Conducting Survey Research: Where Do We Go From Here?

A Team-TERRA Workshop

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Survey Research

- Types: Paper-based (in-person vs. mail), online, telephone, etc.
- Pros: Versatility, Efficiency, Generalizability
- Cons: Potentially unrepresentative sample, Threat of non-response, Sometime little room for clarifications, Response rates can vary as a function of type of survey
- Can collect quantitative & qualitative data

Quantitative vs. Qualitative Research

	Quantitative	Qualitative
Assumptions about World	Single reality	Multiple constructed realities
Researcher Objectivity	Overcome researcher subjectivities to minimize potential bias	Acknowledge researcher subjectivities and incorporate
Research Purpose	Look for relationships, causes, effects, etc.	Understand how participants view and experience specific situations and events
Role of Researcher	Detached observer	Immersed in situation, sometimes even as a participant in the event
Research Methods	Pre-established research designs	Design emerges during research
Data Collection Methods	Tests, questionnaires, noncognitive or affective measures, interviews, observations, alternative assessments	Observations, in-depth interviews, focus groups, document and artifact collection, field observations
Data Type	Numbers and statistics	Detailed descriptions, narratives

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Quantitative vs. Qualitative Research

	Quantitative	Qualitative
Prototypical Study	Experiment	Ethnography
Verification of Results	Focus on replication	Focus on extension of understanding, not replication
Generalizability	Want to generalize study results to other populations, settings, conditions, etc.	Make limited generalizations, if any at all "Transferability"
Role of Context	Goal = Universal, context-free generalizations	Goal = Detailed, context-bound summary statements
Logical Reasoning	Deductive: General statement → specific conclusion	Inductive: Specific statements → summary generalization

Mixed-methods research incorporates both quantitative and qualitative methods

(McMillan & Schumacher, 2010)

Mixing Methods in Survey Research

Mixed Methods Design Type	Process	Purpose
Sequential Explanatory	Quantitative → Qualitative	Qualitative data are used to elucidate, elaborate on, or explain quantitative findings. To follow up outliers or extreme cases.
Sequential Exploratory	Qualitative → Quantitative	Using qualitative data to establish groups to be compared; using quantitative data to explore relationships found in qualitative data. Use qualitative data to identify themes, scales, items, and variables that can be captured in quantitative measures.
Concurrent Triangulation	Simultaneous Quantitative & Qualitative	Using both quantitative and qualitative designs and methods at about the same time. Used to compare quantitative to qualitative results and to combine results in order to identify themes and trends.

(McMillan & Schumacher, 2010, p. 405)

Instrument Design Process

Instrument Design

- Stages
  - Literature Review
  - Item Development from Experts, Focus Groups, Literature, etc.
  - Pilot Administration
  - Scale Finalization

Instrument Design

- Determine Dimensions
- Develop/Judge Items (2x as many as you think you will need in the final scale)
  - Number of items
    - Too few vs. too many
    - Final: 10-15 per subscale (for Likert items)

