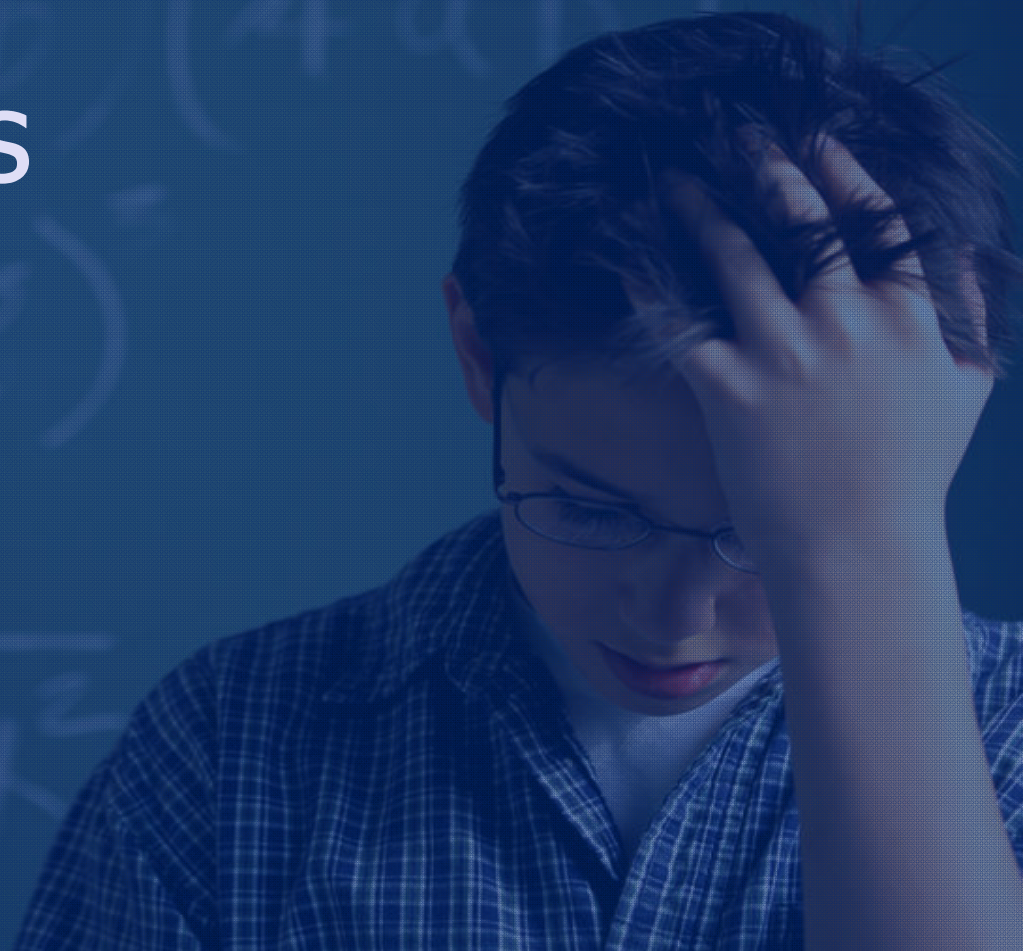


Qualitative Data Analysis



Outline

- Qualitative research
- Analysis methods
- Validity and generalizability



Qualitative Research Methods

- Interviews
 - Ethnographic interviews (Spradley, 1979)
 - Contextual interviews (Holtzblatt and Jones, 1995)
- Ethnographic observation (Spradley, 1980)
- Participatory design sessions (Sanders, 2005)
- Field deployments



Qualitative Research Goals

- **Meaning:** how people see the world
- **Context:** the world in which people act
- **Process:** what actions and activities people do
- **Reasoning:** why people act and behave the way they do

Quantitative vs. Qualitative

- Explanation through numbers
 - Objective
 - Deductive reasoning
 - Predefined variables and measurement
 - Data collection before analysis
 - Cause and effect relationships
- Explanation through words
 - Subjective
 - Inductive reasoning
 - Creativity, extraneous variables
 - Data collection and analysis intertwined
 - Description, meaning

