Demystifying the Qualitative Coding Process: Insights from a Rookie

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Abstract
The coding process is mysterious and terrifying for those new to qualitative methods. The existing guides are either highly theoretical and abstract or incredibly detailed and nuanced. Subjectivity and flexibility, strengths of qualitative coding, are challenging for those new to the process. This article is intended for the new researcher who desires coding examples and the intuition associated with each decision. Offering details on subjective decisions encountered by a rookie researcher moves away from abstract theoretical examples to practical applications and decisions that need to be made by the qualitative researcher.

Keywords
Qualitative Coding, Saturation, Qualitative Coding Examples

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Introduction

The idea of a novice researcher offering insight into the complex qualitative coding process sounds like a home chef giving Gordon Ramsay cooking advice. The insights of the home chef may be unique and unknown, but that’s highly unlikely. This article is not intended to provide deep theoretical insights for the highly experienced qualitative researcher. Instead, it seeks to demystify the coding process for less experienced researchers. While expert cooking shows produce fabulous meals, they also involve exotic ingredients and can use kitchen tools most home chefs don’t own. There is nothing wrong with learning from the expert or using exotic ingredients, but where does one purchase *chom choms*? Sometimes, learning from someone closer to your skill level is more practical. Here, I focus on the omelet, not the *soufflé*.

For new qualitative researchers, the coding process can be complex and mysterious. How does the researcher progress from the vast quantity of qualitative data to meaningful insights? The terminology alone can be overwhelming; *constant comparison, data spirals, open codes, initial codes, focused codes, selective codes, axial codes, and theoretical codes* are just a sample of terms a researcher may encounter in their first qualitative coding experience. The anxiety of incorrectly coding the information looms over the novice researcher, fearing significant setbacks in progress, embarrassing misinterpretations, and delayed degrees and publications.

With all these terms, it is easy to feel overwhelmed. It is essential to take a step back, consider the big picture, and recall the objective. While each method has its unique spin with nomenclature and process, they all work to systematically increase our understanding of the data. The process works to disaggregate large data, analyze the pieces, determine which elements are meaningful, aggregate the significant ideas into categories, and then group the categories into a
comprehensive explanation of insights meaningful to the research question. Admittedly, it is
easier said than done.

With so many different methods used in qualitative research, it is impractical to cover the
exact process for each method here. Material differences exist between any two qualitative
methods. The goal here is not to highlight which approach is most appropriate for your research
project; plenty of resources exist to help with that problem. Here, the focus is on the practical
and the useful, how the theoretical practice gets applied with real examples. The thought process
of coding is highlighted, including some actions that, upon reflection, could be considered
common sense, although it wasn’t to me. I present my mistakes as a learning opportunity.

This article assumes that you have established your research question, determined an
appropriate data collection method, and now must analyze the data collected. We are not starting
at the beginning of the research study but rather focusing on the coding process. To give
meaningful examples, it is best to use actual data and situations. This publication uses data
collected for and text revised from the author’s educational doctorate dissertation (Sandok, 2023)
to provide readers with meaningful examples of the coding process. For context, the primary
research question that the data collected was seeking to answer was, “what are the drivers that
significantly contribute to the dissatisfaction some community college students experience with
asynchronous online education?”

Transcription and Qualitative Coding

The data I collected were sourced from semi-structured interviews conducted via Zoom.
This proved exceptionally valuable for multiple reasons. First, Zoom has an automatic
transcription that, while not perfect, saves a lot of labor! It also provided far more context than I
initially recognized. When students discussed sensitive issues that caused dissatisfaction, it was
not just their words but also their body language, how vigorously they talked with their hands, their tone, and their rate of speech, which all acted as signals for the researcher to take special notice. Using the generated transcript and slowly rewatching the interview recording allowed transcription errors to be corrected and subtle comments initially missed during the interview to be noticed. A few memos were applied to the data as the transcripts were validated.

