

		<p>the practitioner's reports and documentation showed a concerning pattern. The PLs addressed the matter through group and individual supervision by providing a consistent message to practitioners that the IDDT EBP principles would be followed.</p>	<p>using drugs in the supported housing units, and her documentation reflected that she did not believe in consumers' potential for recovery and the potential for the IDDT EBP to be helpful to them.;</p>		<p>had an intense effect all the way through to the late sustaining phase.</p>	
<p>Money</p>		<p>The agency did not hold back anything related to time and</p>			<p>This strategy was present from early preparation</p>	<p>2</p>

		<p>funding to support the IDDT EBP. Both Admin and the psychiatrist donated their time for participation in trainings and meetings, caseloads were lowered to support the EBP, and time for training/study groups was allotted for the practitioners.</p>			<p>through late sustaining and was intense and constant.</p>	
			<p>During the later months of the sustaining phase, the</p>		<p>This barrier was constant and only mildly</p>	<p>0</p>

			<p>agency announced that they decided to stop applying for substance abuse funding from the state.</p> <p>Admin relayed that they were often not reimbursed for much money after filling out an enormous amount of paperwork to apply for state funds.</p>		<p>intense. It occurred during late sustaining phase and there did not appear to be any effects upon the IDDT EBP.</p>	
Responsibility		PL1 took more responsibility for sustaining			PL1 took more responsibility for sustaining	2

		the EBP than PL2 , and worked with practitioners to practice and enhance skills. PL2 focused more on administrative tasks.			the EBP than PL2 , and worked with practitioners to practice and enhance skills. PL2 focused more on administrative tasks.	
Leadership Skills		During the sustaining phase, PL1's leadership role changed a bit, as she was able to shift other duties to allow for more time to be spent on the IDDT EBP. PL1 carried out all the	During the latter months of the sustaining phase, PL2 expressed that he believed that too much emphasis was being placed on practicing the IDDT EBP skills,	CAT attempted to educate PL2 about the necessity of practicing skills and about making attendance mandatory. PL1 continued to provide	It appeared as if the leadership skills of Admin and PL2 were strong enough to counter any negative influence of PL1's dismissal of the need for	2

		<p>follow-up to the training, including assisting the practitioners with skill-building during group supervision. PL1 provided leadership related to clinical skills, while PL2 oversaw changes in documentation, eligibility, etc.</p>	<p>such as MI. This concerned CAT, who believed that regular practice was key to sustaining the IDDT EBP. However, PL1 did make the skill building portion of weekly team meetings optional attendance .</p>	<p>opportunities for practitioners to practice skills.</p>	<p>practice. This occurred during the later part of the sustaining phase.</p>	
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Source: see Resources section for details regarding source for matrices.



Exercise 2: Dimensional Summary

Review the two matrices available on this page. The different approaches taken by the two analysts have different advantages. Based on what you have read in this chapter, consider the key advantages of each approach. Below are several advantages. Select the advantage that best applies to each version of the Dimensional Summary.



Focuses on one dimension, shows complex pattern for that dimension



Allows looking across dimensions



Includes "net trend" column summarizing observations.



Broken down by "phase" of the project

Dimensional Summary	Advantages
Dimensional Summary of Implementation Process – version 1	
Dimensional Summary of Implementation Process – version 2	

7. Drawing and Verifying Conclusions

Variable-Oriented vs. Process-Oriented Matrices

A further distinction offered by Miles and Huberman (1994) is between what they call “paradigmatic” and “syntagmatic” displays. Paradigmatic displays are variable-oriented (think: paradigm) while syntagmatic displays are process-oriented.

Paradigmatic displays focus on relationships among well-defined concepts. For example, they may array one variable against another to find clusters or causal relationships. Syntagmatic displays focus on following the events in a case over time. Miles and Huberman (1994) argue that you must combine the two modes for careful description and explanation.



Exercise 3: Syntagmatic vs. Paradigmatic

Please review the [tables provided](#).