    (Nunnally, 1978; Pett, Lackey, & Sullivan, 2003)
  - Item wording
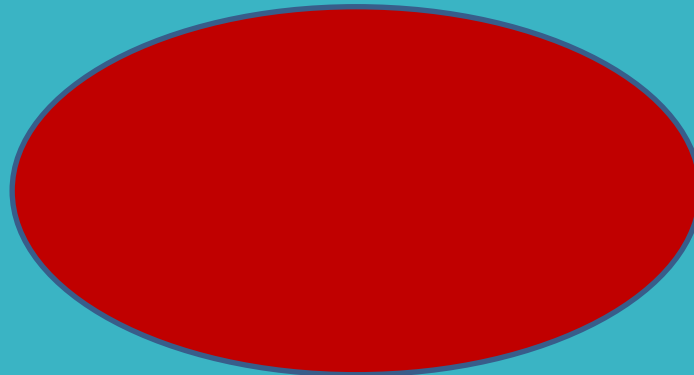 - Response Scale Options
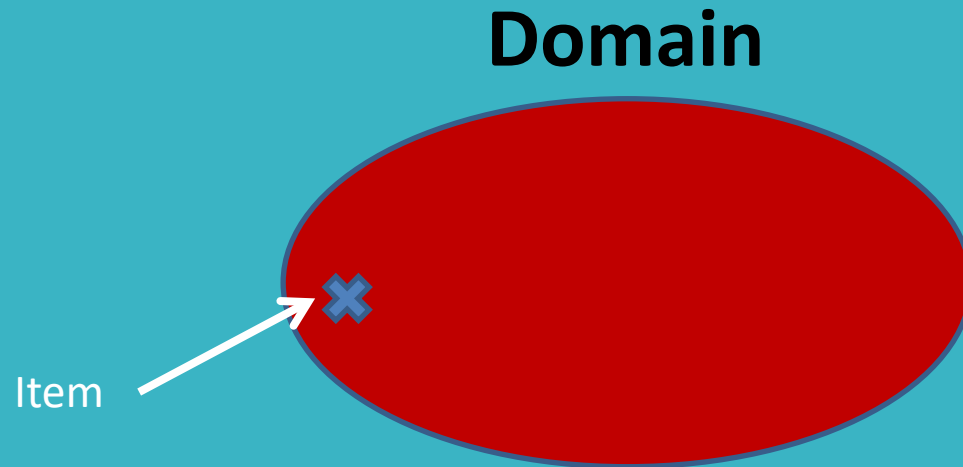 - Qualities of Good Items

Instrument Design

– Number of items

- This is where defining a construct to narrowly (underrepresentation) or too broadly (overrepresentation) can be problematic
- Too few vs. too many items
- Content validity

This is our Domain:

Instrument Design

- Number of items
  - This is where defining a construct to narrowly (underrepresentation) or too broadly (overrepresentation) can be problematic
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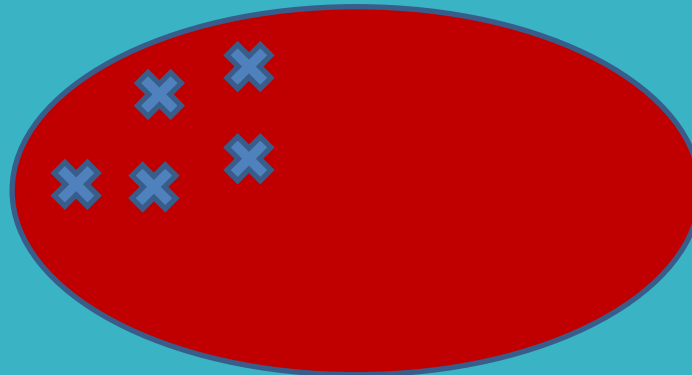 - Content validity

Domain

Item

Instrument Design

- Number of items
  - This is where defining a construct to narrowly (underrepresentation) or too broadly (overrepresentation) can be problematic
  - Too few vs. too many items
  - Content validity

Domain Of Content

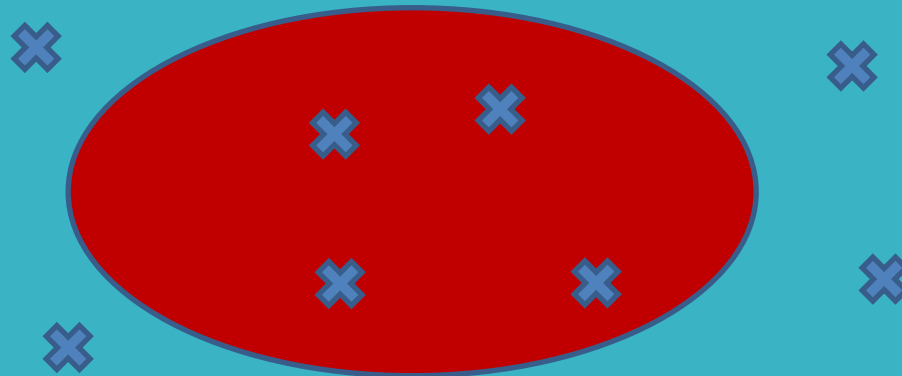**What is wrong with our items in this case?**

Instrument Design

– Number of items

- This is where defining a construct to narrowly (underrepresentation) or too broadly (overrepresentation) can be problematic
- Too few vs. too many items
- Content validity

