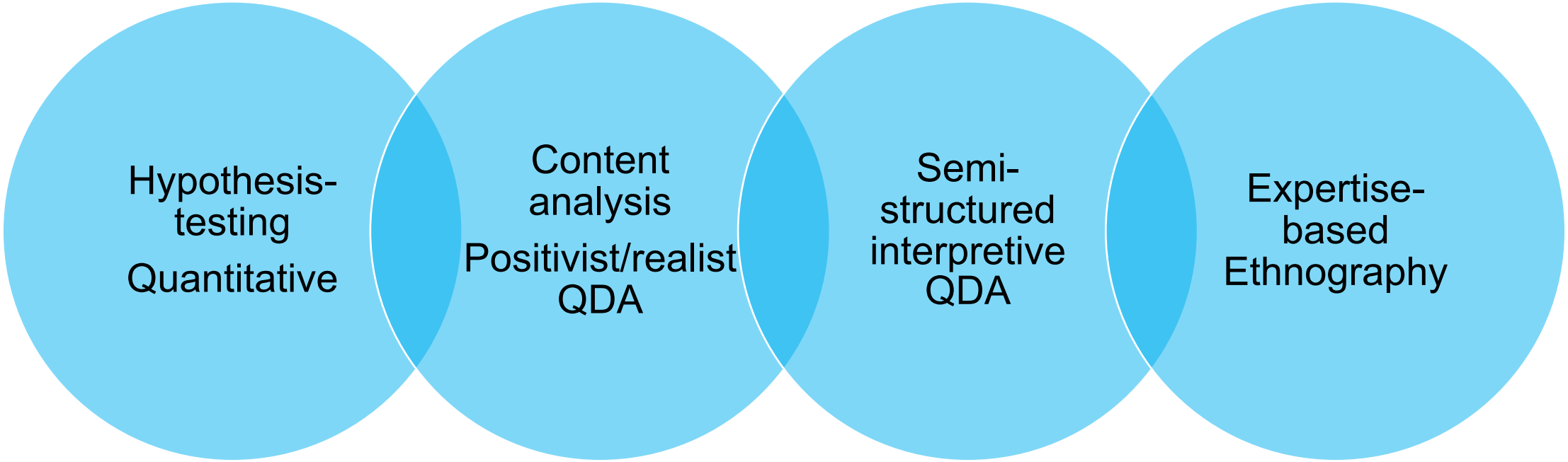
Part 6

Qualitative data analysis

Goals and stages of qualitative analysis

- Goal: turn unstructured data into a detailed description about the important aspects of the situation or problem

- Stages:
  - Identify components of the substance
  - Study properties and dimensions of each component
  - Understand and make inference about the substance



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Terminology

- Code: word or short phrase that symbolically assigns a summative, salient, essence-capturing, and/or evocative attribute for a portion of language-based or visual data
- Categories and subcategories: families or groups of codes that share similarities
- Themes/Concepts: often higher-level and more abstract constructs that go beyond mere categories. Themes often answer questions and show relationships that go beyond descriptive categories.
- Patterns can be characterized by similarity, difference, frequency, sequence, correspondence, causation
- Qualitative data analysis: analysing non-numeric, often text-based information