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Getting 'Good' Qualitative Results

- Depends on:
 - The quality of the data collector
 - The quality of the data analyzer
 - The quality of the presenter / writer

Qualitative Data

- Written field notes
- Audio recordings of conversations
- Video recordings of activities
- Diary recordings of activities / thoughts

Qualitative Data

- Depth information on:
 - thoughts, views, interpretations
 - priorities, importance
 - processes, practices
 - intended effects of actions
 - feelings and experiences

Outline

- Qualitative research
- **Analysis methods**
- Validity and generalizability



Data Analysis

- Open Coding
- Systematic Coding
- Affinity Diagramming

P12 Stay-at-home Mother, Surgeon husband, nanny, 3 children (one is a newborn)

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Open Coding

- Treat data as answers to open-ended questions
 - ask data specific questions
 - assign codes for answers
 - record theoretical notes

Example: Calendar Routines

- Families were interviewed about their calendar routines
 - What calendars they had
 - Where they kept their calendars
 - What types of events they recorded
 - ...
- Written notes
- Audio recordings

Example: Calendar Routines

- Step 1: translate field notes (optional)

Pre-Study Interview Checklist P16

Please show me your primary family calendar.

Location of it: 5 calendars

Why this location: 2613: daughter's, 2614: son, 2616: wife day planner, 2611: kitchen calendar, 2612: family calendar

Type of calendar: kitchen, kitchen, in room, in room, purse

How important is this item to your coordination routine? - looked at most planning calendar

How do you schedule events with it? - mother calendar, - planning calendar, - wife writes down daily activities, - pencil

Types of events on it: she came up with icons: Stick man - gymnastics, book - school, dog - dog sitting, treble clef - son music, fish - swimming, balloons - wife birthday, [Face drawing] OMA - B's mother, House - son going to grandma's, Stick girl with oval - ballet, Ice skate - skating, M - Montana

Types of events left off: each kid's calendar - own activities, family yellow calendar - all kids activities - reminders for Ben

Who added events? When? but daughter has book for library day

Pen/pencil: library day

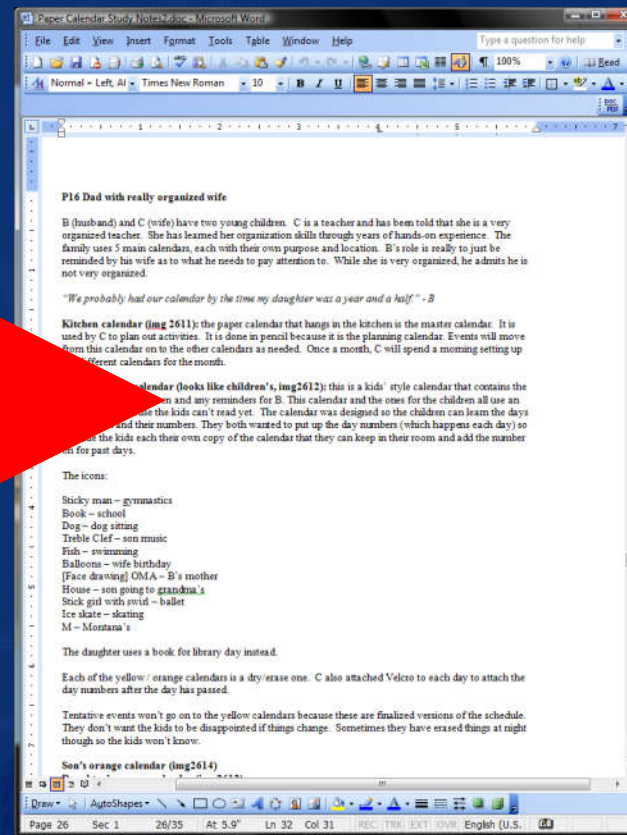
Wife - teacher - Mom organized - teacher 9:30 - lots of work experience in organization - wife calls calendars for kids - wife meets a week - spends morning do all 3 calendars - wife calls calendars for kids

used to learn days of week + numbers - each their own so can each do today

stick man - gymnastics, book - school, dog - dog sitting, treble clef - son music, fish - swimming, balloons - wife birthday, [Face drawing] OMA - B's mother, House - son going to grandma's, Stick girl with oval - ballet, Ice skate - skating, M - Montana

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paper



digital

Example: Calendar Routines

- Step 2: list questions / focal points

Where do families keep their calendars?