What is wrong with our items in this case?
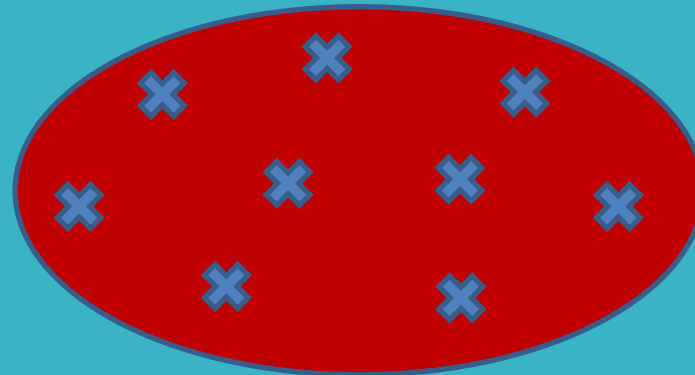
This is our Domain:

Instrument Design

– Number of items

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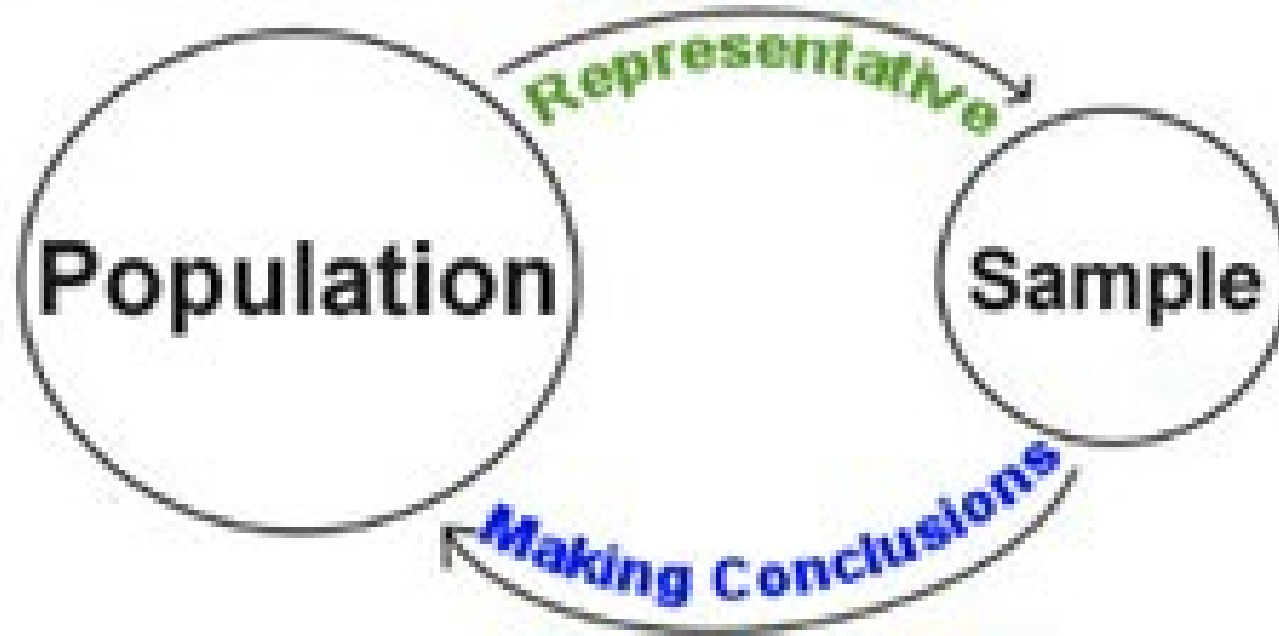- Too few vs. too many items
- Content validity

Domain

How do these items look?

Final: 10-15 per subscale for Likert items
(Nunnally, 1978; Pett, Lackey, & Sullivan, 2003)

Instrument Design

Instrument Design

There are three main considerations when writing a question:

- ❑ determining the question content, scope and purpose
- ❑ choosing the response format that you use for collecting information from the respondent
- ❑ figuring out how to word the question to get at the issue of interest

Instrument Design

– Item Stem Writing Tips

- Create short, straightforward items. Avoid complex sentences.
- Vary item wording.
- Write items at an appropriate reading level for respondents.
- Avoid using slang or jargon.
- Avoid making comparisons within items.
- Try not to ask about more than one idea within an item.
- Write about one dimension at a time.
- Be clear and specific. Ambiguity is bad!
- Avoid too many redundant items.
- Limit use of the word "not."
- Avoid double negatives.
- Avoid emotional language.
- Try to write unbiased items.
- Try to elicit a variety of responses.