Question: Which of the tables here are syntagmatic, and which are paradigmatic?

Table 1: Characteristics of the agency overall - Site 2

 Syntagmatic Paradigmatic

Table 2: Characteristics of the SMI program - Site 2

 Syntagmatic Paradigmatic

Table 3: Quality Improvement Systems - Site 1

 Syntagmatic Paradigmatic

Table 4: Summary of Internet Survey

 Syntagmatic Paradigmatic

Table 5: Project Timeline - Site 2

 Syntagmatic Paradigmatic

Table 6: Dimensional Summary of Implementation Process - 1st Version

 Syntagmatic Paradigmatic

Table 7: Dimensional Summary of Implementation Process - 2nd Version

 Syntagmatic Paradigmatic

7. Drawing and Verifying Conclusions

Designing Matrices

The Miles and Huberman (1994) volume is a treasure trove of examples of matrix types which the researcher can mine for solutions to specific analysis problems (for example, "I need to get an overview of what each of my respondents individually had to say about their experiences with loss," "I need to figure out whether there's a difference between the kinds of attributions made by the doctors, on the one hand, and by the nurses, on the other; I need to carefully inspect the data to see whether my conclusion that more confrontive interventions are associated with better short-term outcomes is really supported by the data; etc."). But they also give you guidelines for designing your own from scratch. The guidelines are presented as a series of decisions to be made.

Is the matrix to be:

- Descriptive, or Explanatory?
- Partially, or Well-ordered?
- (that is, is it just a list of categories, or are they ordered?)
- Time ordered?
- Categories of variables—What will they be?
- What will define the rows, columns?
- How many dimensions will there be?
- (you can get more than 2 dimensions on a piece of paper by nesting rows or columns, or by indicating information about a dimension in the content of the cells—e.g., low, med, high)
- Cell entries—will they be:
 - Quotes?
 - Summaries?
 - Explanations?
 - Ratings?
 - Symbols? (include a legend!)
 - Combinations of the above?
- Single-case vs. multi-case?

Whatever the matrix design, it is very good practice to show your design to colleagues, and encourage them to question and challenge your assumptions, and provide alternate ideas.

7. Drawing and Verifying Conclusions

Presenting Findings from Matrices

It is critical to recognize that most analytic matrices built in qualitative studies are not intended for your readers. They are analytic tools; they help you get an overview, compare cases, look for relationships, confirm your propositions and conclusions. Occasionally, you may decide to make a more consumer-friendly version of one of your matrices and use it as an illustration in a report. But that is not the primary intent. They don't prove anything on their own, and they are not meant to demonstrate things to your audience. They are tools to help you organize your data, and your thinking about it.

Illustration: Interpreting Matrices

Illustration 1:

Review Table 4 and try writing yourself a memo analyzing it. In one or two pages, try to pull together what the respondents are saying about the components of the IRK toolkit into a coherent picture.

After you complete the memo, go back and look through Table 4 again, this time with an eye out for *disconfirming evidence*. That is, is there anything in the matrix that argues *against* the case you've just made? (Hint: There probably is.)

Go back and revise your memo to account for the data you had missed.

Illustration 2:

1. Review Table 7. Create a new version of this matrix using this handout but this time develop summaries for the cells. For example, the cell that reads: "*One **practitioner** demonstrated a negative attitude about the IDDT EBP (this person showed negativity toward consumers, in general). She complained about consumers using drugs in the supported housing units, and her documentation reflected that she did not believe in consumers' potential for recovery and the potential for the IDDT EBP to be helpful to them.*"

Could become:

- One practitioner had a **negative attitude** to EBP
- Complained about consumers' **drug use**
- Did not believe in consumer's or EBP's potential

You could alternatively write short summaries, or even create a system of symbols.

