Aalto University
School of Science

CS-E5250 Data-Driven Concept Design

5 ECTS

Qualitative Data Analysis
Assignment 1

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Agenda

- Today’s lecture and its Learning Outcomes
- Theoretical introduction
- Assignment details and DLs

Qualitative Data Analysis

Introduction to qualitative data analysis using Atlas.ti.

Learning Outcomes

- Become familiar with basic qualitative research theory and methodology.
- Learn basic qualitative research practices (coding, categorizing, developing themes).

After this Assignment:

- You know how to prepare and analyse real-world qualitative user research data to produce relevant user knowledge and insights.

Qualitative Data Analysis

What is qualitative analysis?

Qualitative analysis commonly deals with unstructured, non-numerical data. It often captures valuable insights not found by purely quantitative methods of analysis.

The goal of qualitative analysis is to develop an understanding of the characteristics and meanings of the researched topic.

“Findings and results do not emerge from your transcripts and documents by themselves, but require deliberate work to identify the most important elements and write them up into a coherent and convincing “story” that answers the research questions and provides insights that are loyal to the data.” **(Linneberg & Korsgaard, 2019)**

Examples of qualitative data

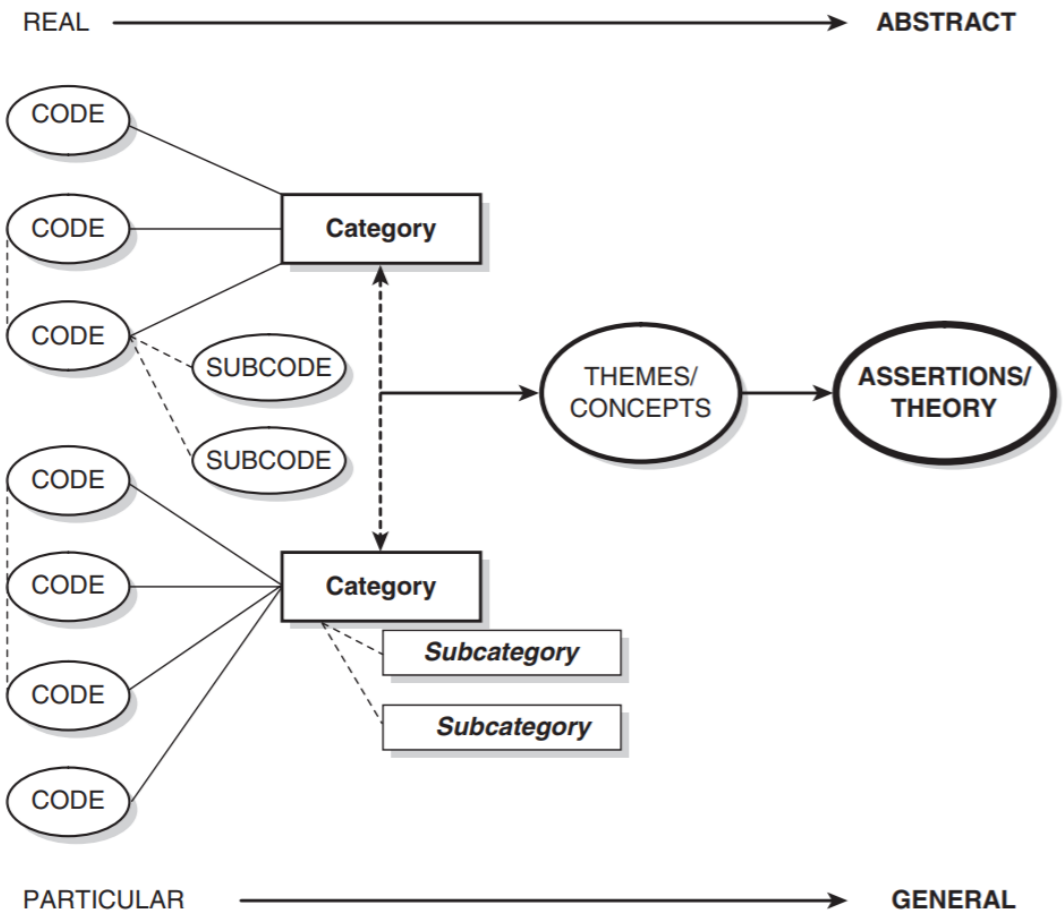
- Interview transcripts
- Social media posts
- Customer feedback
- Participant observation field notes
- Documents
- Photos and videos
- Focus groups

How do we analyze qualitative data?