Instrument Design

Constructing response scales requires as much attention as creating items.

Instrument Design

- Response Options (Scale and Format)
  - Response Scales
    - 5 - 7 rating points is optimal; dichotomous items can be problematic during statistical analysis
    - Use parallel and balanced response choices
    - Exactly one response option for every respondent
    - Try to develop scales with equal intervals
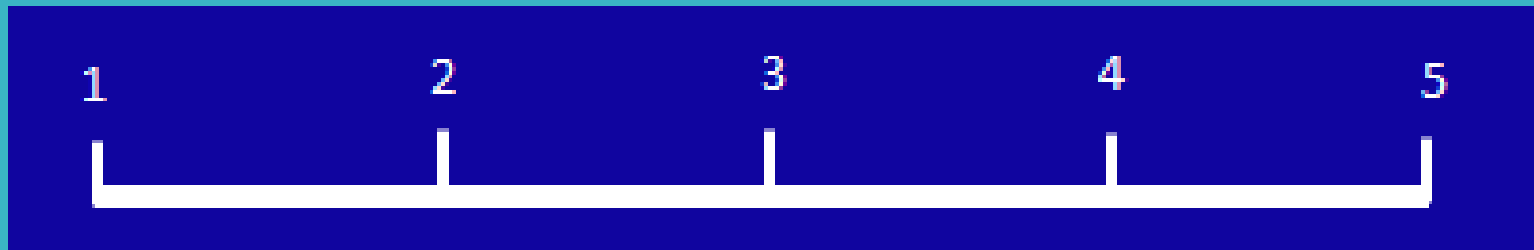
1   2   3   4   5

Instrument Design

- Response Options
  - Response Scales
    - Many forms of rating scales:
      - Frequency
      - Agreement
      - Likelihood

How likely are you to repurchase Widget A?

Very unlikely				Very likely
1	2	3	4	5
○	○	○	○	○

1. The instructor is well prepared for class sessions.

Strongly agree	Agree	Neutral	Disagree	Strongly disagree
○	○	○	○	○

2. The instructor answers questions carefully and completely.

| Strongly agree	Agree	Neutral	Disagree	Strongly disagree
○	○	○	○	○

Instrument Design

- Response Options
  - Response Scales
    - Many forms of rating scales:
      - Interest
      - Quality
      - Importance

Very Interested	Somewhat Interested	Neutral	Not Very Interested	Not at All Interested
5	4	3	2	1

On a scale of 1 to 10, with 10 being EXCELLENT and 1 being POOR, rate this workshop in the following areas (circle one number for each statement):

	POOR	EXCELLENT
Relevance to my job	1 2 3 4 5 6 7 8 9 10	
Amount of practice	1 2 3 4 5 6 7 8 9 10	

Instrument Design
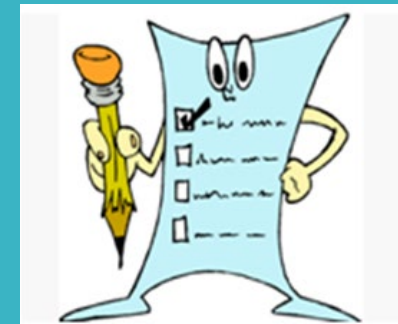
– Qualities of Good Items

1) Asks about only one dimension of the construct.

- Keep items short.

- Focus on one idea per item stem.

- Example: Consider three different dimensions of bullying: (1) Aggressive behavior; (2) Repeated behavior; and (3) Power imbalance between involved parties.

BAD EXAMPLE:

The popular kids call me mean names every day at school.

Strongly Disagree	Disagree	Slightly Disagree	Neither Agree nor Disagree	Slightly Agree	Agree	Strongly Agree
1	2	3	4	5	6	7

Can anyone see what is wrong with this item?