2. Review your matrix. Can you identify any patterns in the Net Trends? Any *explanations* in the data for the Net Trends? Write a brief memo recording your conclusions.
3. Review Table 7 and assess your memo:
 - a. Did you overreach? That is, do the more lengthy comments in the full matrix *really* support your conclusions?
 - b. Did you miss anything? That is, do the more lengthy comments tell you things your condensed one doesn't?
 - c. Or, did you lose something in reducing it?
4. Revise your memo.

What are some of the potential advantages and disadvantages of reducing in this way? Can you think of a better way to reduce a matrix like this?

8. The Role of Computers

Fundamental to the analysis practices described in this chapter is the need to be able to organize the data.

To carry out the procedures described here, we need to be able to find our way through our data, whether by chronology, narrative structure, topic, case type, theme, or by some other kind of relationship between one piece of text and another.

We may need to be able to pull together all the pieces of text that have to do with a topic or theme. We may need to be able to see each utterance in its original context to know what it means. When confirming findings, we may need to be able to find the data to support a proposition, or we may go looking to see if there is disconfirming evidence to contradict it. When working with the often enormous piles of text generated in qualitative research, being careful, diligent, and thorough can be a tremendous challenge, both because of the volume of the data, and the complexity of the thought required to analyze it. For all of these tasks, computers can be a big help (e.g., Weitzman and Miles, 1995b; Weitzman, 1999a, 2000, 2004, 2006).

There are the obvious ways computers already help: we use them to write, search, store data, create tables and diagrams, edit pictures and audio and video, and so on. Software for qualitative data analysis (QDA software) allows the analyst to systematically index and organize (or code) qualitative data, and then to reliably and flexibly retrieve that data in many different ways (for a fuller discussion of the varieties of types of software, see: Weitzman and Miles, 1995; Weitzman, 1999a, 2006). For example, it can facilitate finding all the data the analyst has previously coded for a particular theme or conceptual category, and it can facilitate parsing these data into subgroups based on demographic or other categorical or quantitative variables. It can also find all the cases where a theme was not present, or where combinations of themes are present, and so on. With the use of Boolean operators, the analyst can construct queries of arbitrary complexity, and execute them nearly instantly. **The speed and consistency with which QDA software can carry out such operations make it far more feasible to regularly carry out the kinds of analyses discussed above.**

8. The Role of Computers

It is critical to remember that while software can provide tools to help you analyze qualitative data, it cannot do the analysis for you, not in the same sense in which a statistical package like SPSS, SAS or STATA can do, say, multiple regression. Many researchers have had the hope—for others it is a fear—that the computer could somehow read the text and decide what it all means. That is, generally speaking, not the case. Thus it is particularly important to emphasize that using software cannot be a substitute for learning data analysis methods: **The researcher must know what needs to be done and must do it. The software provides some tools to do it with.**

It is probably not the case that software makes initial coding go faster, and it may not always even be the case that projects get completed faster (Fielding and Lee, 1998; Mangabeira, Lee and Fielding, 2004). However, considering the sorts of operations described in this chapter, and in the discussion of particular types of software below, it is hard to imagine the researcher who can carry out those same functions as quickly by hand. This creates the opportunity for either more rapid production of results by the same methods that would have been employed by hand, or for the use of methods which would be too time-consuming without the assistance of software. For a more detailed discussion of hopes and fears, and the limits of what software can do, see Weitzman (2003).

9. Software

Types and Functions of Software for QDA

This is a rough sorting of available software into types. There is naturally quite a bit of overlap among categories, with individual programs having functions that would seem to belong to more than one type. However, it is possible to focus on the “heart and soul” of a program: what it mainly is intended for. This categorization scheme was first presented in Weitzman and Miles (1995). Since then, the landscape has changed somewhat, both in terms of what programs do, and in terms of what kinds of programs qualitative researchers are using. Some of the categories, like “code-and-retrieve” software, are virtually empty at this point. Others, like “textbase managers,” appear to be rarely used by qualitative researchers. Most of the interest, and virtually all of the recent literature on the use of these programs, has focused on one category, “code-based theory builders.” Nonetheless, qualitative researchers often find themselves faced with unique challenges—unusual datasets, novel analytic needs—and a knowledge of the range of options remains useful. These categories are illustrated with examples of programs that fit them at the time of this writing:

- Text Retrievers;
- Textbase Managers;
- Code and Retrieve;
- Code-based Theory Builders; and
- Conceptual Network Builders.