Memos

Memos do not need to be fancy; my memos were handwritten observations on the side of my printed transcript that documented ideas I wanted to reflect on or consider later. Some memos documented quotes as “said with strong emotions” or “said sarcastically,” while others highlighted potential connections, such as “could external stress cause some of the dissatisfaction?” The memos do not need to be justified, as typically, they will not be visible to others. Some memos I wrote were incorrect. One student expressed frustration with the cold, stale atmosphere of asynchronous courses and discussed getting assigned work from the “void.” I incorrectly made a memo that too much automation, such as automated email reminders and confirmation emails, could contribute to that cold environment. Later, interviewees rejected that idea.

What is the Difference between Codes and Memos?

Perhaps the distinction between codes and memos was evident to others, but for me, initially, it was like identifying a crocodile versus an alligator. They both just look the same. However, there is a difference. Codes are abstractions of the data; they summarize or analyze your information. Memos are like a journal. It is a place to make notes about ideas and potential connections. While other researchers should be able to understand the association of the codes to your data, memos are different. Memos are open ideas, concepts, reminders, or anything else that
helps you organize your thoughts. You can be creative with memos as you explore potential relationships and ideas.

**What Needs to be Coded?**

During the transcription clean-up process, I encountered my first practical challenge. The coding process is a painstaking process where word choice can reveal the level of angst an interviewee feels. Ensuring an accurate transcript is the logical first step in data analysis. As the saying goes, “garbage in, garbage out.” If the data are not clean, we cannot expect meaningful results.

The first transcript started with my reading a disclaimer to the interviewee. It is the standard you would expect, including contact information for concerns, confidentiality plans, goals for the interview, and other administrative tasks. It was time to start coding with my grounded theory bible, Kathy Charmaz’s *Constructing Grounded Theory*, by my side. Charmaz highlighted just how meticulous the process can be and suggested that coding can be done on various levels of analysis. The unit of analysis can be the word, the sentence, the statement, or the idea. Charmaz even stated that coding word-for-word “forces you to attend to images and meanings. You may attend to the structure and flow of words and how both affect the sense you make of them as well as their specific content” (Charmaz, 2004, p. 80). My interview, and thus my transcript, begins with a page of disclaimers; should I code them? At what level? While Charmaz suggests that, at times, it makes sense to evaluate word-by-word, I doubt that is what she would recommend in this situation. My disclaimer does not offer any insight from the interviewee; there is no reason to code this material. The first decision has been made!

After the disclaimer, I ask the interviewee to introduce themselves. I ask specific demographic questions such as age, interviewee’s pronouns, desired major, experience with
asynchronous online courses, and college classification (e.g., Freshman, Sophomore). The transcript provides the information sought; surely, I must code the responses, right? Why ask a question if it does not directly support the research question? This is where I made my first mistake, but fear not, the beauty of qualitative research is that coding can always, and should be, constantly reevaluated. I created numerous codes here, such as age, gender identity, classification, major, etc. Upon reflection, this information did not need to be coded. While I used that information to determine the makeup of my interviewee sample, their responses did not provide insight into my research question. No deeper context was related to my research question when the interviewee stated, “well, I’m 20 years old. I identify as a woman” (Participant_#1, 2022). Having too many codes and filtering out those that are unnecessary later is not fatal to the analysis, but it is inefficient. However, that is also the point of moving from open codes, where the researcher remains open to all ideas, to focused codes, the collection of open codes that, after reflection and learning, are important for answering the research question.

What is Accurate?

So now we are onto line number three of the first interview. I have already decided not to code my questions and started to code demographic information unnecessarily. However, we have hit the next barrier. The first few sentences together are, “I’m 20 years old. I identify as a woman. I have been taken a-sir-nick-u-lous (asynchronous); sorry, I’m gonna be butchering that word for the entire survey. I’m sorry” (Participant_#1, 2022). My interviewee has a speech impediment and cannot say the word “asynchronous.” If 1,000 random people watched the interview, I would estimate that all 1,000 could effortlessly identify what she intended to say. Do I change the transcript to what she intended or keep what was stated? Changing a quote feels like
producing fake data; it feels inappropriate. I could not find guidance on this situation in any reference book, and I panicked.

