TYPES OF DATA
QUALITATIVE ANALYSIS
TECHNIQUE

CPSC 544 FUNDAMENTALS IN DESIGNING INTERACTIVE COMPUTATION TECHNOLOGY FOR PEOPLE (HUMAN COMPUTER INTERACTION)

WEEK 4 – CLASS 6
TODAY

• Type of data
• Qualitative analysis techniques
• In class activity
  • coding
• Discussion of readings
TYPES OF DATA THAT EVALUATION METHODS PROVIDE

spectrum of data...

qualitative:

• users tell you of problems & situations of which they are aware
• you observe situations that users may not be fully aware of

quantitative:

• measure task performance with existing tools / methods:
  • e.g., speed, errors, dead-ends, learning curves for novices …
• numerical data from user-reported answers: e.g., # of emails/day
• counting observed occurrences: e.g. # of times looked at instructions
ACTIVITY:
TYPES OF DATA THAT EVALUATION METHODS PROVIDE:

- controlled observations (of time to complete task)?
- observations (description of observed steps to complete a task).
- unstructured interviews (user telling stories)?
- questionnaire (e.g., self report numbers of times do something)
TRIANGULATION

a strategy to enhance validity, credibility:

use the *multiple perspectives* available from complementary sources

Use multiple:
- data sources
  - people, places, times
- data collection methods
- researchers/evaluators

image credit: Sandra Mathison, UBC EPSE 595
ANALYZING & INTERPRETING DATA

qualitative data – interpreted to tell a “story”
- categories, themes, patterns, etc.

quantitative data – presented as values, tables, charts and graphs
- counts (e.g., summary of total # of errors)
- simple statistical analysis (e.g., averages)
- advanced statistical analysis (e.g., linear regression)

your choice of analysis method will depend on what you’re using it for
- remember you can often transform from qualitative to quantitative
SIMPLE METHODS FOR QUALITATIVE ANALYSIS

- categorization
- critical incident technique
- finding patterns and themes

In all cases your aim is to interpret the data in ways that encapsulate and document your understanding.

many methods often used in combination
QUALITATIVE ANALYSIS METHODS

CATEGORIZING DATA

typically used on transcripts (observations, interviews, etc.)

• at non-granular level of detail to find stories or themes
• or at fine levels of detail focusing on words, sentences, gestures, etc.

first data are ‘coded’ according to a scheme of categories

• can be predetermined, or arise naturally from the data
  • at a high level: affinity diagram
EXAMPLE OF CODED TRANSCRIPT
MID- TO LOW-LEVEL OF DETAIL

Very informative, but time consuming!
QUALITATIVE ANALYSIS METHODS

FINDING CRITICAL INCIDENTS

identify and focus on the most significant incidents

• efficient when you have lots of data
• incidents can be either desirable or undesirable

NOT about summarizing all incidents that occur

→ more like finding tiny gold nuggets in buckets of sand

incidents

non (or less) relevant data
QUALITATIVE ANALYSIS METHODS
PATTERNS AND THEMES

Can be revealed in many ways:

• through the process of conducting the study
• use of tools and techniques (e.g., affinity diagrams)
  • Will talk about it more on Thursday

can support many types of evaluation goals

• e.g., behaviour, culture, places or situations where events occur, breakdowns, user characteristics, etc.

very flexible and widely used

• can be reported as findings or inform more analysis
Thematic analysis is one of the most common forms of analysis in qualitative research.

It is a method for identifying, analysing and reporting patterns (themes) within data. It minimally organizes and describes your data set in (rich) detail.
THEME-BASED APPROACHES TO ANALYSIS

- Grounded theory
  - generate a plausible and useful theory of the phenomena that is grounded in the data
- Phenomenology
  - focuses on subjective human experience

INDUCTIVE VS. THEORETICAL THEMATIC ANALYSIS

• Inductive or ‘bottom up’ way
  • data-driven; process of coding the data without trying to fit it into a preexisting coding frame, or the researcher’s analytic preconceptions.

• Theoretical or deductive or ‘top down’ way
  • analyst driven; driven by the researcher’s theoretical or analytic interest in the area

DOING THEMATIC ANALYSIS: A STEP-BY-STEP GUIDE

1. Familiarizing yourself with your data
2. Generating initial codes
3. Searching for themes
4. Reviewing themes
5. Defining and naming themes
6. Producing the report

FAMILIARIZING YOURSELF WITH YOUR DATA

Transcribing data (if necessary), reading and re-reading the data, noting down initial ideas.