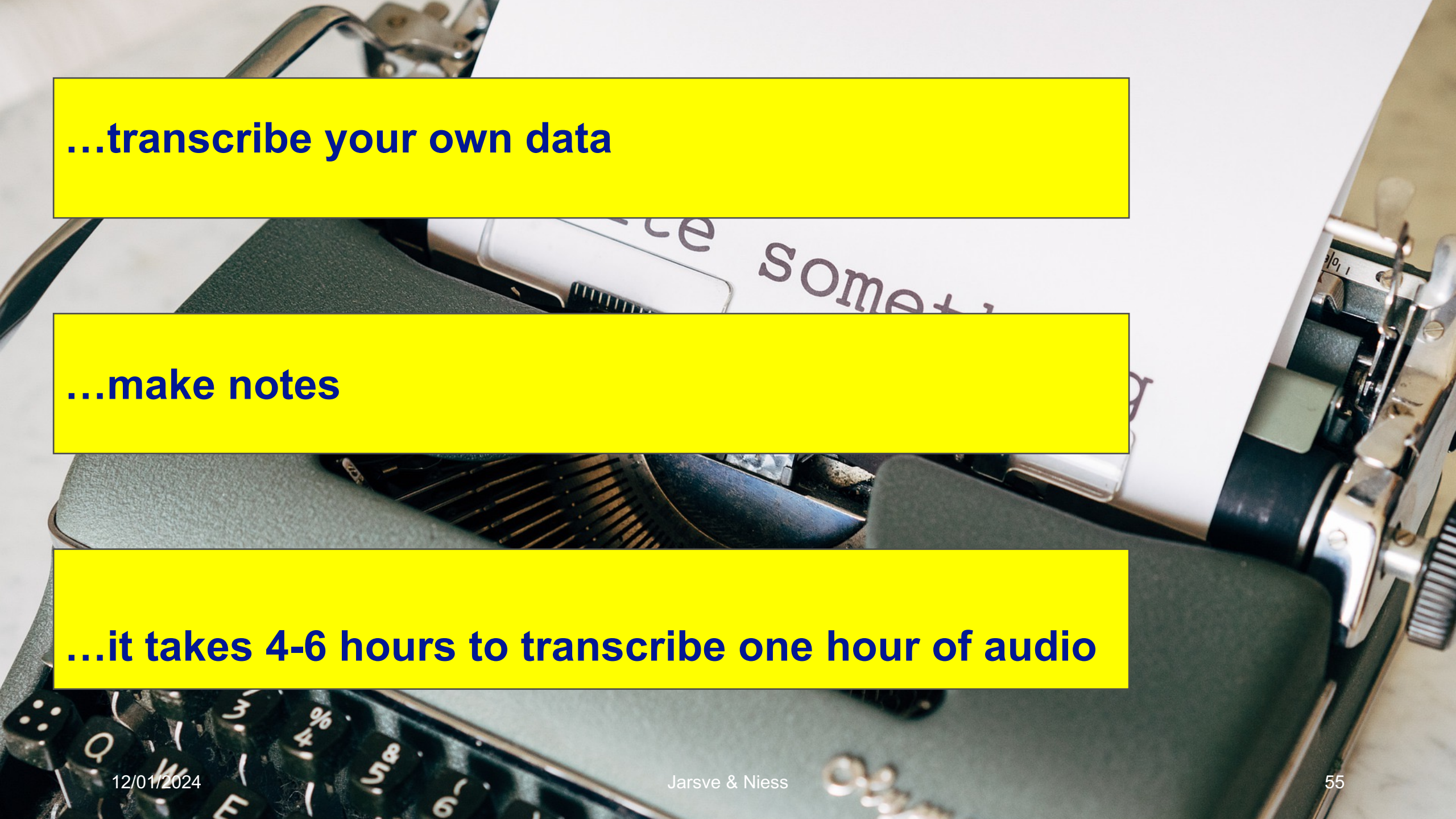
What kind of data is analysed?

What kind of data is analysed?

- Field notes
- Audio files
- Photographs
- Videos


What is the first step?


Write something



…transcribe your own data

…make notes

…it takes 4-6 hours to transcribe one hour of audio

Transcribing your data

- Timestamping helps
- Use [inaudible 00:00:00] when speech cannot be understood
- Do
- Use
- Every sentence should end with a punctuation mark. Except when the sentence ends with a double dash which means the sentence was incomplete
- Use CAPITAL letters if the speaker emphasised something
- Always use a descriptive speaker label
- Clean verbatim does not include speech errors or stuttes

There are many different ways and rules how you can transcribe your data!