"Breaking data into meaningful parts" **(Savin-Baden & Major, 2013)**

"Systematic search for meaning" **(Hatch, 2002)**

Analyzing qualitative data: an overview



(Saldaña, 2013)

What are codes?

Developing codes, or coding, is the first step in making sense of unstructured qualitative data.

A code is *“a 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.*” **(Saldaña, 2013)**

“Coding in its most basic form is the simple operation of identifying segments of meaning in your data and labeling them with a code.” **(Linneberg & Korsgaard, 2019)**

Codes can be attached to words, phrases, sentences or whole paragraphs.

Example code (1/2)

[1] I notice that the grand majority of homes have chain link fences in front of them. There are many dogs (mostly German shepherds) with signs on fences that say "Beware of the Dog." [1] SECURITY

(Saldaña, 2013)

What do we look for when coding?

Hatch (2002) describes coding as looking for patterns in your data. Patterns can be characterized by:

- similarity (things happen the same way)
- difference (they happen in predictably different ways)
- frequency (they happen often or seldom)
- sequence (they happen in a certain order)
- correspondence (they happen in relation to other activities or events)
- causation (one appears to cause another)

Example code (2/2)

[1] Mrs. Jackson rises from her desk and announces, "OK, you guys, let's get lined up for lunch. Row One." Five children seated in the first row of desks rise and walk to the classroom door. Some of the seated children talk to each other.	[1] LINING UP FOR LUNCH
[2] Mrs. Jackson looks at them and says, "No talking, save it for the cafeteria. [3] Row Two." Five children seated in the second row of desks rise and walk to the children already standing in line.	[2] MANAGING BEHAVIOR [3] LINING UP FOR LUNCH

(Saldaña, 2013)

Approaches to coding

There are two commonly used approaches to coding, inductive and deductive.

Inductive coding starts from scratch and develops the codes based on the qualitative data itself. Here, you don't start with a pre-determined codebook. This approach is most useful when doing an exploratory study or when no theoretical concepts are available to help with understanding the studied phenomenon.

Deductive coding involves developing a codebook ahead of time to guide the researcher during the coding process. The codebook is generally based on previous literature on the studied phenomenon.

In practice, a combination of both approaches is often used (Graebner, Martin & Roundy, 2012; Alvesson & Kärreman, 2007).

(Linneberg & Korsgaard, 2019)

Coding as an interpretive act

“Coding is not a precise science; it is primarily an interpretive act.” **(Saldaña, 2013)**

Your codes can be shaped by your research question, what you are trying to get from the data, your academic discipline, theoretical and conceptual frameworks, choice of coding method, and more.

Coding as an interpretive act: example

Participant A: I had chicken and rice for lunch.
Participant B: I had beef lasagna for dinner and drank some wine.

(Yi, 2018)

Coding as an interpretive act: example

Participant A: I had chicken and rice for lunch.	MEALS
Participant B: I had beef lasagna for dinner and drank some wine.	MEALS

(Yi, 2018)

Coding as an interpretive act: example

Participant A: I had chicken and rice for lunch.	FOOD
Participant B: I had beef lasagna for dinner and drank some wine.	FOOD DRINK

(Yi, 2018)

Coding as an interpretive act: example

Participant A: I had chicken and rice for lunch.	MEALS
Participant B: I had beef lasagna for dinner and drank some wine.	MEALS

Participant A: I had chicken and rice for lunch.	FOOD
Participant B: I had beef lasagna for dinner and drank some wine.	FOOD DRINK

(Yi, 2018)

How do you ensure the validity of your codes?

Transparency: Make it clear how your conclusions are linked to your data, allowing the reader to understand the role of the researcher in shaping and analyzing the data (Guba and Lincoln, 1994; Elo et al., 2014).

Collaboration: Employ multiple coders working independently on the same data. Compare the codes you developed and reach a mutual understanding of what codes are most conducive to your research. Using multiple coders also has the added benefit of producing a richer data analysis that may not be achieved alone (Church, Dunn and Prokopy, 2019).

Coding: an iterative process

Coding often occurs in two or more cycles - rarely will anyone get coding entirely right during the first go (Linneberg & Korsgaard, 2019; Saldaña, 2013).

The initial cycle can be relatively fast and straightforward. Familiarize yourself with the data and use broad codes.