What uses do they have for their calendars?

Who adds to the calendars?

When do people check the calendars?

...

(you may end up adding to this list as you go through your data)

Example: Calendar Routines

- Step 3: go through data and ask questions

B (husband) and C (wife) have two young children. C is a teacher and has been told that she is a very organized teacher. She has learned her organization skills through years of hands-on experience. The family uses 5 main calendars, each with their own purpose and location. B's role is really to just be reminded by his wife as to what he needs to pay attention to. While she is very organized, he admits he is not very organized.

"We probably had our calendar by the time my daughter was a year and a half." - B

Kitchen calendar (img 2611): the paper calendar that hangs in the kitchen is the master calendar. It is used by C to plan out activities. It is done in pencil because it is the planning calendar. Events will move from this calendar on to the other calendars as needed. Once a month, C will spend a morning setting up the different calendars for the month.

Orange family calendar (looks like children's, img2612): this is a kids' style calendar that contains the activities for the children and any reminders for B. This calendar and the ones for the children all use an icon system because the kids can't read yet. The calendar was designed so the children can learn the days of the week and their numbers. They both wanted to put up the day numbers (which happens each day) so C made the kids each their own copy of the calendar that they can keep in their room and add the number on for past days.

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Calendar Locations:

[KI] – the kitchen

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[CR]

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[KI] – the kitchen

[CR] – child's room

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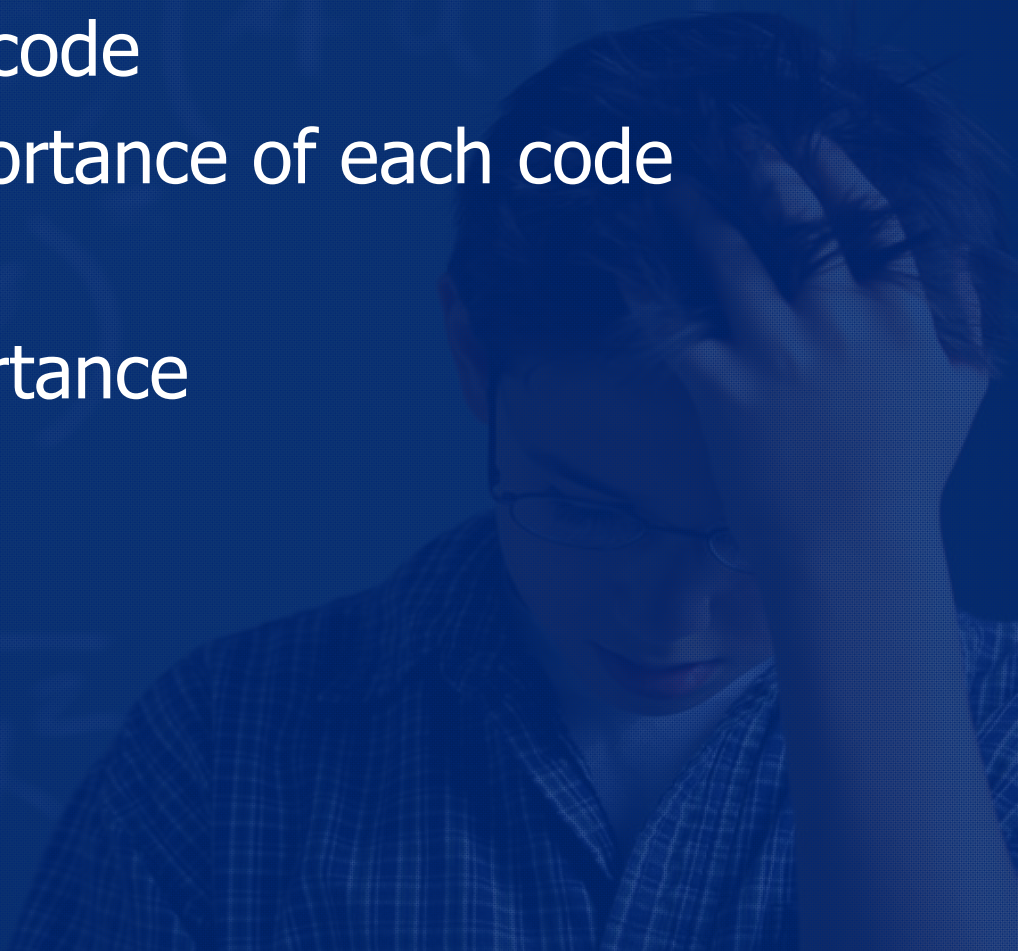
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Continue for the remaining questions....