Transcription software for free https://otranscribe.com/

Transcribing your data

- Timestamping helps
- Use [inaudible 00:00:00] when speech cannot be understood
- Do not paraphrase or reconstruct the speech in the audio you are transcribing
- Use the correct spelling for misspoken words
- Every sentence should end with a punctuation mark. Except when the sentence ends with a double dash which means the sentence was incomplete
- Use CAPITAL letters if the speaker emphasised something
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Two different coding approaches with many different names

- Emergent coding/Semi-structured interpretative approach/Bottom-up approach
  - Conducted without any theory or model
  - identify any interesting concepts or ideas in data

- A priori coding/Top-down approach
  - Involves the use of established theory or hypothesis to identify categories

Two different coding approaches with many different names

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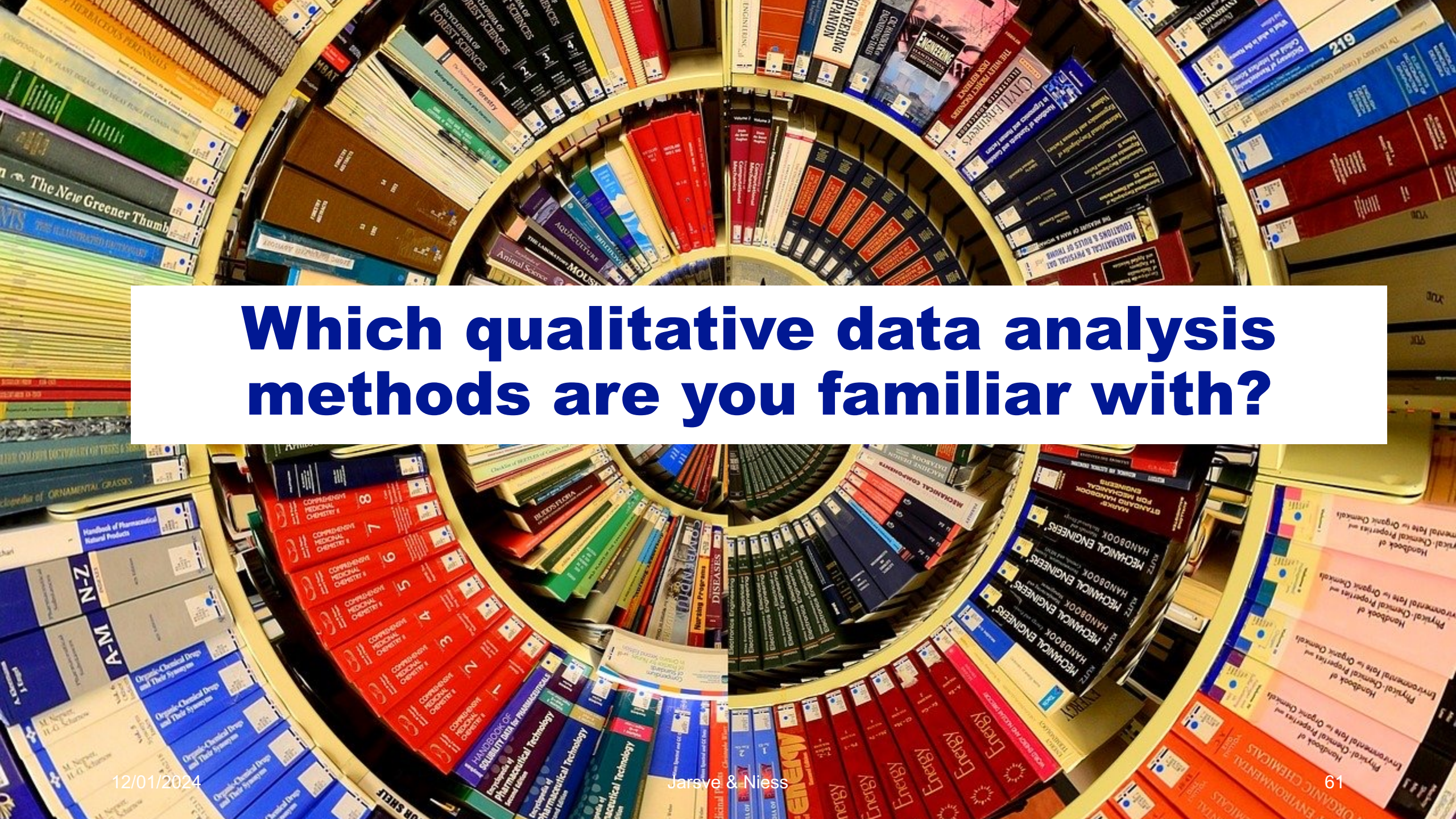
There are many different approaches to reach your goal!