Note:

• writing is an integral part of analysis
• analysis is not a linear process
• read through the entire data set before you begin your coding

GENERATING INITIAL CODES

Coding interesting features of the data in a systematic fashion across the entire data set, collating data relevant to each code.

- your coded data differ from the units of analysis (your themes), which are (often) broader.
- Coding will, to some extent, depend on whether the themes are more ‘data-driven’ or ‘theory-driven’

CODING MANUALLY

Code your data by writing notes on the texts you are analysing, by using highlighters or coloured pens to indicate potential patterns, or by using ‘post-it’ notes to identify segments of data.

Key advice for this phase is:

(a) code for as many potential themes/patterns as possible
(b) code extracts of data inclusively / ie, keep a little of the surrounding data if relevant
CODING WITH COMPUTER SOFTWARE

If using computer software, you code by tagging and naming selections of text within each data item.

- ATLAS.ti: [http://atlasti.com](http://atlasti.com)
SEARCHING FOR THEMES

Collating codes into potential themes, gathering all data relevant to each potential theme.

• Analyse codes and consider how different codes may combine to form an overarching theme.

• It may be helpful at this phase to use visual representations to help you sort the different codes into themes. You might use tables, or mind-maps, or write the name each code.
REVIEWING THEMES

Checking if the themes work in relation to the coded extracts and the entire data set, generating a thematic ‘map’ of the analysis.

Goal:

• to ascertain whether the themes ‘work’ in relation to the data set.
• to code any additional data within themes that has been missed in earlier coding stages.

Note:

Data within themes should cohere together meaningfully, while there should be clear and identifiable distinctions between themes.
DEFINING AND NAMING THEMES:

Identify the ‘essence’ of what each theme is about

- Ongoing analysis to refine the specifics of each theme, and the overall story the analysis tells, generating clear definitions and names for each theme.
- Identify whether or not a theme contains any sub-themes
- Give names to the themes
PRODUCING THE REPORT

The final opportunity for analysis.

- Selection of vivid, compelling extract examples, final analysis of selected extracts, relating back of the analysis to the research question and literature, producing a scholarly report of the analysis.

- It is important that the analysis (the write-up of it, including data extracts) provides a concise, coherent, logical, non-repetitive and interesting account of the story the data tell / within and across themes.
PITFALLS TO AVOID WHEN DOING THEMATIC ANALYSIS

1. Failure to actually analyse the data
   - Thematic analysis is not just a collection of extracts strung together with little or no analytic narrative.

2. using of the data collection questions (such as from an interview schedule) as the ‘themes’ that are reported.

3. a weak or unconvincing analysis
   - where the themes do not appear to work, where there is too much overlap between themes, or where the themes are not internally coherent and consistent.

4. a mismatch between the data and the analytic claims that are made about it.
   - the claims cannot be supported by the data
INTER-RATER RELIABILITY IN QUALITATIVE RESEARCH

Reliability and validity are fundamental concerns of the qualitative researchers;

• Transparency of technique
  • Carefully documenting all their steps so that they can be checked by another researcher
• Reliability checker
  • Organizing an independent assessment of transcripts by additional skilled qualitative researchers and comparing agreement between the raters.
DISCUSSION ON DATA ANALYSIS READINGS [20 MIN]

Get into group of 3-4 answering the following questions:

• What surprised you? or
• What you disagreed with?
• Others?
OTHER RESOURCES

Course on qualitative methods:

ECPS 595 Qualitative Research Methods
http://ecps.educ.ubc.ca/epse-595-qualitative-research-methods/
PROJECT QUESTIONS [5 MIN]

• We put brief comments on project interim milestone on Piazza
• No mark for interim milestones
• Consent forms?
ON DECK...

Next class (Thursday) ...

1. Only one reading
2. Bring your transcripts

Tuesday class...

- First Project milestone: Empathy
  ✨ due on Tuesday Oct 3rd [updated]
- No reading for next Tuesday
- Minor update on milestone description (in red)
ADVANTAGES OF THEMATIC ANALYSIS

• Flexibility.
• Relatively easy and quick method to learn, and do.
• Accessible to researchers with little or no experience of qualitative research.
• Results are generally accessible to educated general public.
• Can usefully summarize key features of a large body of data, and/or offer a ‘thick description’ of the data set.
• Can highlight similarities and differences across the data set.
• Can generate unanticipated insights.
• Allows for social as well as psychological interpretations of data.