Chapter 17
Qualitative Data Analysis

(Reminder: Don't forget to utilize the concept maps and study questions as you study this and the other chapters.)

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

Interim Analysis

Data analysis tends to be an ongoing and iterative (nonlinear) process in qualitative research.

- The term we use to describe this process is <u>interim analysis</u> (i.e., the cyclical process of collecting and analyzing data during a single research study).
- Interim analysis continues until the process or topic the researcher is interested in is understood (or until you run out of time and resources!).

Memoing

Throughout the entire process of qualitative data analysis it is a good idea to engage in <u>memoing</u> (i.e., recording reflective notes about what you are learning from your data).

- The idea is to write memos to yourself when you have ideas and insights and to include those memos as additional data to be analyzed.

Data Entry and Storage

Qualitative researchers usually <u>transcribe</u> their data; that is, they type the text (from interviews, observational notes, memos, etc.) into word processing documents.

- It is these transcriptions that are later analyzed, typically using one of the qualitative data analysis computer programs discussed later in this chapter.

Coding and Developing Category Systems

This is the next major stage of qualitative data analysis.

- It is here that you carefully read your transcribed data, line by line, and divide the data into meaningful analytical units (i.e., <u>segmenting</u> the data). When you locate meaningful segments, you code them.
- <u>Coding</u> is defined as marking the segments of data with symbols, descriptive words, or category names.

Again, whenever you find a meaningful segment of text in a transcript, you assign a code or category name to signify that particular segment. You continue this process until you have segmented all of your data and have completed the initial coding.

During coding, you must keep a <u>master list</u> (i.e., a list of all the codes that are developed and used in the research study). Then, the codes are reapplied to new segments of data each time an appropriate segment is encountered.

To experience the process of coding, look at Table 17.2 and then try to segment and code the data. After you are finished, compare your results with the results shown in Table 17.3. These are shown here for your convenience.

- Don't be surprised if your results are different from mine. As you can see, qualitative research is very much an interpretative process!

■ TABLE 17.2 Unordered List of Responses to the Open-Ended Question, What are some specific problems needing action in your organization?

Participant Responses

There is not enough space for everyone.
Our office furniture is dated and needs replacing.
We need a better cleaning service for the office.
We need more objective recruitment and hiring standards.
We need objective performance appraisal and reward systems.
We need consistent application of policy.
There are leadership problems.
Nonproductive staff members should not be retained.
Each department has stereotypes of the other departments.
Decisions are often based on inaccurate information.
We need more opportunities for advancement here.
Our product is not consistent because there are too many styles.
There is too much gossiping and criticizing.
Responsibilities at various levels are unclear.
We need a suggestion box.
We need more computer terminals.
There is a lot of "us and them" sentiment here.
There is a lack of attention to individual needs.
There is favoritism and preferential treatment of staff.
More training is needed at all levels.
There needs to be better assessment of employee ability and performance so that promotions can be more objectively based.
Training is needed for new employees.
Many employees are carrying the weight of other untrained employees.
This office is "turf" oriented.
There is a pecking order at every level and within every level.
Communication needs improving.
Certain departments are put on a pedestal.
There are too many review levels for our product.
Too many signatures are required.
There is a lot of overlap and redundancy.
The components of our office work against one another rather than as a team.

Now look at how I coded the above data...

■ TABLE 17.3 Categorization of Responses to the Open-Ended Question, What are some specific problems needing action in your organization?

Inductive Categories	Participant Responses
Management issues	There are leadership problems. We need a suggestion box. There is a lack of attention to individual needs. There is favoritism and preferential treatment of staff. Decisions are often based on inaccurate information. We need consistent application of policy.
Physical environment	We need a better cleaning service for the office. Our office furniture is dated and needs replacing. We need more computer terminals. There is not enough space for everyone.
Personnel practices	We need more objective recruitment and hiring standards. We need objective performance appraisal and reward systems. Nonproductive staff members should not be retained. There needs to be better assessment of employee ability and performance so that promotions can be more objectively based.
Employee development	More training is needed at all levels. Training is needed for new employees. Many employees are carrying the weight of other untrained employees. We need more opportunities for advancement here.
Intergroup and interpersonal relations	This office is "turf" oriented. There is a lot of "us and them" sentiment here. There is a pecking order at every level and within every level. Communication needs improving. There is too much gossiping and criticizing. Certain departments are put on a pedestal. Each department has stereotypes of the other departments.
Work structure	There are too many review levels for our product. Too many signatures are required. Responsibilities at various levels are unclear The components of our office work against one another rather than as a team. There is a lot of overlap and redundancy. Our product is not consistent because there are too many styles.