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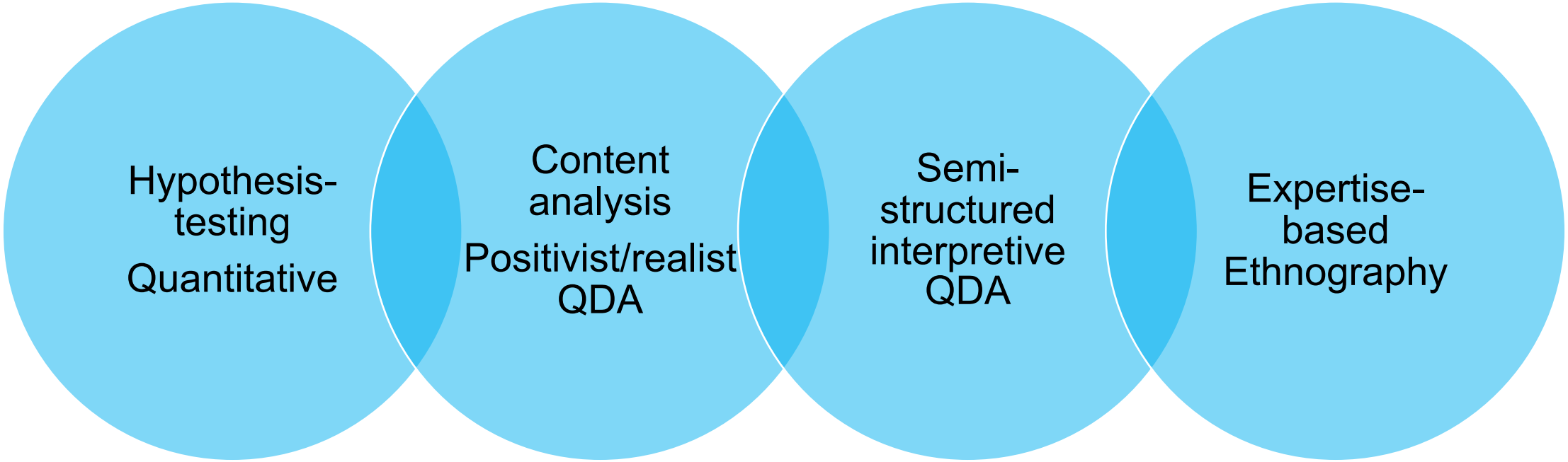