During subsequent rounds, look for patterns and refine your codes to include more detail. Add codes that were developed later to your earlier data.

Example of iterative coding

COLUMN 1 Raw Data	COLUMN 2 Preliminary Codes	COLUMN 3 Final Code
[1] The closer I get to retirement age, the faster I want it to happen. I'm not even 55 yet and I would give anything to retire now.	*"retirement age"*	[1] RETIREMENT ANXIETY
But there's a mortgage to pay off and still a lot more to sock away in savings before I can even think of it. I keep playing the lottery, though, in hopes of winning those millions. No luck yet.	*financial obligations* *dreams of early retirement*	

(Saldaña, 2013)

From codes to categories

As you go through the process of coding qualitative data, you'll notice that certain codes can be thematically grouped together. These groupings form your categories, which allow you to move beyond a messy collection of individual codes.

"Coding is thus a method that enables you to organize and group similarly coded data into categories or "families" because they share some characteristic – the beginning of a pattern." **(Saldaña, 2013)**

Choosing what to categorize: *"You use classification reasoning plus your tacit and intuitive senses to determine which data 'look alike' and 'feel alike' when grouping them together."* **(Linneberg & Korsgaard, 2019; Lincoln & Guba, 1985)**

Categories: example

Category: Physical Oppression

Code: PUSHING

Code: FIGHTING

Code: SCRATCHING

Category: Verbal Oppression

Code: NAME-CALLING

Code: THREATENING

Code: LAUGHING AT

(Saldaña, 2013)

Categories: another example

Category: Teacher Skills

Subcategory 1: Instructional Skills

Code: PEDAGOGICAL
Code: SOCIO-EMOTIONAL
Code: STYLE/PERSONAL EXPRESSION
Code: TECHNICAL

Subcategory 2: Management Skills

Code: BEHAVIORIST TECHNIQUES
Code: GROUP MANAGEMENT
Code: SOCIO-EMOTIONAL
Code: STYLE (overlaps with instructional style)
Code: UNWRITTEN CURRICULUM

(Saldaña, 2013)

From categories to themes

"When the major categories are compared with each other and consolidated in various ways, you begin to transcend the "reality" of your data and progress toward the thematic, conceptual, and theoretical." **(Saldaña, 2013)**

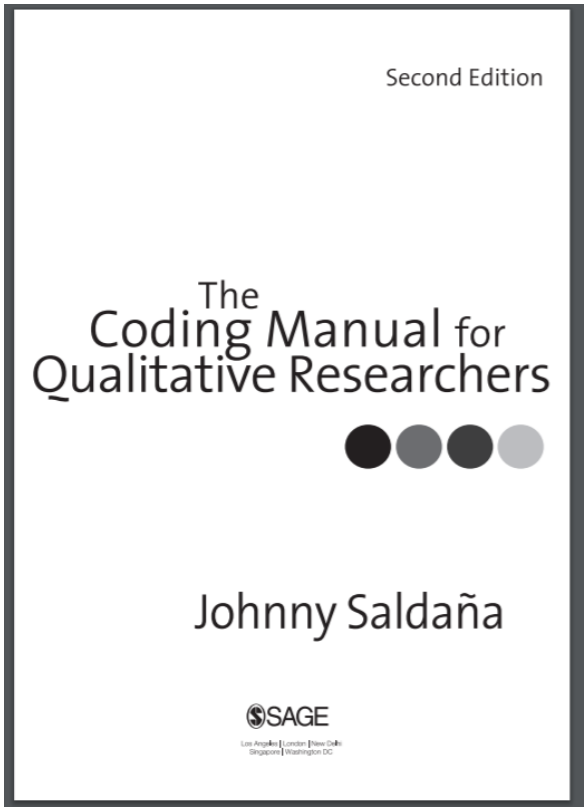
While codes and categories describe the data, themes try to explain what is happening. This is where you engage is storytelling from your data.