Qualitative research is more defensible when multiple coders are used and when high inter- and intra-coder reliability are obtained.

- Intercoder reliability refers to consistency among different coders.
- Intracoder reliability refers to consistency within a single coder.

Inductive and a Priori Codes
There are many different types of codes that are commonly used in qualitative data analysis.

- You may decide to use a set of already existing codes with your data. These are called a priori codes.
- A priori codes are codes that are developed before examining the current data.
- Many qualitative researchers like to develop the codes as they code the data. These codes are called inductive codes.
- Inductive codes are codes that are developed by the researcher by directly examining the data.

Co-Occurring and Facesheet Codes
As you code your data, you may find that the same segment of data gets coded with more than one code. That's fine, and it commonly occurs. These sets of codes are called co-occurring codes.

- Co-occurring codes are codes that partially or completely overlap. In other words, the same lines or segments of text may have more than one code attached to them.

Oftentimes you may have an interest in the characteristics of the individuals you are studying. Therefore, you may use codes that apply to the overall protocol or transcript you are coding. For example, in looking at language development in children you might be interested in age or gender.

- These codes that apply to the entire document or case are called facesheet codes.

After you finish the initial coding of your data, you will attempt to summarize and organize your data. You will also continue to refine and revise your codes. This next major step of summarizing your results includes such processes as enumeration and searching for relationships in the data.

Enumeration
Enumeration is the process of quantifying data, and yes, it is often done in "qualitative" research.

- For example, you might count the number of times a word appears in a document or you might count the number of times a code is applied to the data.
- Enumeration is very helpful in clarifying words that you will want to use in your report such as "many," "some," "a few," "almost all," and so on. The numbers will help clarify what you mean by frequency.
- When reading "numbers" in qualitative research, you should always check the basis of the numbers. For example, if one word occurs many times and the basis is the total number of words in all the text documents, then the reason could be that

many people used the word or it could be that only one person used the word many times.