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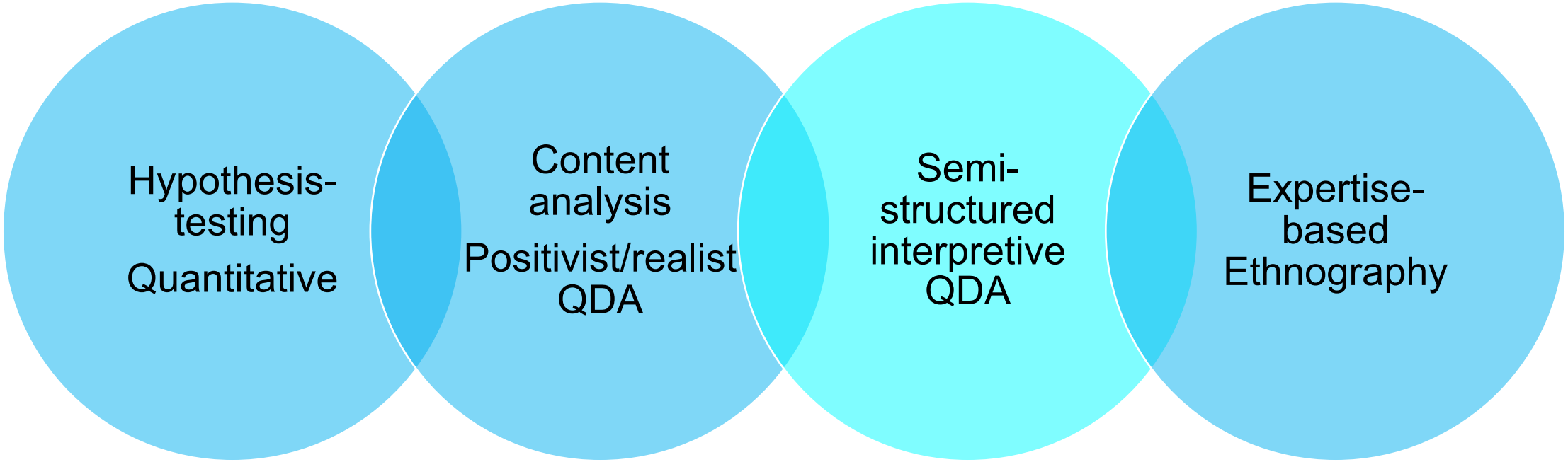

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Thematic analysis

Thematic analysis (TA)

- …as described by Braun and Clarke (2006)
- …builds on thematising meanings as a generic skill across qualitative methods
- …can be applied across a range of theoretical positions
- Applied to answer research questions about people's experiences, views and perceptions, and representations of a given phenomena
- Theoretical framework and methods need to match what the researcher wants to find out
- Not neutral
- Other descriptions of TA exist (e.g. by Joffe, 2012)

Thematic analysis

1. Familiarising yourself with the data
2. Generating initial codes
3. Conceptualising themes
4. Reviewing themes
5. Defining and naming themes
6. Producing the report

Generating initial codes

R1: "*When I was a graduate student I **love**d working in Library A because it is such a **love**ly place to work. The difficulty here is—I hate working in Library B, I think it's a slum; it's an airport lounge, erm, I can't stand Library C which is even more of a slum; I don't care for Library D very much, so I don't like working there. But when I go abroad—I've just been to Washington; working in Library E there is very pleasant and I enjoy that, although you don't get much done because people come and talk to you and show you things, there's chat and you can't do long stints, at Library E, at 3:45 they ring a bell and you have to go and have tea.*"

R2: "*I **love** Library B to work in, it's a pain in the arse to get things out, because you know, you, everything is, you know, you have to go and order it, but its thirty minutes minimum you know, but I **love** going in there, sitting in there and working in there. I think it's just amazing as a building and I never really thought about the extent to which the environment affects me.*"

Generating initial codes

R1: *When I was a graduate student I* `loved working` *in Library A because it is such a lovely place to work. The difficulty here is—I* `hate` *working in Library B, I think it's a* ***`slum`****; it's an* ***`airport lounge`****, erm, I* `can't stand` *Library C which is even more of a* ***`slum`****; I* `don't care for` *Library D very much, so I* `don't like` *working there. But when I go abroad—I've just been to Washington; working in Library E there is* `very pleasant` *and* **`I enjoy that`****, although you don't get much done because people come and talk to you and show you things,* ***`there's chat`*** *and you can't do long stints, at Library E, at 3:45 they ring a bell and you have to go and have tea."*

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What themes are not

Themes are not…

- …topic summaries
- …collections of experiences of X, benefits of Y, barriers to Z, and so on

Instead, themes are…

- …meaning-based patterns

Make comparisons

- Between different coding category
- Between different participant group
- Between existing data and previous literature

