Lecture Notes

# Chapter 20: Data Analysis in Qualitative and Mixed Research

## Learning Objectives

* 1. Understand the terminology surrounding qualitative data analysis.
	2. Describe the process of coding.
	3. List the different types of codes.
	4. Know what it means to analyze data inductively.
	5. Code some text data.
	6. Know some of the common types of relationships found in qualitative data.
	7. Describe the procedures used to analyze qualitative data.
	8. List the three most popular computer programs that are used to analyze qualitative data.
	9. Know the advantages and disadvantages of using computer programs for qualitative data analysis.
	10. Describe the cells of the mixed research data analysis matrix.
	11. Describe the seven analytical procedures used in mixed analysis.

## Chapter Summary

The purposes of this chapter are to help students grasp the language and terminology of qualitative data analysis and to help them understand the process of qualitative data analysis.

## Annotated Chapter Outline

1. Introduction
	1. The previous chapter focused on analyzing data for quantitative research studies.
	2. This chapter focuses on the methods of data analysis that are used in qualitative and mixed research.
2. Interim Analysis: In qualitative research data, analysis begins early and researchers alternate between data collection and data analysis.
	1. **Interim analysis**: the cyclical process of collecting and analyzing data during a single research.
		1. Ongoing and iterative
		2. Interim analysis continues until the process or topic the researcher is interested in is understood (or until they run out of time and resources!).
		3. Discussion Question: Describe the process of data analysis in qualitative research.
3. **Memoing:** recording reflective notes about what you are learning from the data.
	* 1. Can include notes about anything, including thoughts on emerging concepts, themes, and patterns found in the data; the need for further data collection comparisons that need to be made in the data.
		2. Should not rely on memory later, write down things as they come up.
		3. Include memos as additional data to be analyzed.
		4. Discussion Question: How is memoing used in qualitative and mixed research?
4. Analysis of Visual Data: In many fields (e.g., anthropology, media studies), visual data are primary sources of evidence. The chapter discusses three approaches to visual data analysis: photo interviewing analysis, semiotic analysis, and visual content analysis. Multiple quantitative and qualitative analyses are possible. Researcher or participants can conduct the analysis. Visual data can be analyzed by qualitative software.
	1. **Photo interviewing analysis**: analysis is done by the participant who examines and “analyzes” a set of visual images.
		1. Researchers show images to research participants during formal or informal interviews.
		2. Researcher records participant’s thoughts, memories, and reactions as results.
		3. Researcher can also interpret results further.
	2. **Semiotic** **visual analysis:** the identification and interpretation of symbolic meaning of visual data.
		1. Researcher is concerned with what signs in visual images mean.
		2. Images often have layered meanings.
			1. First layer, denotative meaning, or what is being depicted in image.
			2. Second layer, connotative meaning, builds on what people know and explores how ideas and values are expressed and represented in images.
	3. **Visual content analysis:** this identification and counting of events, characteristics, and other phenomena in visual data.
		1. What is directly visible in image.
		2. More quantitative.
		3. Uses a representative sample of images rather than individual images.
		4. Less concerned with deep meaning and more concerned with prevalence.
		5. Begins with hypotheses that categorize and compare visual content. Size of study is determined ahead of time based on research questions, importance of generalization, and statistical procedures to be used.
	4. Discussion Question: Compare and contrast the three techniques that can be used for the analysis of visual data.
5. Data Entry and Storage: Transcription is recommended.
	1. **Transcription:** transforming qualitative data into typed text
		1. Typed text is a more useable format for data.
		2. Retain original data source for safekeeping.
		3. Computer programs can be used to provide the transcript.
		4. It is these transcriptions that are later analyzed, typically using one of the qualitative data analysis computer programs discussed later in this chapter.
		5. Discussion Question: Explain why qualitative data must be transcribed.
6. Segmenting, Coding, and Developing Category Systems: Key point
	1. Basic definitions
		1. **Segmenting:** dividing data into meaningful analytical units.
			1. Read the text line by line and see whether there is meaning within part of it.
			2. When meaningful units are found, they are coded.
		2. **Coding:** marking segments of data with symbols, descriptive words, or category names.
			1. The codes are reapplied to new segments of data each time an appropriate segment is encountered.
			2. Being with words that describe the content of the segments of data however the category name should be more abstract than actual text so code can be applied in other places in the data.
			3. Full descriptive words or phrases are not always used in coding. Sometimes abbreviations are used.