See **Section 12. Resources** for a list of available links.

9. Software

The 5 main software family types are discussed in the following pages: text retrievers; textbase managers; code and retrieve; codebase theory builders; and conceptual network builders.

Text Retrievers

Text retrievers specialize in finding all the instances of words and phrases in text, in one or several files. They typically also allow you to search for places where two or more words or phrases coincide within a specified distance (a number of words, sentences, pages, etc.), and allow you to sort the resulting passages into different output files and reports. Free, easy to use search programs available on the web, such as Google Desktop, do these basic things very well. Many of the programs qualitative researchers typically turn to, on the other hand, may do other things as well, such as content analysis functions like counting, displaying keywords in context or creating concordances (organized lists of all words and phrases in their contexts), or they may allow you to attach annotations or even variable values (for things like demographics or source information) to points in the text. Examples of text retrievers are Sonar Professional, and a variety of free (but hard to use) GREP tools available on the internet.

Textbase Managers

Textbase managers are database programs specialized for storing text in more or less organized fashion. They are good at holding text, together with information about it, and allowing you to quickly organize and sort your data in a variety of ways, and retrieve it according to different criteria. There are programs—some free, like Zotero—that specialize in storing web-based material. Some are better suited to highly structured data that can be organized into “records” (that is, specific cases) and “fields” (variables—information that appears for each case), while others easily manage “free-form” text. They may allow you to define fields in the fixed manner of a traditional database such as Microsoft Access® or FileMaker Pro®, or they may allow significantly more flexibility, for example, allowing different records to have different field structures. Their search operations may be as good as, or sometimes even better than those of some text retrievers. Examples of textbase managers are askSam and TEXTBASE GAMMA.

Code and Retrieve

Code-and-retrieve is the dominant paradigm for qualitative analysis software, but at this point most programs with code-and-retrieve capability have evolved to the more sophisticated code-

based theory builder category discussed next. These programs are often developed by qualitative researchers specifically for the purpose of qualitative data analysis. As a baseline, the programs in this category have specialized in allowing the researcher to apply category tags (codes) to passages of text, and later retrieve and display the text according to the researcher's coding. These programs have at least some search capacity, allowing you to search either for codes or words and phrases in the text. They may have a capacity to store memos. Even the weakest of these programs represented a quantum leap forward from the old scissors-and-paper approach, being more systematic, more thorough, less likely to miss things, more flexible, and much, much faster. Examples of code-and-retrieve programs were the earlier versions of The Ethnograph, HyperQual2, Kwalitan, QUALPRO, and Martin. Today, we occasionally see free tools made available on the web that fit this category.

9. Software

Code-based Theory Builders

Code-based theory builders today appear to attract most of the qualitative researchers who employ software for their analyses. Most of these programs are also based on a code-and-retrieve model, but they go beyond the functions of code-and-retrieve programs. They do not, nor would you want them to, build theory for you. Rather, they have special features or routines that go beyond those of code-and-retrieve programs in supporting your theory-building efforts. For example, they may allow you to represent relations among codes, build higher-order classifications and categories, or formulate and test theoretical propositions about the data. For the most part, these programs allow you to create hierarchical trees of codes, but some, notably Atlas/ti and HyperRESEARCH, allow for non-hierarchical networks as well. They may have more powerful memoing features (allowing you, for example, to categorize or code your memos), or more sophisticated search-and-retrieval functions than did the earlier code-and-retrieve programs. They may have extended and sophisticated hyperlinking features, allowing you to link segments of text together, or to create links among segments of text, graphics, photos, video, audio, web sites and more. They may also offer capabilities for "system closure," allowing you to feed results of your analyses (such as search results, or memos) back into the system as data. One program, QUALRUS, uses artificial intelligence techniques to suggest coding.