My goal is to understand the dissatisfaction with asynchronous courses from the student’s perspective. Regardless of whether she can say “asynchronous,” the essence of her responses contains the information needed. With guidance from my research chair, I changed the transcript to indicate what she intended to state. I felt it was respectful to acknowledge that I understood our conversation. Additionally, member checking, the step where the researcher asks the interviewee to confirm that the transcript accurately reflects their ideas, helps in this situation. I was simply cleaning up the transcript to accurately reflect the intended statement so the interviewee would not be burdened to alter the transcript later. I want to note that I was conscientious about avoiding changing word choices or the intended meaning of the response.

**Open Codes**

Open coding is breaking down large chunks of data into small bits of information. You can think about it as an analytical summary or an information observation. Theorists highlight the various levels of the units of analysis possible: by individual word, sentence, statement, paragraph, etc. For a new researcher, coding guides that describe selecting the appropriate level for the unit of analysis as “subjective” do not provide much insight.

Observing how the unit of analysis can vary in non-research-based settings can provide insight into why the unit of analysis adjusts situationally. Attorneys consider every word of a legislative act; a single word can change an outcome. Alternatively, a privacy terms and conditions of use notice that a cellular phone provides as a part of an update is almost entirely dismissed at the collective level. Without reading the terms and conditions, users may just scan the notification to get the gist of the alert. The same is true for codes.
While each research question and data source will make the unit of analysis “subjective,” I would suggest that you do not need to stay at one unique level throughout your analysis. I found myself looking at an entire response to an interview question, then drilling into specific word choices that I found important. Shifting between the levels of the units of analysis is perfectly acceptable.

**Coding Example**

Let us get even more concrete. How might one code the following interview segment?

In these assignment instructions, they just felt like they were coming from the void, and then I just had to do the requirements, and then I’d just send my assignment back into the void. That created almost a feeling of animosity sometimes, especially if the assignment was giving me a lot of trouble. It’s like, why are you making me do this faceless void? Stop it! (Participant_#4, 2022)

The word “void” is such a powerful word choice by the participant that I decided to keep that word as my open code. Using the participants’ words as open codes is called *in vivo* coding (Manning, 2017). I found using in vivo codes helpful to keep the lens of the participants. In the second segment of the sentence, “and then I just had to do the requirements,” I perceived a sense of obligation and responsibility, but you may have sensed a lack of engagement, motivation, or some other insight. That is OK; we will not all use the same identifier. The second sentence, “that created almost a feeling of animosity sometimes, especially if the assignment was giving me a lot of trouble,” produced multiple open codes for me, including animosity, dislike, and challenges. When I looked at the entire paragraph, I had codes of instructor-student relationship, atmosphere, cold, and communication. This highlights how the varying unit of analysis that
Charmaz encouraged for consideration can offer different codes. “Void” was a powerful word, but without context, it does not clarify the concern with frustration with incomplete information from someone unknown (lack of relationship).

Did you get different codes when you looked at the previous quote? It is very likely, and that is OK. A novice researcher should be able to have a documentation trail that shows where an open code was created, and most qualitative software have such features. A peer might not have chosen the identical code you selected but should see your code as reasonable.

Over time an open code may evolve. In my first interview, the participant discussed the benefits of having an orientation to online learning. I had initially coded that thought as “benefits from orientation.” In a later interview, the participant discussed how her lack of receiving an online orientation negatively impacted her academic experience. I had initially used an open code of “need for orientation” for this second concept. As a part of the constant comparison method, I eventually merged these two ideas. This application of the constant comparison method helps organize data into meaningful and consistent ways to allow for grouping and organization (Glaser, 1965).