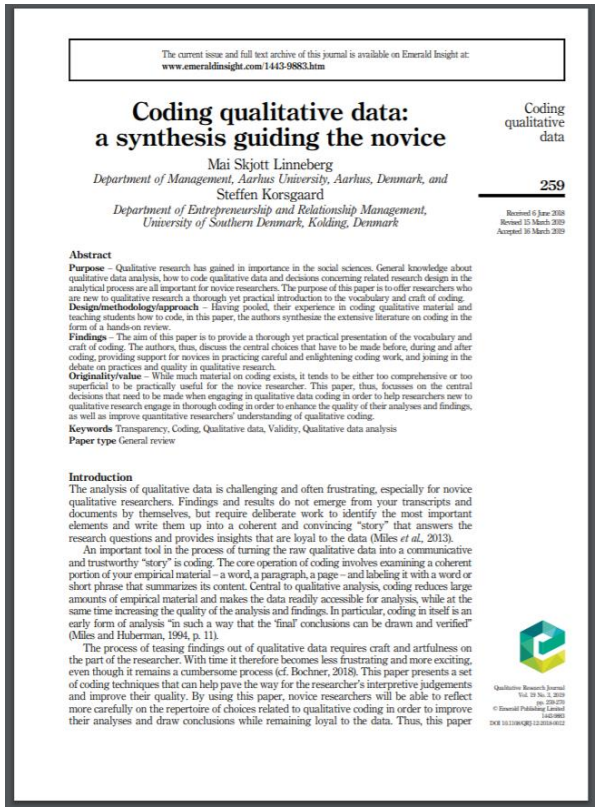
"Think of a category as a word or phrase describing some segment of your data that is explicit, whereas a theme is a phrase or sentence describing more subtle and tacit processes" **(Rallis & Rossman, 2003)**

Recap: the qualitative analysis process

1. Familiarize yourself with the data
2. Generate initial codes (first cycle)
3. Refine and add detail to codes (subsequent cycles)
4. Organize codes into categories
5. Develop themes

Recommended resources





Saldaña, J., 2013. *The Coding Manual For Qualitative Researchers*. 2nd ed. Sage.

Skjott Linneberg, M. and Korsgaard, S., 2019. Coding qualitative data: a synthesis guiding the novice. *Qualitative Research Journal*, 19(3), pp.259-270.

ATLAS.ti for coding

Get started by downloading ATLAS.ti from (download.aalto.fi)

Suggested viewing:
https://www.youtube.com/watch?v=EK9yZ0VqZgE

ATLAS.ti workshop on Wednesday

Assignment 1: Qualitative Data Analysis

Assignment 1: Qualitative Data Analysis

Background: Recently, 16 users took part in an exploratory study on collaboration in virtual reality. The aim of the study was to investigate different methods of communication between users in an *asymmetric* setup, where one user is immersed in virtual reality and the other remains in the real world. The primary focus was on how to preserve the immersed user's sense of presence during the interaction. After each session, the users were interviewed about their subjective experiences.

Assignment 1: Qualitative Data Analysis

Your task: Using real data from these post-session interviews, perform a qualitative analysis on how the users experienced the various methods of communication. Pay attention to which methods seemed conducive to keeping them immersed in the virtual world, and which ones seemed to interrupt their sense of immersion.

Introduction to the study's goals and research question

How does a person inside an immersive environment work with other people who are in the real world?

Which types of methods of communication between immersed users and external users are most susceptible to interrupting the immersed user's sense of presence, and what are the preferred interaction methods in VR to preserve immersion?

The experiment: overview

Pre-session setup (10 min)

Virtual reality cabin (30-40 min)