Instrument Design

– Qualities of Good Items

2) There is exactly one response option for every student.

– Make sure that the question applies to all students.

– Consider whether you have omitted a possible response choice.

BAD EXAMPLE:

In the last week, how many times have you experienced negative emotions because of another student's actions?

1 time

2 times

3 times

4 times

Can anyone see what is wrong with this item?

Instrument Design

– Qualities of Good Items

3) Has mutually-exclusive response options.

BAD EXAMPLE:

In the last week, how many times have you experienced negative emotions because of another student's actions?

0-2 times

2-4 times

4-6 times

6 or more times

Can anyone see what is wrong with this item?

Instrument Design

– Qualities of Good Items

4) Elicits truth.
- Try to avoid writing items that will encourage a socially-desirable response.
- Social Desirability: "Pressures on survey respondents to answer as they think they should respond in accordance with what is most socially acceptable, and not in accordance with what they actually believe." (Shaughnessy, Zechmeister, & Zechmeister, 2006, p. 546)
- This is why it can be difficult to ask about risky/illegal behaviors or very sensitive topics.

BAD EXAMPLE: Students should not knowingly cause harm to other students.

Can anyone see what is wrong with this item?

Instrument Design

- Qualities of Good Items

    5) Avoids ambiguity.

    - Try to focus on one specific idea at a time.

    (This goes back to our physical and emotional bullying item.)

    - This is one reason negatively-written items can be problematic.

    - Keep items short.

    - Avoid comparisons within items.

    BAD EXAMPLE #1: I love pizza and spaghetti.

    BAD EXAMPLE #2: I like pizza better than spaghetti.

    Can anyone see what is wrong with these items?

Instrument Design

– Qualities of Good Items

6) Follows reasonably from previous item.

7) Does not make assumptions.

BAD EXAMPLE:

This intervention has reduced instances of mean-spirited behavior at E. O. Smith High School.

Can anyone see what is wrong with this item?

Instrument Design

– Qualities of Good Items

8) Produces a range of responses.

- – We want to write items that some people will respond more and less favorably to.
- – One goal in item writing is to write items for which all of the response scale points can be used (across people, of course).
    - » I like school.   vs.   I love school.
- – We want to encourage variability in responses.

BAD EXAMPLE:

Sometimes I feel happier than other times.

Can anyone see what is wrong with this item?

Instrument Design

– Qualities of Good Items

9) Avoid items that lead respondents to a particular answer.

– BIAS!!!!

– Like asking a leading question in court.

» As a lawyer, you cannot ask a question that leads a witness to a particular response. (The other attorney will object!)

BAD EXAMPLE:

Bullying is a big problem at this school, right?

Can anyone see what is wrong with this item?

Instrument Design

– Final Instrument Design Considerations
  - Start with the easiest questions.
  - Put difficult or sensitive questions toward the end of the survey.
  - Put demographics questions at the end of the survey.
  - Randomly mix your items, so that not all of the items for one dimension are in one section of your survey.
  - Keep your survey short and focused.
  - Pay attention to the formatting of your survey.
    - If you use a matrix of items, repeat column headers on every page.
    - Provide clear directions to participants. (Good idea to test them out with someone prior to pilot administration)
    - Ask others to review your survey before you use it. (Preferably someone who has not worked on developing the survey)

Scale Evaluation

After we develop and administer our new survey, what do we do?

- Dimensionality / Factor Structure
  - How many dimensions are present? Is the scale unidimensional or multidimensional?
  - Are the dimensions correlated?
  - Which items are best explained by which dimensions?
  - **Exploratory Factor Analysis** allows us to look at the factor structure of our scale by identifying groups of items that are strongly correlated with one another, but weakly correlated with other scale items.

After we develop and administer our new survey, what do we do?

- Reliability
  - Precision/Consistency of scale scores
  - Reliability coefficient estimated for each dimension/factor
    - Reliability coefficients range from 0 $\rightarrow$ 1 and are generally interpreted like correlation coefficients
    - Reliability coefficient should not be below .70; higher is better (Nunnally, 1978)

$$Reliability = \frac{True\ Score\ Variance}{Total\ Score\ Variance}$$

After we develop and administer our new survey, what do we do?