Example: Calendar Routines

- The result:
 - list of codes
 - frequency of each code
 - a sense of the importance of each code
- frequency \neq importance



Example 2: Calendar Contents

- Pictures were taken of family calendars



Example: Calendar Contents

- Step 1: list questions / focal points

What type of events are on the calendar?

Who are the events for?

What other markings are made on the calendar?

...

(you may end up adding to this list as you go through your data)

Example: Calendar Contents

- Step 2: go through data and ask questions



What types of events are on the calendar?

Example: Calendar Contents

- Step 2: go through data and ask questions



Types of Events:

[FO] – family outing

What types of events are on the calendar?

Example: Calendar Contents

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Types of Events:

[FO] – family outing
[AN] - anniversary

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Types of Events:

[FO] – family outing
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Continue for the remaining questions....

Reporting Results

- Find the main themes
- Use quotes / scenarios to represent them
- Include counts for codes (optional)

Dad's role. *"I'm pretty used to our schedule so I don't need to check it that often. As sad as it is, I work full time so a lot of activities don't pertain to me. But Fridays change because I may be home. I may also glance at it because the activities end at regular periods. I look for the ends of things because I'll try to make it to the last class so I can make it to at least one of their classes during that activity. And I'll glance at it to see if anything is out of the ordinary. I get used to the pattern so if there is something that is out of the ordinary I'll take a closer look to see what's going on...I don't have to do much. If I have something that is coming up, I'll just tell [my wife] then she'll know where I am and I'll know." - B*

Software: Microsoft Word

SamplePhotoSouvenirCoding.doc - Microsoft Word

File Edit View Insert Format Tools Table Window Help

Type a question for help

Normal + Tahom Tahoma 12 B I U

Non-Digital Photo Routines

P#	Where do you display your photos?	How did you decide to store your photos there?	Why did you store your photos there?	What works well about this location?	What doesn't work well about this location?	Etc.
1	[LR]		[PU]			
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
Totals						

Location Codes:
[LR] A location within the living room of the home.

Page 2 Sec 1 2/4 At Ln Col REC TRK EXT OVR English (U.S.)

Software: Microsoft Excel

The screenshot shows a Microsoft Excel spreadsheet titled "SamplePhotoSouvenirCoding.xls". The spreadsheet is organized into two main sections: "Demographics" and "Non-Digital Photo Routines".

Demographics Section:

ID	# of Ho	Membe	Membe	Membe	Membe	Parent	Parent
F1	4	5	6	34	36	Teacher	Trucker
F2							
F3							
F4							
F5							
F6							
F7							
F8							
F9							
F10							
F11							
F12							