- Puzzles
- Conduits (communication methods)
- Questionnaires

Post-session interview

Video: mika.mp4

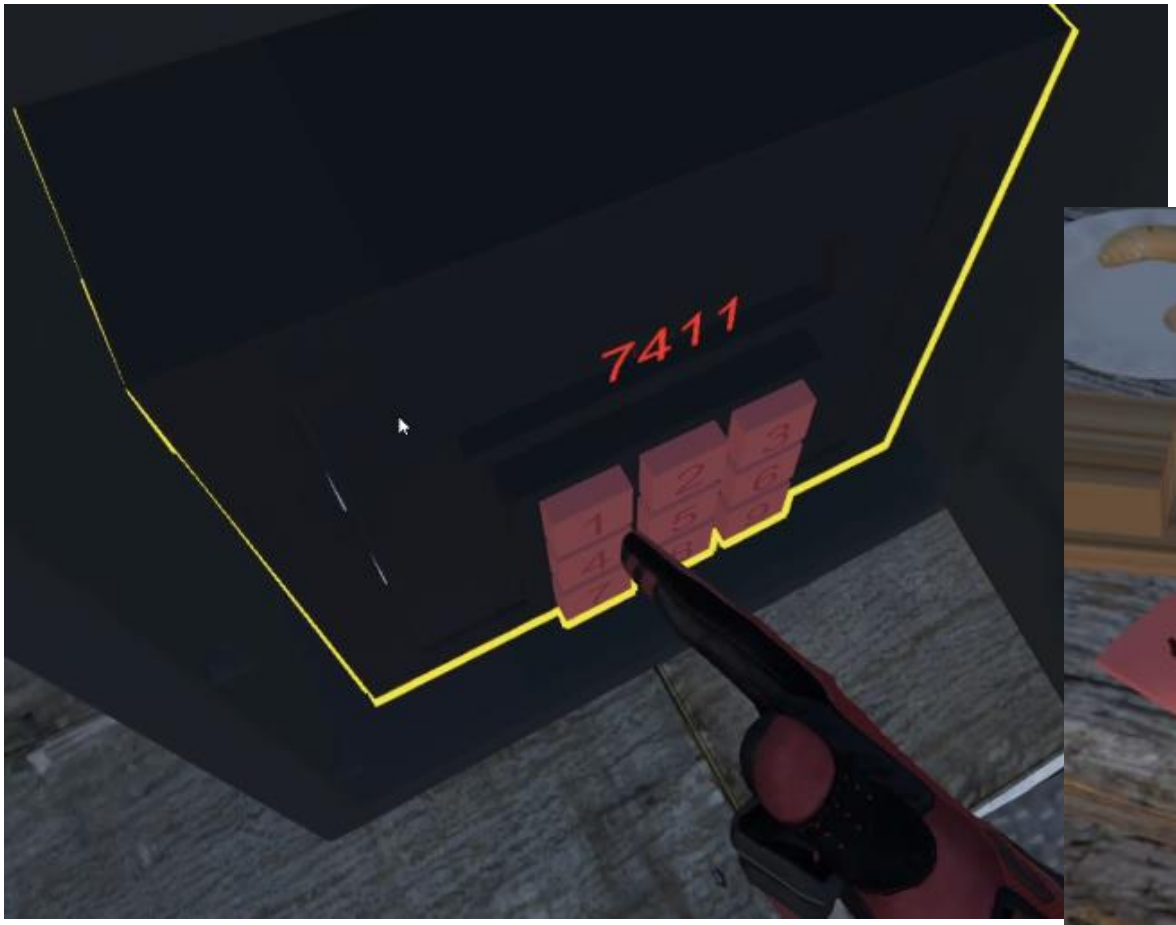
The experiment: puzzles

- Shapes puzzle
- Letters puzzle
- Red number box puzzle
- Blue number box puzzle
- Snowball puzzle

Puzzles: shapes

Puzzles: letters

Puzzles: number boxes



Puzzles: snowball

The experiment: conduits (communication methods)

- Disembodied voice
- Yelling
- Walkie talkie
- Video call
- Outlines
- Sunlight

Conduits: walkie talkie

Conduits: video call

Conduits: outlines

Conduits: sunlight

The experiment: questionnaires

The experiment: post-session interviews

- 16 interviews
- Questions about:
  - the overall experience; what they liked and what they didn't
  - probing questions about how they felt about each conduit

Assignment 1

Deliverable one (due 15.01)

- Code 5 user transcripts individually.

Deliverable two (due 25.01)

- In groups of 2-3, compare your individual codes and merge them into one project.
- Prepare an intercoder agreement analysis and 1-2 page written report about your merged codes and themes.

Detailed instructions available on MyCourses. **Please read before starting.**

Thank you!

References

References (1/2)

Alvesson, M. and Kärreman, D., 2007. Constructing mystery: Empirical matters in theory development. *Academy of Management Review*, 32(4), pp.1265-1281.

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Elo, S., Kääriäinen, M., Kanste, O., Pölkki, T., Utriainen, K. and Kyngäs, H., 2014. Qualitative Content Analysis. *SAGE Open*, 4(1), p.215824401452263.

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Rallis, S. and Rossman, G., 2003. Mixed methods in evaluation contexts: A pragmatic framework. In: A. Tashakkori and C. Teddlie, ed., *Handbook of mixed methods in social & behavioral research*. Thousand Oaks, CA: Sage, pp.491–512.

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Yi, E., 2018. *Themes Don'T Just Emerge — Coding The Qualitative Data*. [online] Medium. Available at: <https://medium.com/@projectux/themes-dont-just-emerge-coding-the-qualitative-data-95aff874fdce> [Accessed 3 January 2021].