Creating Hierarchical Category Systems
Sometimes codes or categories can be organized into different levels or hierarchies.
- For example, the category of fruit has many types falling under it (e.g., oranges, grapefruit, kiwi, etc.). The idea is that some ideas or themes are more general than others, and thus the codes are related vertically.
- One interesting example (shown in Figure 17.2 on page 512) is Frontman and Kunkel's hierarchical classification showing the categorization of counselors' construal of success in the initial counseling session (i.e., what factors do counselors view as being related to success). Their classification system has four levels and many categories.
- Here is a part of their hierarchical category system:
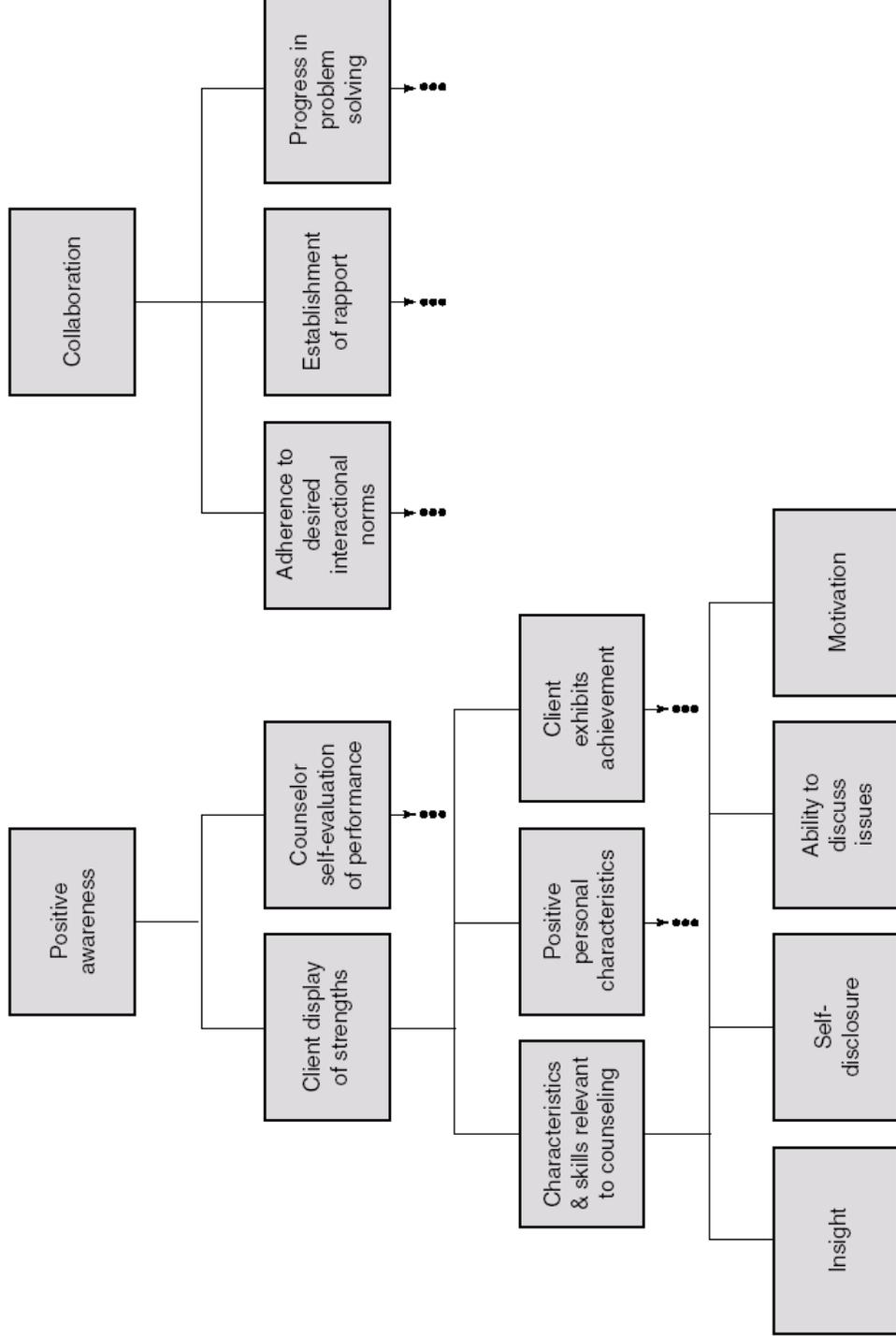
FIGURE 17.2 Hierarchical categorization of counselors' construal of success in the initial session. The vertical ellipses show where we have left out subcategories.

Showing Relationships Among Categories
Qualitative researchers have a broad view of what constitutes a relationship. The hierarchical system just shown is one type of relationship (a hierarchy or strict inclusion type).