- Make modifications to our scale

- Re-administer scale to a new sample

- Evaluate our modified scale for its dimensionality using **Confirmatory Factor Analysis**

- Evaluate the reliability of our new data by dimension/factor/subscale

- Start to investigate the relationships between our scale and other constructs/criteria

Qualitative Data Analysis

Qualitative Data Analysis: Fundamentals

Qualitative data analysis "is the process of making sense of the data. And making sense out of data involves consolidating, reducing, and interpreting what people have said and what the researcher has seen and read—it is the process of making meaning…the practical goal of data analysis is to find *answers* to your research questions" (Merriam, 2009, p. 176)

Qualitative Data Analysis: Fundamentals

- Become familiar with the portion of your data that you plan to analyze

- Identify data segments (units of data) that:
  - Address the research question
  - Can stand on their own (words, phrases, sentences, pages)
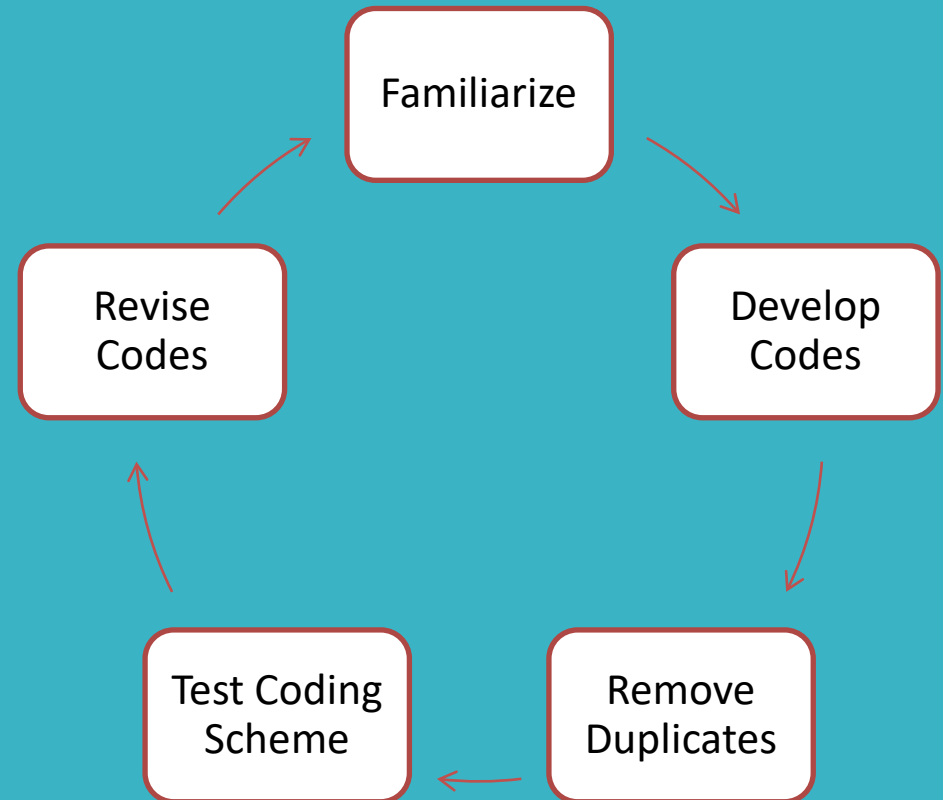
<div align="right">(Merriam, 2009)</div>

- Assign codes for each data segment

Qualitative Data Analysis: Coding

- Pre-determined codes vs. open coding

- Types of codes: setting/context, participants' perspectives, participants' thinking about people/objects, process, activity, event, relationship and social structures, strategy (McMillan & Schumacher, 2010, p. 371)

- McMillan and Schumacher (2010) suggest that qualitative studies often include 30-50 initial codes

Qualitative Data Analysis: Coding

1) Familiarize yourself with the portion of data you plan to analyze.
2) Develop initial codes.
3) Remove duplicate codes.
4) Test initial coding scheme with additional data.
5) Revise coding.

