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Article

Clarifying Analysis and Interpretation in Grounded Theory: Using a Conditional Relationship Guide and Reflective Coding Matrix

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Abstract

Although qualitative methods, grounded theory included, cannot be reduced to formulaic procedures, research tools can clarify the process. The authors discuss two instruments supporting grounded theory analysis and interpretation using two examples from doctoral students. The conditional relationship guide contextualizes the central phenomenon and relates categories linking structure with process. The reflective coding matrix serves as a bridge to the final phase of grounded theory analysis, selective coding and interpretation, and, ultimately, to substantive theory generation.

Keywords: qualitative methodology, grounded theory, qualitative data analysis

Authors' note: We thank L.K. McCray for the inclusion of his doctoral work.

Introduction

Inexperienced researchers, such as doctoral students planning qualitative studies, seem to view grounded theory as a relatively easy approach to qualitative research (Bryan, 2007; Suddaby, 2006). The guidelines for conducting grounded theory research tend to be attractive to novices (Bryan, 2007). Suddaby, however, has suggested that "the methodology suffers from its apparent simplicity" (p. 639). As a reviewer for a peer-reviewed journal he observed that "many of the primary techniques of grounded theory are developmental" (p. 639) and that researcher experience with the techniques improves the quality of the emergent results.

The need for researcher experience and interpretive creativity is inherent in grounded theory (and qualitative research as a paradigm) to yield trustworthy substantive theory. Researcher depth of sensitivity toward data analysis cannot be overemphasized. Although novice researchers are looking to the literature for procedural guidance for their early forays into the field, seasoned grounded theorists are publishing descriptions of techniques that have performed well over time as the researchers gained acumen with their tradition. Publishing techniques to the extant literature submits them to the test of scholarly discussion, where they are examined and either rejected or refined. In this paper we offer the research community two qualitative data analysis techniques for critical examination.

In 2004 I introduced the conditional relationship guide and reflective coding matrix to the academic community as instruments supporting grounded theory analysis (Scott, 2004). During the 3 years since that initial publication I have received numerous national and international requests to clarify and detail the process for their use. In this paper I describe in detail the processes from the perspective of both the facilitator (doctoral adviser) and the learner (two doctoral candidates in their dissertation research). The two instruments serve as bridges during the constant comparative process as the researcher is moving between open coding and axial coding and later to selective coding. Both are firmly rooted in the traditional grounded theory of its originators (Glaser & Strauss, 1967; Strauss & Corbin, 1998). A short discussion of the instruments' genesis rooted in traditional grounded theory follows.

Grounded theory research is a qualitative tradition built on compared concepts (Glaser & Strauss, 1967). Proponents of the constant comparative method have suggested that similar data are grouped and conceptually labeled during a process called open coding. Then concepts are categorized. Categories are linked and organized by relationship in a process called axial coding. Conditions and dimensions are developed, and finally, through an interpretive process called selective coding, a theory emerges (Glaser, 1978; Glaser & Strauss, 1967; Strauss & Corbin, 1990).

There is wide discussion of the grounded theory tradition, yet the process for carrying out the analysis has remained vague (Boeije, 2002). Although a lack of specificity allows for creativity in the art and science of grounded theory research (Strauss & Corbin, 1998), it can mystify the novice (McCaslin & Scott, 2003). A large body of literature describes numerous approaches to grounded theory. Eaves (2001) has claimed that currently the state of affairs is such that adherence to the method as explicated by its originators, Glaser and Strauss (1967), is lacking. Separately, Boeije, McCaslin and Scott, Scott (2002), and Suddaby (2006) have suggested additional rigor in data analysis to increase systemization and a clear audit trail. Grounded theory focuses on comparative questions. Strauss and Corbin (1998) have suggested that grounded theory analysts work to "uncover relationships among categories . . . by answering the questions of who, when, why, how, and with what consequences . . . to relate structure with process" (p. 127) but suggested only vaguely how that is to be accomplished.

