Qualitative analytic techniques to examine ethnographic data

Assoc. Prof. PhD Simona Butnaru

Alexandru Ioan Cuza University of Iasi

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I. Definitions and purposes of data analysis and data interpretation

- **Data analysis** = **summarizing data** in a dependable and accurate manner and leads to the presentation of study findings in a manner that has an air of undeniability; explore every possible angle of data (Gay et al., 2012); difficult, time-consuming, challenging
- **Data interpretation** = attempt by the researcher to **find meaning in the data** and to answer the "So what?" question in terms of the **implications of the findings**.
- Make sense of multiple narrative, descriptive, non-numerical data sources (field notes from observations and interviews, questionnaires, maps, pictures, audiotape transcripts, and videotaped observations); trying to find patterns and seek out new understandings from the data.

Data analysis during data collection

- It begins from the initial interaction with participants and continues throughout the entire study.
- To avoid collecting data that are not important or that come in a form that cannot be understood, the researcher must think, "How am I going to make sense of the data?" before conducting the study.
- During the study, the researcher should try to narrow the topic progressively and to focus on the key aspects of the participants' perspectives.
- **Steps and iterations**: gathering data, examining data, comparing prior data to newer data, writing up field notes before going back to the research site, and making plans to gather new data; conscously pausing to reflect.

Questions: "Why do participants act as they do?" "What does this focus mean?" "What else do I want to know about that participant's attitude?" "What new ideas have emerged in this round of data collection?" "Is this a new concept, or is it the same as a previous one?"

  - Is your research question still answerable and worth answering?
  - Are your data collection techniques catching the kind of data you want and filtering out the data that you don't? (Anderson et al. 1994)

- Avoid stating research outcomes on the basis of premature analysis, hasty conclusion, impulsive actions

Data analysis after data collection

- Fully examine each piece of information and building on insights and hunches gained during data collection, attempt to make sense of the data as a whole.
- It is based on **induction**: The researcher starts with a large set of data and seeks to narrow them progressively into small and important groups of key data. No predefined variables help to focus analysis, as in quantitative research. The qualitative researcher constructs meaning by identifying patterns and themes that emerge during the data analysis.
- **Multistage process**: organizing, categorizing, synthesizing, analyzing, and writing about the data
- Read and reread, listen and relisten, watch and rewatch.
- Get to know intimately what you have collected. Struggle with the nuances and caveats, the subtleties, the persuasive, the incomplete. Avoid premature judgment.

II. STEPS IN ANALYZING QUALITATIVE RESEARCH DATA

1. **Write dates** (month, day, year) on all notes.
2. **Sequence all notes** with **labels** (e.g., 6th set of notes).
3. **Label notes** according to type (such as observer's notes, memo to self, transcript from interview).
4. Make two **photocopies** of all notes (field notes, transcripts, etc.) and retain original copies.
5. **Organize computer files** into folders according to data type and stages of analysis.
6. Make **backup copies** of all files.
7. **Read** through data and make sure all information is complete and legible before proceeding to analysis and interpretation.
8. **Begin** to **note themes** and patterns that emerge.

STEPS IN ANALYZING QUALITATIVE RESEARCH DATA

(1) Becoming **familiar** with the data and identifying potential themes (i.e., reading/memoing): write **notes** in the margins or **underline** sections or issues that seem important; record of your initial thoughts and sense of the data; search for **recurring themes** or common threads.

(2) **Describing research context**: the **setting, participants** and **activity** based on collected observations, interview data, field notes and artifacts; events in chronological order; a typical day in the life of a participant in the setting; focus on **key contextual episodes**, or illuminate **different perspectives** of the participants.

(3) **Classifying**: **coding** pieces of data and **categorizing** (grouping them into themes). A category is a classification of ideas or concepts; breaking down data into smaller units, determining their import, and putting the pertinent units together in a more general, analytical form. There is no single "correct" way to organize and analyze the data. Different researchers produce different categories from the same data for many reasons, including researcher biases, personal interests, style, and interpretive focus.

III. Data analysis strategies

1. Identifying themes;
2. Coding surveys, interviews, and questionnaires;
3. Asking key questions;
4. Doing an organizational review;
5. Concept mapping;
6. Analyzing antecedents and consequences;
7. Displaying findings;
8. Stating what is missing.

1. Identifying themes

- Consider the big picture and **start to list themes that you have seen emerge in your literature review** and in the **data collection**.
- **Patterns that emerge** (events that keep repeating themselves, key phrases that participants use to describe their feelings, or survey responses that seem to match one another)
- Making a note of themes can be helpful during the first reading of the data, as part of **memoing**.
- In subsequent readings of the data, additional themes may emerge.

2. Coding surveys, interviews, and questionnaires

- Categorically marking or referencing units of text (e.g., words, sentences, paragraphs, and quotations) with codes and labels as a way to indicate patterns and meaning and to reduce your data to a manageable form.
- Record important data on **index cards**, which are manageable and allow for sorting and compiling the data in categories or themes.
- If you approach the data with preconceived categories and assumptions, **you will likely coding text units according to what you expect to find**. Conceptually, you are beginning to construct a web of relations that may or may not appear as you thought they would.
- If you approach the data with questions you hope your research will illuminate, but no clear sense as to what the findings may be, you will likely start to build themes as you read.