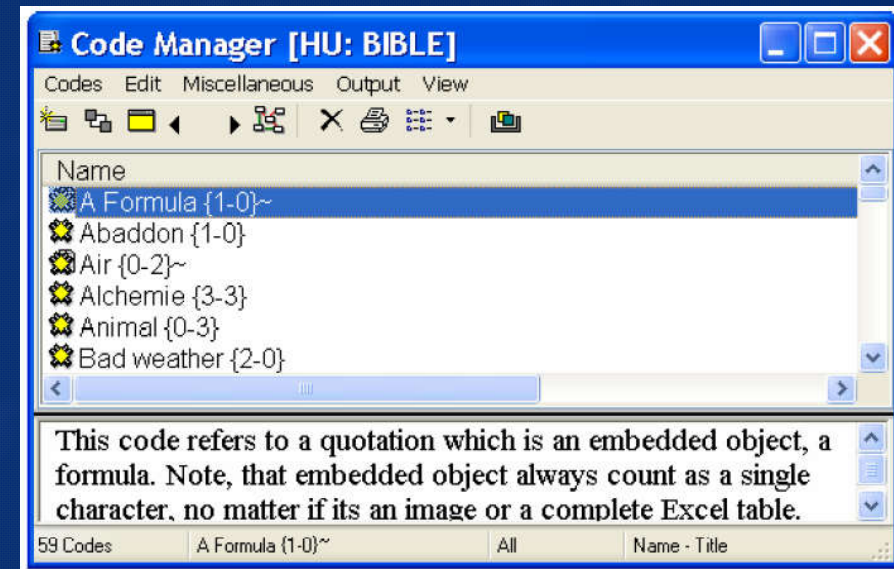
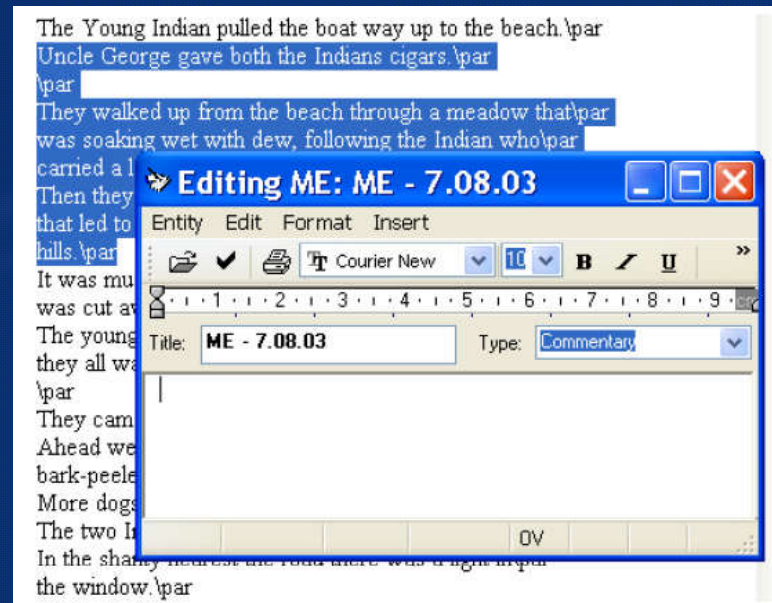
Non-Digital Photo Routines Section:

Where	How di	Why di	What w	What d	Etc
LR		PU			

Codes for Locations:

LR	A location within the living room of the home.

Software: ATLAS.ti



<http://www.atlasti.com/> -- free trial available

Data Analysis

- Open Coding
- Systematic Coding
- Affinity Diagramming

P12 Stay-at-home Mother, Surgeon husband, nanny, 3 children (one is a newborn)

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Systematic Coding

- Categories are created ahead of time
 - from existing literature
 - from previous open coding
- Code the data just like open coding

Data Analysis

- Open Coding
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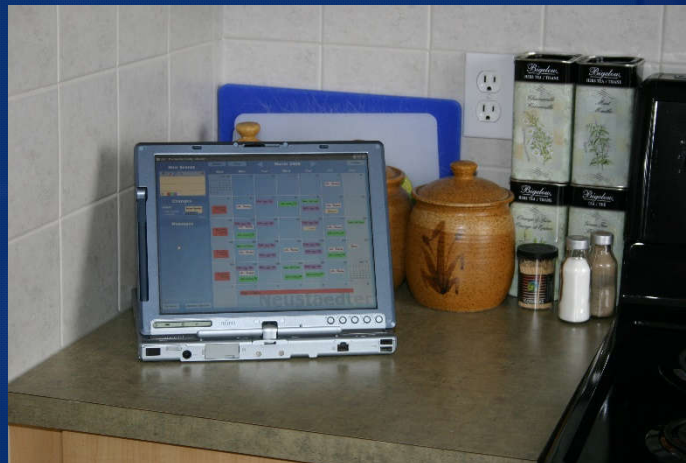
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Affinity Diagramming

- Goal: what are the main themes?
 - Write ideas on sticky notes
 - Place notes on a large wall / surface
 - Group notes hierarchically to see main themes

Example: Calendar Field Study

- Families were given a digital calendar to use in their homes
- Thoughts / reactions recorded:
 - Weekly interview notes
 - Audio recordings from interviews



Example: Calendar Field Study

- Step 1: Affinity Notes
 - go through data and write observations down on post-it notes
 - each note contains one idea

It was really easy to check the calendar from work because of the web page.