**Focused Codes**

After coding the first transcript, I had almost 80 open codes. As mentioned previously, I could quickly see that some codes were too narrow and others unnecessary. While having demographic codes, such as age, gender identity, classification, and major, do not contribute to the explanation, having a single code of “demographics” allows qualitative tools to index information needed later. One code for demographics was created, and all the previous contributor codes to demographics were remapped to this master identifier.
In my research case, I asked students about the causes of dissatisfaction with asynchronous courses. Perhaps it is human nature, but every interviewee at some point compared their negative experiences with positive experiences. I noticed many open codes tied to factors contributing to satisfaction, not dissatisfaction. Again, that is OK. I grouped numerous codes into a poorly named category, “satisfaction contributors,” which allowed me to ensure that I was getting information on the opposite of each contributor (i.e., if a strong relationship with the instructor contributed positively, then I wanted to ensure I at least asked people who were dissatisfied how they perceived their relationships with their instructors). Not every code needs to contribute to the result.

**Aggregating Codes**

The qualitative researcher deconstructs large data into smaller analytical units or codes. Why are we using codes? It helps to identify repeating concepts and allows for aggregation in ways that add value to the data. In this step, we arrange the codes into meaningful categories that combine multiple ideas into a conceptual thought.

In my example, students voiced concerns over significantly delayed or incomplete feedback, which prevented them from knowing their academic progress and learning from their mistakes. Additionally, students expressed frustration when a technology incident prevented students from submitting an assignment on time. While these two ideas seem superficially at the communication and technology level, I recognized that students had developed expectations that were not being met with communication and flexibility. Expectations became my categorical code, which can be called an *axial* or *selective* code, depending on the qualitative model used. Other researchers could have created a category called *communication* and *technology*, which could have been just as appropriate. It is the researcher’s subjective call.
Confirrnability

Likely, you did not develop a category called “expectations.” Not matching other researchers’ examples makes new researchers question their research ability. One assumes that if results do not align perfectly with other researchers, then it must be wrong. It is OK if you do not match others to a degree. There is subjectivity again. One reason we may have different results is why qualitative researchers choose to do qualitative research. Creswell and Poth note, “when researchers conduct qualitative research, they are embracing the idea of multiple realities” (2018, p. 20). This ontological perspective implicitly assumes that the participants will perceive the phenomena differently. A reasonable extension assumes the researchers will also interpret data differently.

My background as an economist likely results in an internal bias toward problem-solving using the lens and tools of the economist. As the saying of debated origin goes, “if your only tool is a hammer, then every problem looks like a nail” (Quote Investigator, 2014). Your unique background and experiences will likely result in categorizations and terminology choices that vary from others. So, what should we do?

It is important to highlight any known biases and likely sources of unknown biases. This revelation of information is known as stating your positionality (Coghlan & Brydon-Miller, 2014). Of course, you cannot articulate your unknown biases, but you can likely identify key elements of your life experience that influence how you perceive the world. Stating educational training, significant life experiences, and meaningful relationships that could influence your perceptions of the phenomenon being studied allows the readers greater transparency to consider your thought process. Pilot Chelsey “Sully” Sullenberger, known best for being the captain of US Airways flight 1549 that was forced to land in the Hudson River after a 2009 bird strike,
likely has a bias on airline safety. A bias is not necessarily bad, and everyone has their own biases, but they do influence one’s perspective.

For transparency, an audit trail that demonstrates the creation of the open code, the categorization of open codes into categories, and a mapping of how the categories contribute to the theoretical elements need to be provided. Again, this is not suggesting that everyone will proceed with identical terminology and groupings. Even within my research project, I reclassified and regrouped my elements dozens of times, showing variability exists even within a single researcher. The logical roadmap provides insight to the reader on your subjective choices. Providing that insight allows the reader the information needed to evaluate your study’s conclusions and validity critically. Readers don not need to match your choice, but they need to be able to assess your decisions.