2. Coding guidelines

- 1. **Gather photocopies** of your original data.
- 2. **Read through all the data** and **attach working labels** to blocks of text.
- 3. Literally **cut and paste the blocks of text onto index cards** so that you now have the data in a manageable form (i.e., shuffling cards is much easier than sorting through reams of paper). Use some kind of **numbering system** so that you can track the block of text back to the original context : For example, marking the **date and time** (e.g., 1/26 10:15)
- 4. Start **to group together cards that have the same or similar labels** on them.
- 5. **Revisit each pile of cards** and see if the **label still fits** or whether similar labels warrant their own category. Seek categories that will encapsulate similar thoughts and ideas.

Examples of index cards

- Card 1. Assistant superintendent urges principals not to reinvent the wheel but to share ideas with each other as they attempt to deal with an identified problem. (In this case the problem was low test scores on the California Achievement Test [CAT].) The assistant superintendent states to the principals, "I don't want any of you to think that you are alone out there."
- Card 2. One of the principals at the meeting comments, "Clearly, the CAT does not test what we teach in our schools. The test was designed for California, not Oregon."
- Card 3. The next meeting of principals following the release of the CAT scores and the directive from the superintendent that "all schools will develop action plans to address areas of weakness identified by the test scores" does not include any discussion of action plan development.
- Card 4. A principal sums up his feelings about standardized testing as follows, "The district makes us go through a whole lot of garbage for little outcome or benefit to the teachers and the students."
- Card 5. Principals' meeting 3 months following the release of test scores and action plan mandate. Action plans were due to the Curriculum Director 7 weeks ago. Principals are instructed that they can have another 2 weeks to complete the plans.
- Card 6. The assistant superintendent announces that he will be meeting with principals on an individual basis to discuss how action plans for school improvement will be implemented. It is 4 weeks before the end of the school year, and 16 weeks since the initial directive to develop school improvement action plans.
- Card 7. One principal commented on the development of the action plan/school improvement plan, "Do I write plans of improvement just to let the central office know that it has been done so that they are satisfied and can get on with doing whatever it is that they do with all the paper work? I admit that I have written plans and never followed up on them because I'm too busy getting on with the real business of school."

3. Asking Key Questions

- Can enable qualitative researchers to "**extend their understanding** of the problems and contexts" (Stringer, 2007)
- Examples: Who is centrally involved? Who has resources? Which ones? What major activities, events, or issues are relevant to the problem? How do acts, activities, and events happen? When does this problem occur?

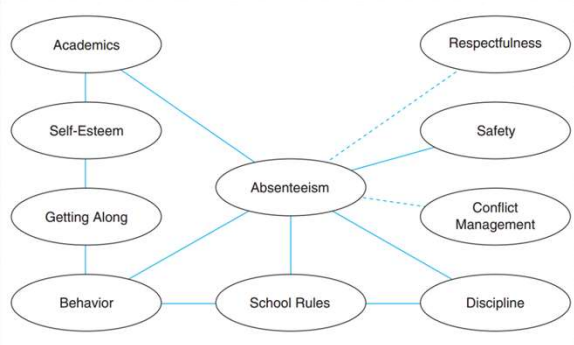
4. Doing an Organizational Review

- Education departments, school districts, individual schools, teacher unions, and other similar **organizations have spoken and unspoken rules**.
- **Educational problems are influenced by these rules**
- Taking a look at the larger organizational setting: **vision and mission; goals and objectives; structure and operation; and problems and concerns**, allows a deeper understanding of the data.
- "As participants work through these issues, they will extend their understanding of the organization and aspects of its operation that are relevant to their problems, issues, and concerns." (Stringer, 2007)

5. Developing a concept map

- Helps action research participants to **visualize the major influences** that have affected the study (Stringer, 2007). For example, what were the perspectives of the students? Parents? Teachers? Administrators?
- Gives participants an opportunity to display their analysis of the problem and to determine **consistencies and inconsistencies** that exist between the disparate groups.
- The steps for developing a concept map include the following:
- 1. **List the major influences** that have affected the study of your area of focus.
- 2. **Develop a visual representation** of the major influences (factors) connecting the influences with relationships **you know** exist (using solid lines), and influences **you have a "hunch"** about (using dotted lines).
- 3**. Review the concept map** to determine any consistencies or inconsistencies that exist between the influences.
- This forces you back to your data to see "what's missing." For example, in a study of the effectiveness of a school absenteeism policy, the researcher concluded that respectfulness, safety, conflict management, discipline, school rules, behavior, getting along, self-esteem, and academics were major indicators of success. Further, the researcher believed that some relationships (real and perceived) existed between these factors.

Concept map



6. Analyzing antecedents and consequences

- **Mapping antecedents** (i.e., causes) **and consequences** (i.e., effects) is another strategy to help qualitative researchers identify the major elements of their analysis. Using this framework provides a **visual representation** of the causal relationships that the researcher believes exist.
- The steps:
- 1**. List the influences** that emerged from the analysis for which there appears to be a causal relationship.
- 2. **Revisit the review of literature** to determine whether the analysis of the study supports, or is challenged by, the findings of previous studies.
- 3. **Revisit your data** to determine if **anything is missing** and suggest how your findings may influence future research.