Qualitative Data Analysis: Categories

- Categories - like code "baskets"
- Categories should be:
  - Relevant to the research question
  - Exhaustive
  - Mutually Exclusive
  - Sensitizing
  - Conceptually Congruent   (Merriam, 2009)

Code 3
Code 2
Code 1
Category 1

Code 6
Code 5
Code 4
Category 2

Code 9
Code 8
Code 7
Category 3

Qualitative Data Analysis: Categories

- Cresswell (2007) suggests that it is reasonable to utilize 25-30 categories and whittle down to five or six ultimate themes

Qualitative Data Analysis: Identifying Patterns

- Patterns: Links among categories
  - Trustworthiness and Triangulation are important!!!!!!!
  - Discrepant vs. Negative Evidence
  - Chronologically ordering, re-arranging, sorting categories to identify patterns
  - Visual representations of relationships between codes, categories, and themes
  - Elimination of plausible alternative explanations for the uncovered patterns

A word on Qualitative Data Analysis Computer Programs

- Index Card Approach vs. Software

- Many different options

- Should research various programs to see which best fits your needs

- IMPORTANT: Software should *assist* you with data management and analysis, though it may be tempting to overuse the program

Now, let's try some examples!!!!

EXHIBIT 8.1. LEARNING REQUIRED AND HOW IT WAS BEING OBTAINED.

Transcript	Comments / Codes / Categories
1 *Researcher:* Now let's talk about training. How did you learn what you do in your	
2 business?	
3	
4 *Participant:* You see, I did not get far with schooling. So I did not learn anything about	
5 businesses in primary school. I just used my experience to start this business. In this	5 used my experience
6 culture we believe that experience of others can be copied. I think I stole the business	6 others can be copied
7 management system that I use in this business from the first shop assistance job that I	7 first job
8 did. They taught me on the job how to treat customers, specifically that I had to be	8 prior work experience
9 friendly, smile at customers, and treat them with respect. I knew these things before but	
10 I did not know then that they were important for the business. Also they showed me	10 prior work experience
11 how to keep track of what I have sold and things like that. Secondly, I learnt	
12 a lot from my sister about how businesswomen in similar businesses like mine in	12 sister, similar businesswomen
13 Gaborone operate theirs. This learning experience and my common sense were very	13 common sense
14 helpful at the initial stages of this business. Once I was in business, well, you kind of	
15 learn from doing things. For example you face problems and what works in what you	15 personal experience, learn by doing
16 keep in your head for the next crisis. As the business expanded I learnt a lot from other	
17 women. I talk with them about this business, especially those who own similar	17 other women
18 businesses like the ones I travel with to South Africa for our business shopping, those	18 experience as customer
19 who businesses are next to mine, employees, customers and family. You just have to	
20 talk about your business and the sky is the limit with learning from other people.	20 learning from other people

What are your main concerns about water pollution?

PID	Response (Text Data)	Code	Category
1	*I am worried that polluting our waterways will negatively impact the health of fish and other organisms.*	Fish health; aquatic health	Ecological
2	*Water pollution could change the aquatic environment, causing fish to migrate to more-temperate waters.*	Fish reduction; aquatic health; fish migration	Ecological
3	*I don't want pollution to contaminate the fish we eat.*	Food safety; fish health	Ecological; Human Health
4	*Water pollution can kill fish and impact my livelihood.*	Fish health; fish reduction; personal economics	Ecological; Economics
5	*I think pollution will harm the fish and their living environment.*	Fish health; aquatic health	Ecological
6	*If there is too much pollution, it could deplete and endanger the populations of certain species.*	Fish diversity; species diversity; fish health; fish reduction; aquatic health	Ecological
7	*Too much water pollution could facilitate climate change. That could cause our fish to migrate or die, impacting the fishing industry.*	Industry economics; fish migration; fish reduction; climate change; fish health; aquatic health	Ecological; Economics
8	*I don't want to get sick from eating contaminated fish.*	Fish health; human health	Ecological; Human Health

What else can I do with collected survey data?

Needs & Research Questions

- Provide narrative / context within your paper
- Describe sample characteristics or perspectives
- Create analytic variables for your models (e.g., creating factor scores)
- Support other planned analyses (e.g., discretizing / dichotomizing / quantifying qualitative data)
- Explain or contextualize findings from quantitative analyses
- Identify limitations of the study
- Others…?

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