- Several other possible types of relationships that you should be on the lookout for are shown in Table 17.6 (p. 514) and shown below for your convenience.
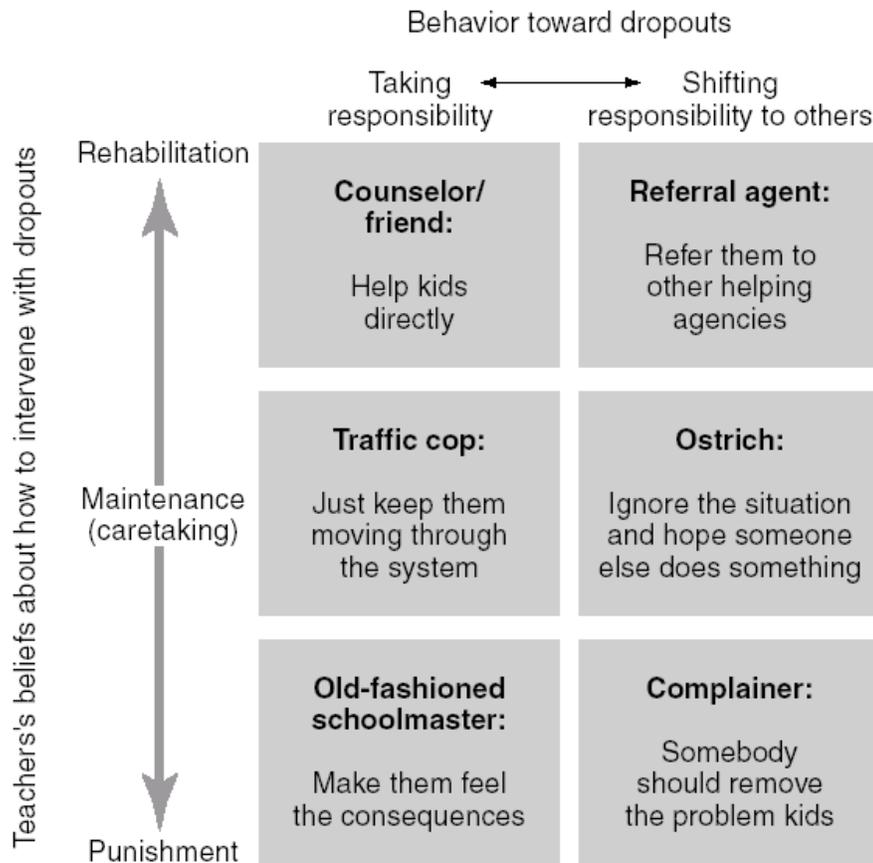
■ TABLE 17.6
Spradley's Universal Semantic Relationships

Title	Form of Relationship
1. Strict inclusion	X is a kind of Y
2. Spatial	X is a place in Y; X is a part of Y
3. Cause-effect	X is a result of Y; X is a cause of Y
4. Rationale	X is a reason for doing Y
5. Location for action	X is a place for doing Y
6. Function	X is used for Y
7. Means-end	X is a way to do Y
8. Sequence	X is a step (stage) in Y
9. Attribution	X is an attribute (characteristic) of Y

Source: Adapted from J. P. Spradley, 1979, p. 111. Used by permission.

- For practice, see if you can think of an example of each of Spradley's types of relationships. Also, see if you can think of some types of relationships that Spradley did not mention.

In Figure 17.3 you can see a typology, developed by Patton, of teacher roles in dealing with high school dropouts.

Behavior toward dropouts

	Taking responsibility ← → Shifting responsibility to others	
Rehabilitation	**Counselor/ friend:** Help kids directly	**Referral agent:** Refer them to other helping agencies
Maintenance (caretaking)	**Traffic cop:** Just keep them moving through the system	**Ostrich:** Ignore the situation and hope someone else does something
Punishment	**Old-fashioned schoolmaster:** Make them feel the consequences	**Complainer:** Somebody should remove the problem kids

Teachers's beliefs about how to intervene with dropouts

■ **FIGURE 17.3**   Patton's typology of teacher roles in dealing with high school dropouts

Reprinted from M. Q. Patton, *Qualitative Evaluation and Research Methods,* p. 413, copyright © 1990 by Sage Publications, Inc. Reprinted by Permission of Sage Publications, Inc.

Typologies (also called taxonomies) are an example of Spradley's "strict inclusion" type of relationship.

Patton's example is interesting because it demonstrates a strategy that you can use to relate separate dimensions found in your data.

Patton first developed two separate dimensions or continuums or typologies in his data:
(1) teachers' beliefs about how much responsibility they should take and
(2) teachers' views about effective intervention strategies.

Then Patton used the strategy of crossing two one-dimensional typologies to form a two dimensional matrix, resulting in a new typology that relates the two dimensions.
• As you can see, Patton provided very descriptive labels of the nine roles shown in the matrix (e.g., "Ostrich," "Counselor/friend," "Complainer").

In Table 17.7 (p.517 and here for your convenience), you can see another set of categories developed from a developmental psychology qualitative research study.

- These categories are ordered by time and show the characteristics (subcategories) that are associated with five stages of development in old age that were identified in this study. This is an example of Spradley's "sequence" type of relationship.