The colors on the events made it really easy to see who had events.

I check my calendar on my cell phone while driving.

The size of the writing was too small to read.

We couldn't place the calendar in the spot we usually do in our home.

Example: Calendar Field Study

- Step 2: Diagram Building
 - place all notes on a wall / surface

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Example: Calendar Field Study

- Step 3: Diagram Building
 - move notes into related columns / piles

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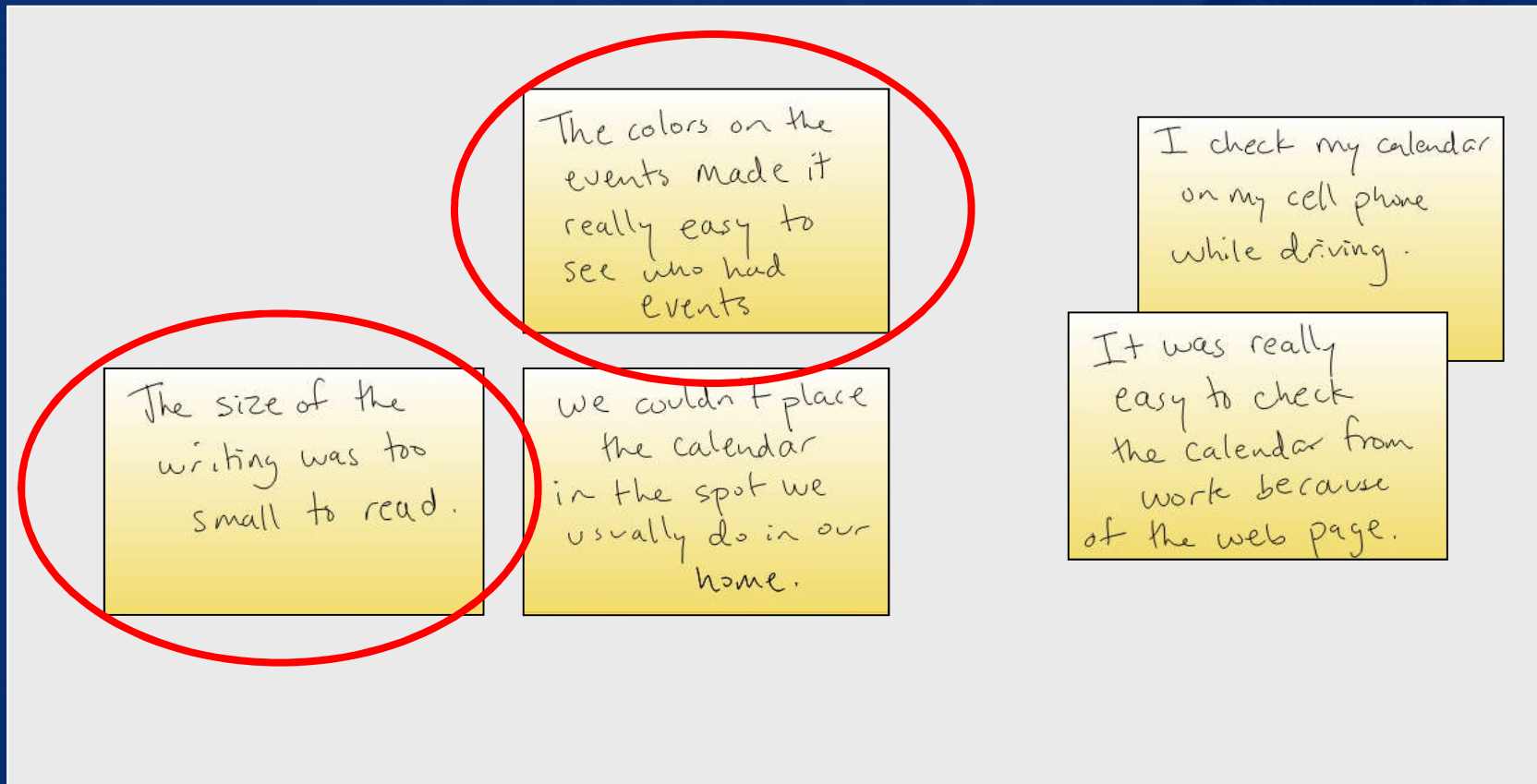
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- Step 5: Further Refine Groupings
 - see Holtzblatt et al. 2005