Challenge: Frequent engagement with details and abstraction

Grounded theory

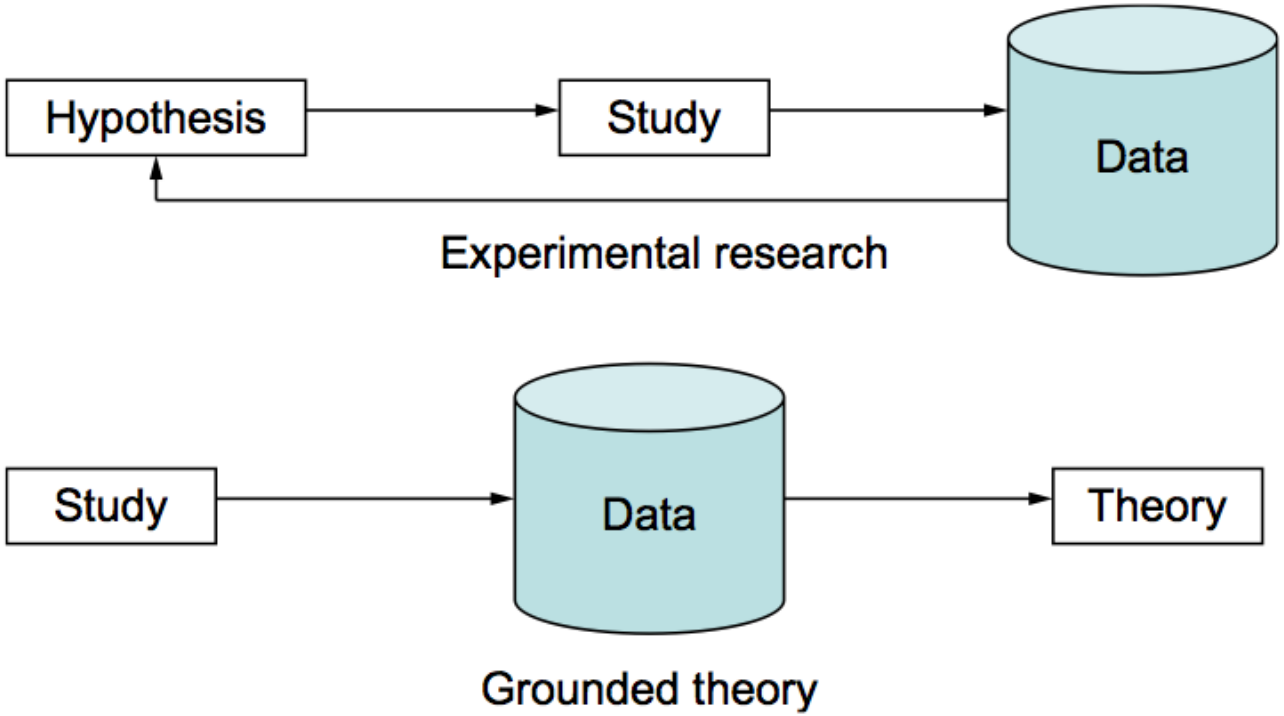


FIGURE 11.1

Experimental research compared with grounded theory.

Grounded theory

Grounded theory is not a theory. It involves:

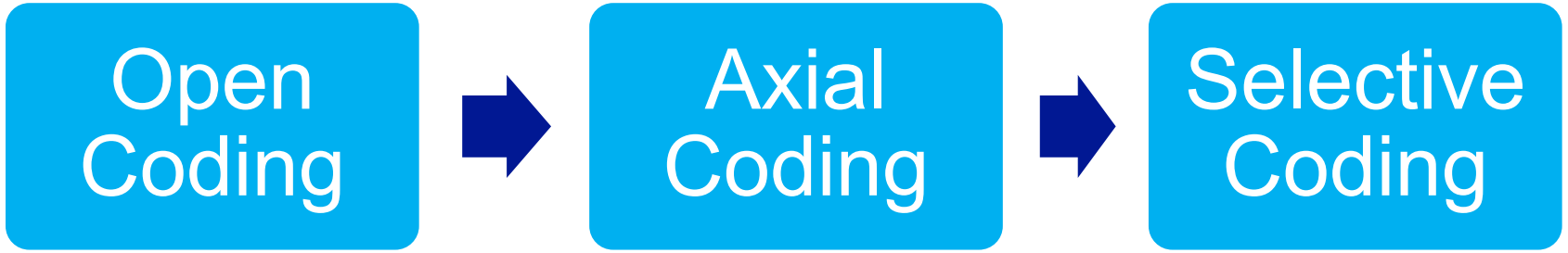
- open coding
- an iterative process
- the development of concepts
- grouping concepts into categories
- formation of a theory