Here is Table 17.7:

■ TABLE 17.7
Categories Ordered
by Time

Category I: Continuity with Middle Age

Characteristics:	Retirement plans pursued
	Middle-age lifestyle continued
	Other activities substituted for work

Category II: Early Transition

Characteristics:	Involuntary transitional events
	Voluntary transitional events
	End of continuity with middle age

Category III: Revised Lifestyle

Characteristics:	Adaptation to changes of early transition
	Stable lifestyle appropriate to older adulthood
	Socialization realized through age-group affiliation

Category IV: Later Transition

Characteristics:	Loss of health and mobility
	Need for assistance and/or care
	Loss of autonomy

Category V: Final Period

Characteristics:	Adaptation to changes of later transition
	Stable lifestyle appropriate to level of dependency
	Sense of finitude, mortality

Source: Adapted from Fisher, J. C. (1993). A framework for describing developmental change among older adults. *Adult Education Quarterly 43*(2), 81.

In the next section of the chapter, we discuss another tool for organizing and summarizing your qualitative research data. In particular, it was about the process of diagramming.

Drawing Diagrams
Diagramming is the process of making a sketch, drawing, or outline to show how
something works or clarify the relationship between the parts of a whole.
- The use of diagrams are especially helpful for visually oriented learners.
- There are many types of diagrams that can be used in qualitative research. For
  some examples, look again at Figure 17.2, on page 512 and Figure 17.3, on page
  516.

One type of diagram used in qualitative research that is similar to the diagrams used in
causal modeling (e.g., Figure 11.5 on page 352) is called a network diagram.
- A network diagram is a diagram showing the direct links between categories,
  variables, or events over time.
- An example of a network diagram based on qualitative research is shown in
  Figure 17.4 and below for your convenience.
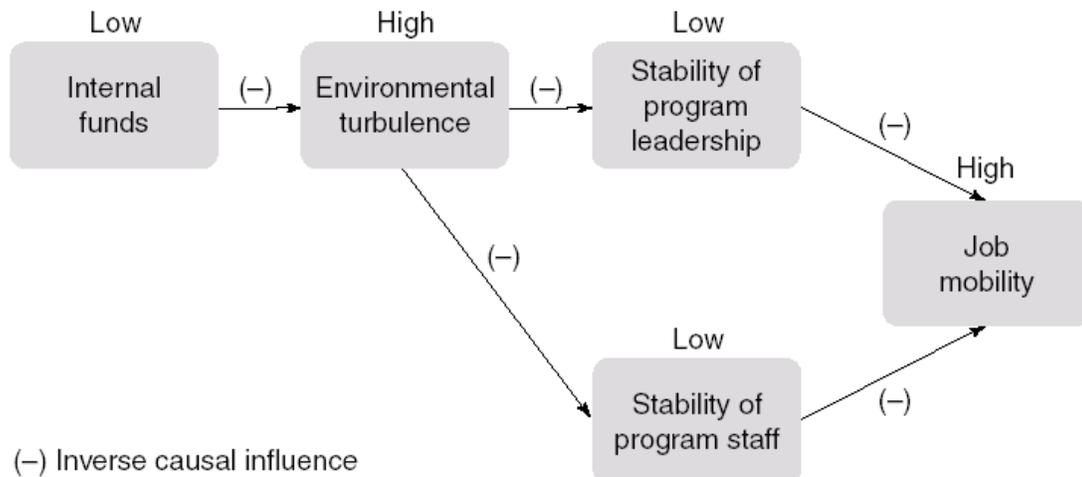
FIGURE 17.4   Network diagram for job mobility

It is also helpful to develop matrices to depict your data.
- A matrix is a rectangular array formed into rows and columns.
- Patton's typology of teacher roles shown above is an example of a matrix.
- You can see examples of many different types of matrices (classifications usually
  based on two or more dimensions) and diagrams in Miles and Huberman's (1994)
  helpful book titled "Qualitative Data Analysis: An Expanded Sourcebook."
- Developing a matrix is an excellent way to both find and show a relationship in
  your qualitative data.

As you can see, there are many interesting kinds of relationships to look for in qualitative research and there are many different ways to find, depict, and present the results in your qualitative research report. (More information about *writing* the qualitative report is given in the next chapter.)