			4. Have students “code” data in Table 20.2.
			5. Look at Table 20.3 for results.
		3. **Master list:** a list of all the codes used in a research study.
			1. Should include each code as well as the full code name and brief description or definition of the code.
			2. The codes on the master list are reapplied to new segments of data each time an appropriate segment is encountered.
		4. In coding, the researcher uses a “constant comparative approach” of comparing codes to the data, codes to other codes in the data, and the data to new codes for further development or expansion.
		5. Discussion Question: Discuss the processes that researchers use to code qualitative data.
		6. **Intercoder reliability:** consistency among different coders
			1. Similar to inter-rater reliability.
			2. Add objectivity to the research and decreases errors due to inconsistencies among coders.
		7. **Intracoder reliability**: consistency within a single individual
			1. Each individual coder should be consistent.
			2. Discussion Question: Explain why intracoder and intercoder reliability are needed.
	2. Inductive and A Priori Codes
		1. **Inductive codes**: Codes that are generated by a researcher by directly examining the data.
			1. Frequently used
		2. **In vivo codes:** codes that use the words of the research participants.
			1. Often emic codes (in participants’ own words)
		3. **A priori codes:** Codes that were developed before examining the current data.
			1. Use when goal of the study is replication or extension of a particular line of research.
			2. May be added during the coding process
			3. Good research involves the use of preexisting and inductive codes.
		4. Discussion Question: Why should researchers use inductive, in vivo, and a priori codes.
	3. Co-Occurring and Face Sheet Codes
		1. **Co-occurring codes:** codes that overlap partially or completely.
			1. May suggest redundancy in coding, a relationship among categories within a set of text or across multiple sets of text for different participants
			2. It is not a problem to have overlapping codes
			3. Example in Table 20.5 of book and description.
		2. **Face sheet codes:** codes that apply to a complete document or case.
			1. Demographic variables are frequently used as face sheet codes.
			2. May want to sort data based on face sheet codes
			3. See example in Table 20.5.
		3. Discussion Question: When might researchers use co-occurring and face sheet codes.
7. First-Stage and Second-Stage Coding
	1. **First-stage coding:** initial coding of qualitative data
		1. Inductively and/or deductively code and categorize transcript data and show the results.
		2. More needs to be done, you do not stop here.
	2. **Second-stage coding:** follow-up coding to organize codes/categories and determine their interrelationships for the research report.
	3. Discussion Question: Have students browse Chapter 20 Appendix (Additional Types of Codes for Qualitative Research) and discuss the two types of codes they find most interesting in this supplemental material.
8. **Enumeration:** the process of quantifying data
	1. How much, how often?
	2. Can be useful in identifying themes in the data.
	3. Check the basis of the numbers used, the kinds of numbers used should be recognized.
	4. Discussion Question: What is enumeration and why is it important?
9. “Theming the Data” and Creating Hierarchical Category Systems
	1. One way to analyze data is to count the categories for suggestive themes.
		1. **Theme:** a word, or more typically, a set of words denoting an important idea that occurs multiple times in your data
		2. **Thematic analysis:** identification of themes in the research findings.
	2. Another type of analysis is hierarchical analysis
		1. **Hierarchical analysis:** search for potential hierarchical arrangement of inductively generated categories in qualitative data analysis.
		2. Set of subcategories based on levels, typologies, and hierarchical systems.
		3. Most commonly used approach is bottom-up or inductive strategy.
		4. Figure 20.2 contains an example.
	3. Discussion Question: Explain how a researcher completes a thematic analysis and a hierarchical analysis.
10. Identifying Relationships Among Categories
	1. Qualitative subgroup analysis: looking for relationships between categories/themes and demographic or other grouping factors.
		1. For quantitative researchers, “relationship” refers to different relations or connections between things including but not limited to variables.
		2. Table 20.6: Spradley’s Universal Semantic Relationships.
		3. Typology (a classification that breaks something down into different types or kinds) is used to refer to categories following Spradley’s strict inclusion form of relationship.
			1. Are useful because they help make sense out of qualitative data
			2. Can be simple or complex.
			3. Construct through **mutually exclusive** (a set of categories that are separate or distinct) and **exhaustive categories** (a set of categories that classify all of the relevant cases in the data)
		4. Discussion Question: Using the relationships in Table 2.6, ask students to think of an example of each of Spradley’s types of relationships defined in Table 20.6. Also, see if they can think of some types of relationships that Spradley did not mention.
	2. Drawing Diagrams:
		1. **Diagramming:** making a sketch, drawing, or outline to show how something works or clarify the relationship between the parts of a whole.