Programs in this category

Examples of code-based theory builders are AFTER, AnSWR, AQUAD, ATLAS/ti, C-I-SAID, HyperRESEARCH, MAXqda, NVivo, QCA, fs/QCA, QUALRUS, and The Ethnograph. Three of these programs, AQUAD, QCA, and fs/QCA support cross-case configural analysis (Ragin, 1987), QCA being dedicated wholly to this method and not having any text-coding capabilities, and fs/QCA supporting Ragin's fuzzy-set extension of this methodology (Ragin, 2000).

Numbers in, numbers out

Increasingly, code-based theory builders support the integration of quantitative and qualitative data. It is important to distinguish here between "numbers in" capabilities, and "numbers out" capabilities. With regard to *numbers in* approaches, some programs have strong facilities for applying quantitative or categorical variables to qualitative datasets, allowing the analyst to associate demographics, test scores, or survey results, for example, with the cases in their qualitative data. In the best implementations, you can easily import whole spreadsheets of such variables into the qualitative analysis package, and flexibly and easily examine subsets of cases based on combinations of these variables. For example, you might want to compare the occurrence of some qualitative theme you have identified in different demographic categories. *Numbers out* capabilities, on the other hand, allow the analyst to generate quantitative data based on their qualitative work, and export it for further analysis in spreadsheets or statistical packages. The best implementations here allow you not only to generate numbers based on frequency of coding, but also to use coding for developing scores, flexibly generate frequencies of co-occurrence of codes either on text passages or within documents, and give you good control over the parameters of the matrices of numbers generated.

Teamwork

Code-based theory builders are supporting teamwork with increasing flexibility. Many programs will now at least allow you to lump together coding work done on different copies of a dataset (perhaps by different coders) into one new dataset. More sophisticated merge functions allow you to track team members' work: who wrote which memo, who used which code on which passage of text, and so on, allowing not only more control over the merge, but also facilitating collaboration, and particularly discussions of differences in coding. Some programs will allow the generation of statistics assessing consistency of coding, or inter-coder reliability, and it is important to pay attention to the fact that different programs use quite different statistical models for this.

Multimedia

Multimedia capabilities have become for many researchers a significant issue in software choice. There are now several programs in the code-based theory builder category that allow you to use audio and video, as well as text, as data: AFTER, ATLAS/ti, AQUAD, C-I-SAID, HyperRESEARCH, InterClipper, NVivo, TAMS Analyzer, and Transana all allow you to code and annotate audio and/or video files, and search and retrieve from them, in ways quite similar to the ways they let you manipulate text. In these programs, you can play a media file (audio or video), mark the

beginning and ending points of segments, and then treat those segments much like segments of text.

Some of these programs, including Atlas/ti, HyperRESEARCH, InterClipper, TAMS Analyzer, and Transana, include built-in or add-on transcription modules. With these, you can play your media files, type the transcripts, and have the program maintain links between the media and corresponding text.

9. Software

Conceptual Network Builders

These programs emphasize the creation and analysis of network displays. Some of them are focused on allowing you to create network drawings: graphic representations of the relationships among concepts. Examples of these are Inspiration, Mindjet, and Visio. Others are focused on the analysis of cognitive or semantic networks, for example, the program MECA. Still others offer some combination of the two approaches, for example, SemNet, Personal Brain, and Decision Explorer. Finally, ATLAS/ti, a program also listed under code-based theory builders, also has a fine graphical network builder connected to the analytic work you do with your text and codes, while others, like MAXqda and NVivo, offer an integrated drawing module which does not manipulate underlying relationships.