Grounded theory

- Interleaving between data gathering and analysis
- avoiding bringing pre-conceived expectations of what might be found
- theoretical sampling
- constant comparative analysis
- Not about numbers

Grounded theory

- Grounded theory analysis involves the following basic steps:
  1. Coding text and theorising
  2. Memoing and theorising
  3. Integrating, refining and writing up theories
- Strauss and Corbin differentiate between three kinds of systematic coding procedures



Open coding

- Segment data into meaningful expressions and describe them in a concept or theme
- Existing annotations and concepts are attached to these expressions or create new relations (open coding)
- Break down and understand the concept and develop categories using open (W) questions
  - What? - Identify the underlying issue and the phenomenon
  - Who? - Identify the actors involved and the roles they play
  - How? - Identifying the aspects of phenomenon
  - When? How long? Where? - Time, course, location
  - How much? How long? - The intensity or duration
  - Why? - Identifying the reasons causing the phenomenon

Axial coding

- Focusing the phenomenon(s) under study
- Conditions related to that phenomenon
  - Context conditions
  - Structural conditions
  - Causes
- Actions and interactional strategies directed at managing or handling the phenomenon
- Consequences of the actions/interactions related to the phenomenon

Selective coding

- Integrate the different categories that have been developed during axial coding into one cohesive theory or framework
- Results from axial coding are further elaborated, integrated, and validated on an abstract level
  - “Is there an overarching theory”?
  - “What is the overarching theory”?
  - Choosing the core category and relating it with the other categories from axial coding
- If the core category is found, the story line of the research is set and the researcher knows the central phenomenon of the research and can finally answer the research question

The importance of asking questions

- Sensitizing questions: to better understand the data
  - What is happening?
  - What did the user click?

- Theoretical questions: help make connections between concepts and categories
  - What is the relationship between the two factors?
  - How does the interaction change over time?

Grounded theory (GT) & thematic analysis (TA)

Commonalities:

- Iteration in analysis
- Explanatory narratives and themes

Differences:

- TA: analysis can be informed by previous work and established theory
- GT: more data-driven
- GT: data gathering and analysis are an iterative process
- TA: works with existing data set
- GT used for analysis and collection; TA is used for analysis
- GT: participant recruitment should be “theoretical”
- GT: participants are recruited until data saturation is reached

A few tips for qualitative data analysis

- Do it as soon as possible
- Sit down and summarise notes immediately afterward
- Transcribe audio
- Avoid “cherry-picking”
- Fully-structured, closed-ended: tabulate answers
- Open-ended questions require qualitative coding
- Re-use your written summaries

QDA preparation: Cheat sheet

- How will data be analysed?
- At what level of detail will transcription take place?
- What tools will be used to support analysis?
- Will codes be pre-determined or will they be determined during analysis?
- Will coding be done individually or by multiple people?
- If there are multiple coders, is their coding independent or negotiated?
- If the analysis is individual and reflexive, what steps will the researcher take to ensure the validity of findings?
- Will participants be involved in analysis and/or validation? If so, how?

Key takeaways

- Qualitative data analysis can be conducted bottom-up or top-down
- Use your research question/research aim as a guide to determine which QDA approach to apply
- QDA brings structure to large amounts of data. Don’t be afraid of the chaos in the beginning

References & food for thought

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Thank You!