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Outline

- Qualitative research
- Analysis methods
- **Validity and generalizability**



Validity Threats

- Bias
 - researcher's influence on the study
 - e.g., studying one's own culture
- Reactivity
 - researcher's effect on the setting or people
 - e.g., people may do things differently

Validity Tests

- Intensive / long term
- Rich data
- Respondent validation
- Intervention
- Negative cases
- Triangulation
- Quasi-statistics
- Comparison

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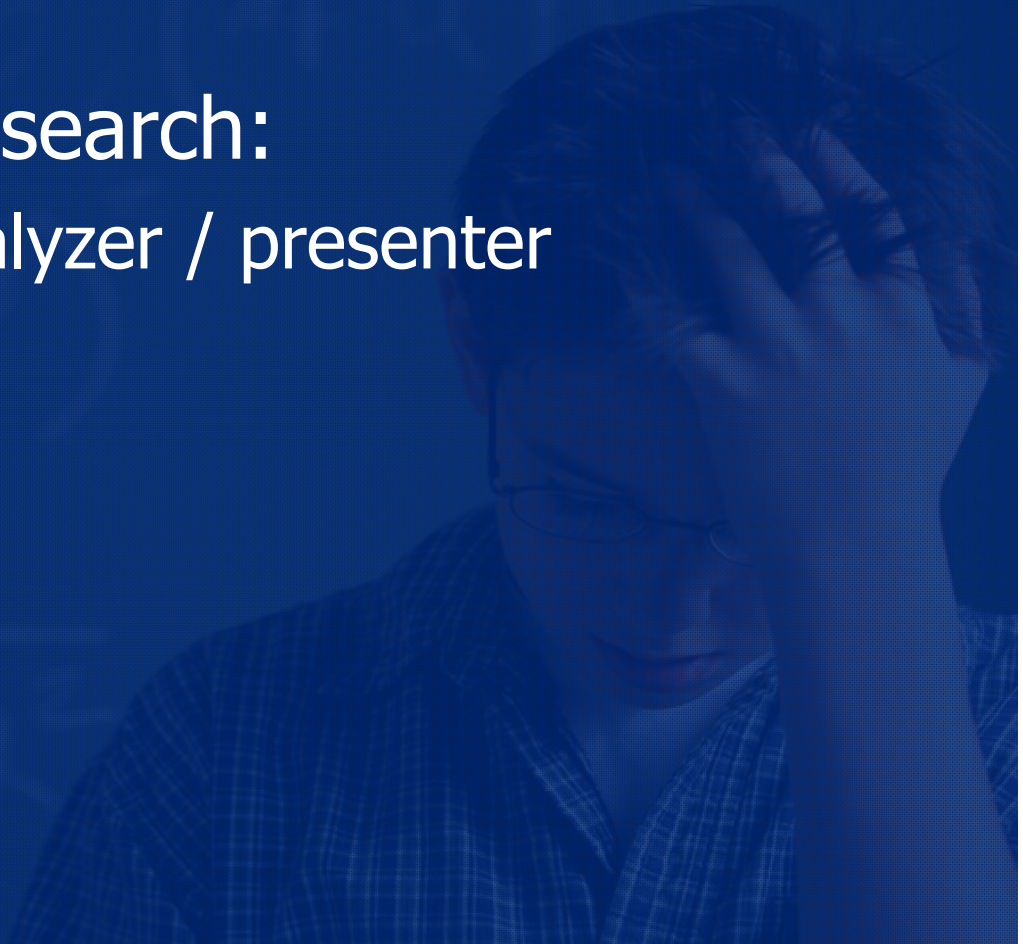
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Generalizability