Summary

In concluding this discussion of the five main software family types, it is important to emphasize that functions often cross type boundaries. For example, askSam can be used to code and retrieve, and has an excellent text search facility. ATLAS/ti, HyperRESEARCH, NVivo, and MAXqda allow you to edit graphical representations of relationships among codes, although among these, only ATLAS/ti and HyperRESEARCH allow you to work with and manipulate the actual relationships through editing the drawing. You can still see the actual relationships among codes in a hierarchical “explorer” with expandable and collapsible branches in most programs. Atlas/ti, NVivo, The Ethnograph and MAXqda each have a system for attaching variable values (text, date, numeric, etc.) to text files and/or cases. The implication: do not decide too early which family you want to choose from. Instead, stay focused on the functions you need.

12. Resources

Exemplary Qualitative Researchers

Matthew B. Miles and A. Michael Huberman

The authors of the seminal, *Qualitative Data Analysis*, Miles and Huberman were also prolific researchers, both separately and together. Their work is excellent, and illustrates the methods described in their famous methods text.

Harry F. Wolcott

Wolcott has written numerous excellent books on qualitative research methods, and has been a prolific researcher as well. His ethnographies and other research studies illustrate the methods he explains in his methods books.

Robert S. Weiss

Weiss is the author of the excellent book, *Learning From Strangers*, 1994, a qualitative methods text that focuses on interviewing. His numerous interview studies are an excellent source of examples of clear and compelling qualitative interview research.

Raymond M. Lee

A methodologist as well as qualitative researcher, Lee has made a particular specialty of doing research on sensitive topics.

Tables 1-7 Credit:

Reprinted with permission from the National Implementing Evidence-Based Practices Project. I would like to thank my colleague, Greg McHugo, at the Dartmouth Psychiatric Research Center for helping to identify and providing the site reports from which these displays are drawn.

Further information about the project can be found in:

Torrey, W.C., Lynde, D.W., & Gorman, P. (2005). Promoting the implementation of practices that are supported by research: The national implementing evidence-based practice project. *Child and Adolescent Psychiatric Clinics of North America*, 14, 297-306.

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12. Resources

Software Program Links

AnSWR

AQUAD

askSam

Atlas/ti

C-I-SAID

Decision Explorer

The Ethnograph

fs/QCA

Google Desktop

HyperRESEARCH

InterClipper

Kwalitan

MAXqda

NVivo

Personal Brain

QCA

QUALRUS

SemNet

Sonar Professional

SuperHyperQual

TAMS Analyzer

TextBase Gamma

Transana

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14. Author Biography

Eben A. Weitzman, PhD is a social and organizational psychologist specializing in the resolution of conflict. He is an Associate Professor in the Graduate Programs in Dispute Resolution, and in the Public Policy Ph.D. Program, both at the University of Massachusetts Boston. He leads the conflict resolution work of the Service Employees International Union's (SEIU) Institute For Change. His work focuses on conflict within and between groups, with emphases on organizational conflict, cross-cultural conflict, and intergroup relations.

Since 1989, Dr. Weitzman has been doing conflict resolution, organizational development, and dispute resolution systems design with a wide variety of individuals and organizations in both the public and private sectors. His clients have included organizations in health care, organized labor, education, government, law enforcement, social services, business, and the courts. From 1989-2000, he was a trainer, consultant, and research associate at the International Center for Cooperation and Conflict Resolution at Columbia University. He has been a senior technical consultant to The Mediation Group since 2000, and became Director of TMG's organizational consulting practice in 2008.

Dr. Weitzman is also a research methodologist. In 1995, he co-authored one of the first texts on computer assisted qualitative data analysis with the late Mathew Miles, and continues to write and teach about qualitative research methods for use in a wide range of areas including health care services and public policy development. He has served as Reviews Editor for the journal *Field Methods*, has consulted on numerous large qualitative research studies in health care and human services, and has served as a Visiting Lecturer in the Summer Institute in Survey Research Techniques at the Survey Research Center of the Institute for Social Research, University of Michigan since 1997.