Creating an audit trail showing the relationships between each code level provides transparency in the coding process. In my example, Error! Not a valid bookmark self-reference. shows the relationships between focused codes and axial codes. Then, Figure 2 documented how the axial codes contributed to the theoretical codes. You might notice that one of the axial codes, motivation, did not contribute to any of the final theoretical codes. Much like some open codes are eliminated as a part of the focus coding process, some axial codes may not contribute enough to warrant their inclusion in the final theoretical codes. Finally, I created an audit trail with an example of each focused code, showing how the code progressed through each stage. See Figure 3 for an example of an entry from the audit trail.
Figure 1

Axial Code Development

Figure 2

Theoretical Code Development
If code elements can be grouped and reclassified almost indefinitely, when does the novice researcher know when they are finished? A researcher can always spend additional time critically evaluating their options. As Leonardo Da Vinci stated, “art is never finished, only abandoned” (Landi, 2014). The same can be said of academic research. Expect rounds of productive creativity followed by periods of multiple conceptual ideas that bear little to no fruit. Eventually, and subjectively, the researcher will fail to see the value of spending more time proposing additional options to oneself when the existing ideas adequately describe the phenomenon.

**Saturation**

Glaser and Strauss suggest that “data saturation is the point in a research process where enough data have been collected to draw necessary conclusions, and any further data collection will not produce value-added insights” (Quantilope, 2020). This subjectivity makes one recall Supreme Court Justice Potter Stewart’s famous statement from a 1964 Supreme Court opinion attempting to identify obscenity and pornography in Jacobellis v. Ohio’s case: “I know it when I see it” (Gewirtz, 1996). While saturation is ultimately a subjective decision by the researcher, it
is possible to help the novice researcher better define the idea of saturation. While no definition will be perfect, an example helps build intuition and confidence in declaring saturation.

At the highest level, saturation is the idea that additional effort to collect and analyze more data is unlikely to produce new results or change the conclusions from your current analysis state. As conclusions are drawn from data, and the primary analytical unit of analysis for qualitative research is the “code,” the abstraction of the idea obtained from your source (e.g., interview, historical record, image), we want to keep an eye on the incremental number of new codes. The first data source analyzed as “open codes” provides a wealth of new information; after all, none of the information could be duplicated from previous sources. However, if the information is being sourced from “rich” datasets that have a lot of information on your research topic, each additional source of data can only either support an existing code (which can either repeat a code or cause a slight modification of an existing code) or produce a new code. See
Figure 4. As the pool of existing codes grows, the ability for new information to be found decreases.
A clear saturation pattern is observed in the researcher’s study on identifying the drivers that significantly contribute to dissatisfaction with asynchronous online education. The additional benefits of interviewing an additional student decreased with each interview. The first interview identified 51 new codes (after some consolidation and massaging of the open codes). Each subsequent interview reiterated previously established codes while adding fewer and fewer new ones (See Figure 5). The fourth, fifth, and sixth interviews resulted in just two additional codes. The researcher’s objective was to identify significant causes of dissatisfaction with online asynchronous learning. If a concept was not identified consistently in the initial handful of interviews, it is hard to justify it as a significant or common cause of dissatisfaction. Certainly, the newly identified concern can be important to the individual student and result in framing a potential theme slightly differently, but it is less likely to explain factors that are influencing the
majority of dissatisfied students and is unlikely to shift the results substantially. As a result, when the researcher predicts that the additional incremental value of a new interview will result in only minor incremental theory improvement, saturation should be declared, and further data collection should be stopped.

**Figure 5**

*Saturation: Number of New Initial Codes by Interviewee*

In major U.S. organizations, there is a saying, “analysis paralysis,” suggesting “an inability to make a decision due to over-thinking a problem” (Chen, 2022). Qualitative analysis is no different. Searching for the ideal code on the first data source likely is not the optimal strategy. As the researcher acquires more information, codes evolve, and that perfect word choice is no longer applicable. Expect to modify your codes and groupings numerous times as you code. You will not get it correct on your first attempt; no one needs to know how many attempts it took. Do not let perfect be the enemy of good.
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