- Internal generalizability
 - do findings extend *within* the group studied?
- External generalizability
 - do findings extend *outside* the group studied?
- Face generalizability
 - there is no reason to believe the results don't generalize

Summary

- Qualitative goals:
 - meaning, context, process, reasoning
- Good qualitative research:
 - data collector / analyzer / presenter



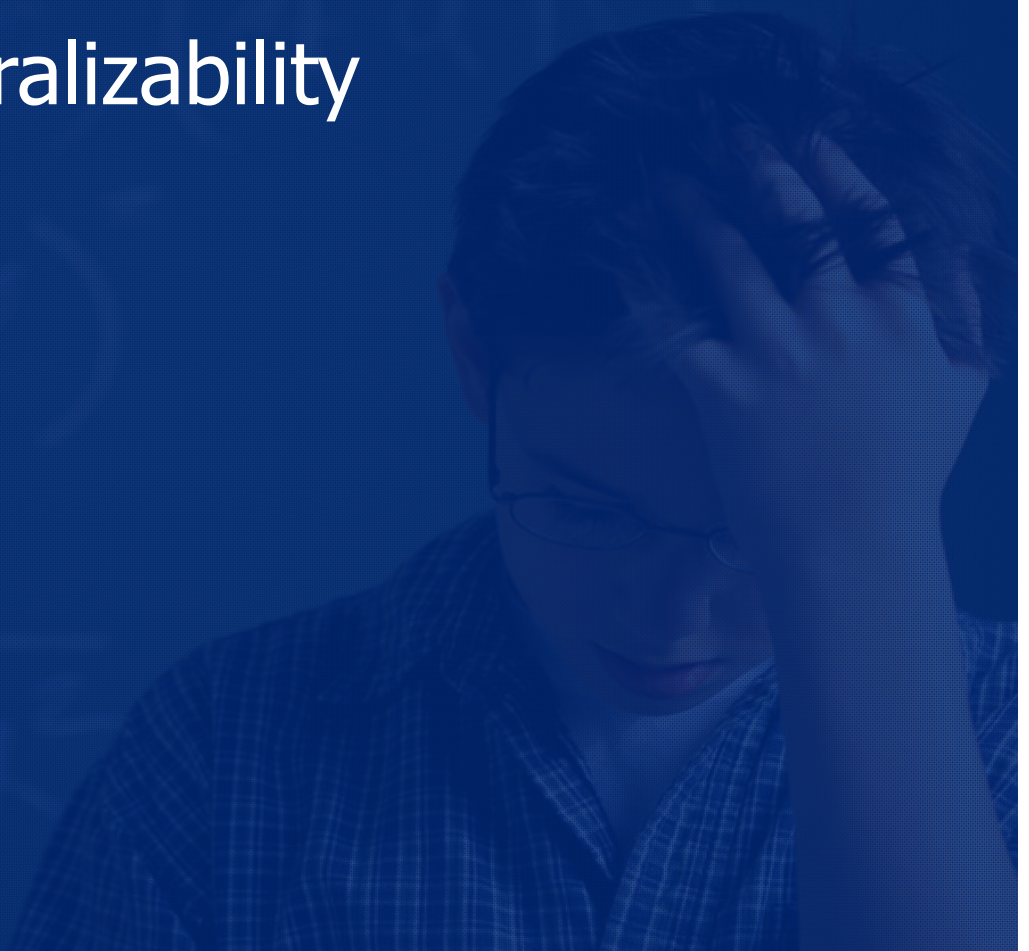
Summary

- Qualitative data:
 - detailed descriptions (audio, written, video)
- Analysis methods:
 - open coding
 - systematic coding
 - affinity diagramming



Summary

- Report descriptions / scenarios / quotes
- Look for face generalizability
- Use validity tests



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