7. Displaying findings

- **Summarize the information you have collected** in an appropriate and meaningful format that you can share with interested colleagues.
- **Matrixes, charts, concept maps, graphs, and figures** - these visual displays of data serve to share findings and celebrate the insights in a public forum, such as a research conference. Putting the data into a visual format can also help you see new aspects of it.

8. Stating what's missing

- Flag for the consumers of your research the **pieces of the puzzle that are still missing** and identify the **questions for which you have not been able to provide answers**.
- We should to **avoid to move beyond our data with unwarranted assertions** which may, ultimately lead to embarrassing questions about what we actually did.
- Stating what's missing allows you to hint at **what may or should be done next** in your quest to understand the findings of your study.

IV. DATA INTERPRETATION STRATEGIES

- **Goal** = to find the meaning in data.
- It is based heavily on the **connections, common aspects, and links among the data**, especially the identified **categories and patterns**.
- One cannot classify data into categories without thinking about the **meaning of the categories**.
- To aid interpretation, researchers must:
  - **make the conceptual bases** or understandings of the categories explicit
  - identify clearly the **characteristics that make each category distinct from the others**.
- Interpretation requires more **conceptual and integrative thinking** than data analysis because it involves identifying and abstracting important understandings from the detail and complexity of the data.

DATA INTERPRETATION STRATEGIES

- **Questions:**
- 1. **What is important** in the data?
- 2. **Why is it important**?
- 3. **What can be learned** from it?
- 4. **So what**?
- Interpretation is an **idiosyncratic, personal process**. As in most qualitative studies, **success depends on the perspective and interpretive abilities** of the researcher.
- Wolcott (1994) : the interpretations made by qualitative researchers matter to the lives of those we study.
- The process of interpretation is important because it can **challenge qualitative researchers' taken-for-granted assumptions and beliefs about the educational processes** they have investigated.

1. Extend the analysis.
2. Connect findings with personal experience

- 1. **Extending the analysis of the data by raising questions** about the study, noting implications that may be drawn without actually drawing them. As Wolcott (1994) suggested, "This is a strategy for pointing the way rather than leading the way".
- 2. Qualitative research is very personal business, so **it makes sense to personalize our interpretations**: "Based on my experiences in conducting this study, this is what I make of it all."
- You have to **try to make sense of discrepant events** just when you thought you had it right. **Share your interpretations** based on your intimate knowledge and understandings of the research setting.
- **Seek the advice of critical friends.** Offer your accounts to colleagues with the request that they share with you their possible interpretations. Similarly, you may ask your informants (e.g., students, parents, teachers, and administrators) for their insights.
- The more opinions you seek, the more you will receive, and often these suggestions will come with the expectation that you accept the advice. Over time you will develop **reciprocity with a cadre of trusted, like-minded colleagues** who will selflessly fulfill the role of critical friend. Take the time to build these relationships and reap the rewards they offer.

3. Contextualize findings in the literature

- **Provide support for the findings** of the study in the literature.
- **Making these connections** also provides a way to share with colleagues the existing knowledge base about a research problem and to acknowledge the unique contribution the qualitative researcher has made to the understanding of the topic under study.

4. Turn to theory

- Theory allows researchers to search for **increasing levels of abstraction** and to **move beyond a purely descriptive account**, **to communicate the essence** of our descriptive work to colleagues; can **provide a rationale or sense of meaning** to the work we do.
- Know **when to say "when"!** If you don't feel comfortable offering an interpretation, don't do it. Be satisfied with making **suggestions for what may be done next, and use the suggestions yourself as a starting point for the next research cycle**. **Restate the problem** as you now see it, and explain how you think you will fine-tune your efforts as you strive to increase your understanding of the phenomenon you have investigated.
- As Wolcott (1994) cautioned, "don't detract from what you have accomplished by tacking on a wimpy interpretation." **All researchers, and qualitative researchers in particular**, must face the prospect of **not** being able to **report all the data they have collected**. Rarely is every piece of data used in the report of a study. This reality is difficult for any researcher but may be more so for qualitative researchers because of the time and effort it typically takes them to obtain and understand their data. Remember, however, the task of interpreting data is to **identify the important themes or meanings in the data**, not necessarily every theme.

4. Turn to theory

- **Share your interpretations wisely**.
- At some time we have all been exposed to what are variously called "fads,"
- **Avoid being evangelical** about your interpretations, connect them closely to your data and analysis, and share your newfound understandings with colleagues in an appropriate manner.

V. ENSURING CREDIBILITY IN YOUR STUDY

- 1. Are the **data based on one's own observation** or on hearsay?
- 2. Are observations **corroborated** by others?
- 3. In **what circumstances** was an observation made or reported?
- 4. **How reliable** are those providing the data?
- 5. **What motivations may have influenced** a participant's report?
- 6. **What biases may have influenced** how an observation was made or reported? (Dey, 2005)

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