			1. **Network diagram:** a diagram showing the direct links between variables or events over time.
			2. Can be applied to quantitative or qualitative data.
			3. There are many types of diagrams that can be used in qualitative research. For some examples, look again at Figures 20.2, 20.3, and 20.4.
			4. Discussion Question: When might a qualitative researcher want to use diagramming?
11. Corroborating and Validating Results
	1. Review the five types of validity and strategies that are used to promote qualitative research validity.
	2. Think about validity and use the strategies throughout the qualitative data-collection, analysis, and write-up process whenever possible.
	3. Discussion Question: Ask students to recall the validity strategies for qualitative research and how they could be addressed in the analysis stage.
12. Computer Programs for Qualitative Data Analysis
	1. Qualitative researchers traditionally use a filing system approach to data analysis
		1. Transcribe data and make copies of documents.
		2. Hand-code data in left margin.
		3. Make copies of coded data and cut date into text segments with marked code. Segments then placed into the appropriate folders. If a segment fits in multiple folders, copies are made and placed in multiple folders.
	2. Qualitative data analysis programs can do everything discussed in the chapter: store and code hierarchical classification systems, enumeration, attach memos, and diagrams.
		1. Simple or complex searches which use **Boolean operators** (words such as *and* and *or* that create logical combinations)
	3. Most popular qualitative and mixed research data analysis computer programs
		1. MAXQDA, QDA Miner, NVivo, HyperRESEARCH.
		2. Others include Dedoose, Ethnograph, and ATLAS.
	4. Advantages of using computer programs: can help in sorting and organizing data, can be used for all of the analyses discussed in chapter (and more), reduce the time required to analyze data by hand, and make procedures available that are not done by hand because they are too complex or too time-consuming.
	5. Disadvantages: Programs can take time to learn, they cost money and require computer availability, can become outdated, and start-up time.
	6. Discussion Question: Why might a researcher want to use a computer program to analyze his or her qualitative data?
13. Data Analysis in Mixed Research
	1. **Mixed data analysis**: the use of both quantitative and qualitative analytical procedures in a research study.
		1. May be concurrent, or sequential, or iterative
	2. Mixed Analysis Matrix
		1. **Monodata:** only qualitative or quantitative data are collected.
		2. **Multidata:** both quantitative and qualitative data are collected.
		3. Decisions that lead to a matrix
			1. Number of data types that will be analyzed.
			2. How many data analysis types will be used (quantitative or qualitative). One type is **monanalysis** and both types (quantitative and qualitative) are **multianalysis**.
		4. Table 20.8 mixed analysis matrix
			1. Cell 1: Analysis of one data type using its standard analysis type, traditional **monodata-monoanalysis**. Can include quantitative analysis of quantitative data or qualitative analysis of qualitative data. Not mixed analysis.
			2. Cell 2: One type of data (quantitative or qualitative) using both analysis types (quantitative and qualitative). **Mondata-multianalysis.** First phase of analysis should match data type. Data from initial analyses are converted to other data type by quantitizing or qualitizing.
			3. Cell 3: Analysis of two data types by one data analysis type, multidata-**monoanalysis**. Uncommon in research because it involves one of the types of data being analyzed using a nonstandard analysis.
			4. Cell 4: analysis of both data types using both analysis times, **multidata-multimethod**, may be concurrent or sequential.
		5. Discussion Question: Compare and contrast the cells in the mixed analysis matrix
	3. Analytical Procedures in Mixed Data Analysis
		1. Data reduction: reducing the number of dimensions in the quantitative data
		2. Data display: describing visually the quantitative and/or qualitative data
		3. Data transformation: quantitizing and/or qualitizing data
		4. Data correlation: correlating or cross-classifying different data types
		5. Data consolidation: quantitative and qualitative data are combined to create new or consolidated codes, variables, or data sets.
		6. Data comparison: findings from the qualitative and quantitative data sources or analyses are compared.
		7. Data integration: qualitative and quantitative findings are integrated into a coherent whole, typically done last.
		8. Last two strategies are important for almost all mixed research studies.
		9. Discussion question: Describe the strategies used in mixed data analysis.
	4. Constructing Joint Displays in Mixed Data Analysis
		1. **Joint display:** matrix juxtaposing qualitative and quantitative results for cases, research questions, variable, outcomes, times, locations, or any other dimension of interest.
		2. Figures 20.9 and 20.12 present various models of joint displays that researches can use.
		3. Many variations are possible. The researcher needs to decide which joint display will most effectively communicate the key ideas and results of the study.
		4. Discussion Question: Explain the purpose of joint displays in mixed research.