Corroborating and Validating Results

As shown in the depiction of data analysis in qualitative research in Figure 17.1, corroborating and validating the results is an essential component of data analysis and the qualitative research process.

- Corroborating and validating should be done throughout the qualitative data collection, analysis, and write-up process.
- This is essential because you want to present trustworthy results to your readers. Otherwise, there is no reason to conduct a research study.
- Many strategies are provided in Chapter 8, especially in Table 8.2 which is reproduced here for your convenience.

Strategy	Description
Researcher-as-detective	A metaphor characterizing the qualitative researcher as he or she searches for evidence about causes and effects. The researcher develops an understanding of the data through careful consideration of potential causes and effects and by systematically eliminating rival explanations or hypotheses until the final case is made beyond a reasonable doubt. The detective can utilize any of the strategies listed here.
Extended fieldwork	To provide for both discovery and validation researchers should collect data in the field over an extended time period.
Low-inference descriptors	The use of description phrased very close to the participants' accounts and researchers' field notes. Verbatims (i.e., direct quotations) are a commonly used type of low-inference descriptors.
Triangulation	Cross-checking information and conclusions through the use of multiple procedures or sources. When the different procedures or sources are in agreement you have corroboration.
Data triangulation	The use of multiple data sources to help understand a phenomenon.
Methods triangulation	The use of multiple research methods to study a phenomenon.
Investigator triangulation	The use of multiple investigators (i.e., multiple researchers) in collecting, analyzing, and interpreting the data.
Theory triangulation	The use of multiple theories and perspectives to help interpret and explain the data.
Participant feedback	The feedback and discussion of the researcher's interpretations and conclusions with the actual participants and other members of the participant community for verification and insight.
Peer review	Discussion of the researcher's interpretations and conclusions with other people. This includes discussion with a disinterested peer, (e.g., with another researcher not directly involved). This peer should be skeptical and play the devil's advocate, challenging the researcher to provide solid evidence for any interpretations or conclusions. Discussion with peers who are familiar with the research can also help provide useful challenges and insights.
External audit	Using outside experts to assess the study quality.
Negative-case sampling	Locating and examining cases that disconfirm the researcher's expectations and tentative explanation.
Reflexivity	Involves self-awareness and critical self-reflection by the researcher on his or her potential biases and predispositions as these may affect the research process and conclusions.
Pattern matching	Predicting a series of results that form a distinctive pattern and then determining the degree to which the actual results fit the predicted pattern or "fingerprint."

Computer Programs for
Qualitative Data Analysis

In this final section of the chapter, we discuss the use of computer programs in qualitative data analysis.

- Traditionally, qualitative data were analyzed "by hand" using some form of filing system.

- The availability of computer packages (that are specifically designed for qualitative data and analysis) has significantly reduced the need for the traditional filing technique.
- The most popular qualitative data analysis packages, currently, are NUDIST, ATLAS, and Ethnograph.

Here is a table not included in your book that provides the links to the major qualitative software programs.
- Most of these companies will provide you, free of charge, with demonstration copies of these packages.

Bonus Table:
Websites for Qualitative Data Analysis Programs

Program name	Website address
AnSWR (freeware)	http://www.cdc.gov/hiv/software/answr.htm
ATLAS	http://atlasti.de/
Ethnograph	http://qualisresearch.com
HyperResearch	http://researchware.com
Nvivo	http://www.qsrinternational.com
NUD-IST	http://www.qsrinternational.com

- Qualitative data analysis programs can facilitate most of the techniques we have discussed in this chapter (e.g., storing and coding, creating classification systems, enumeration, attaching memos, finding relationships, and producing graphics).
- One highly useful tool available in computer packages is Boolean operators which can be used in performing complex searches that would be very time consuming if done manually.
- Boolean operators are words that are used to create logical combinations such as AND, OR, NOT, IF, THEN, and EXCEPT. For example, you can search for the co-occurrence of codes which is one way to begin identifying relationships among your codes.

I concluded the chapter by listing several advantages and disadvantages of computer packages for qualitative data analysis.

You now know the basics of qualitative data analysis!