Strauss and Corbin (1998) have also suggested the use of diagrams to explain and illustrate the patterns that exist during axial coding. They proposed that illustrative diagrams can focus the researcher toward theoretical explanations of the phenomenon under study. In this paper we present two instruments that use matrices in place of diagrams to facilitate the comparative, investigative questioning and the inherent grounded theory creativity. The first instrument is the conditional relationship guide, which specifically engages Strauss and Corbin's investigative questions. The second is the reflective coding matrix, which serves as a relational bridge from the analysis of axial coding to the interpretation of selective coding. The reflective coding matrix depicts the narrative story line and guides substantive theory generation.

Strauss and Corbin (1998) claimed, "Analysis is the interplay between the researcher and the data" (p. 13). A researcher espousing the constructivist grounded theory paradigm addresses the participants' ecology (McCaslin & Scott, 2003) and the meanings participants confer on their realities (Charmaz, 2000). A constructivist paradigm also finds a strong voice in adult education (Merriam & Caffarella, 1999) and learning theory (Mezirow, 1991), which is also our background. Viewing the data through the participant perspective and attributed set of meanings is emic, whereas viewing the data through researcher-established criteria is etic (Creswell, 2007). The instruments presented here work well regardless of researcher perspective as long as the perspective remains consistent. Charmaz (1994) suggested,

> The researcher constructs theory from the data. By starting with data from the lived experience of the research participants, the researchers can, from the beginning, attend to how they construct their worlds. That lived experience shapes the researcher's approach to data collection and analysis. (p. 68)

Although my preference is emic, staying close to the participants' meanings, either researcher perspective works well with Strauss and Corbin's (1998) relational investigative questions and therefore with the conditional relationship guide as well.

To discuss specific applications for the conditional relationship guide and the reflective coding matrix as instruments for assisting novice grounded theory researchers in engaging relational questions in constant comparison, we will use as examples two dissertation studies advised by one of the coauthors (Howell, 2006; McCray, 2004). In each grounded theory study data were collected via semistructured interview protocols used in audiotaped interviews that were transcribed verbatim prior to analysis.

Data analysis of two example studies

Glaser and Strauss (1967) and Strauss and Corbin (1990) have called for open coding as the initial phase of grounded theory analysis. In the experience of one of the authors as a doctoral dissertation adviser, students seem to understand and manage open coding relatively well. It is during axial coding and selective coding (Strauss & Corbin, 1990, 1998), where constant comparison is engaged, when anxieties arise related to the best way to proceed with data analysis. Constantly comparing categories helps the investigator understand the construction of interrelationships, but stepping to this higher level of abstraction can challenge the novice. In the experience of one of the coauthors, novice researchers such as doctoral candidates tend to struggle with distinguishing and interpreting relationships and patterns.

In the remainder of this paper we will focus on creating a conditional relationship guide, a method for discovering those patterns that contextualize a central phenomenon and the

relationships among the categories from which those patterns are constructed. From the guide a researcher can construct a reflective coding matrix, as described by McCaslin (1993), leading toward a story line and emergent theory, graphically depicted in a conditional matrix (Strauss & Corbin, 1998).

Conditional relationship guide

When grounded theory analysts code reflectively, we are acting very much like investigative reporters, asking the questions what, when, where, why, how, and with what result or consequence (Strauss & Corbin, 1998). Answering these questions assembles the loose array of concepts and categories we labeled and sorted in open coding into a coherent pattern. The constant comparative nature of the questions ensures that our patterns are not merely two-dimensional pictures of the participants' realities but, rather, the much more complex, multidimensional constructivist ecology revealing each participant's character in a group portrait. Asking and answering these investigative questions also allows for a fourth dimension of time (ongoing process) to be included. Our portrait must be dynamic within its ecology. Although the study reports record snapshots in time, the participants of our example studies continue to interact with their realities. Strauss and Corbin have referred to that dynamic element as *process*.

Understanding the relationships among emergent categories is not intuitive. McCaslin (1993) suggested developing a reflective coding matrix at this point in the analysis. For novice researchers such as doctoral students to understand both the art and science of grounded theory analysis (Strauss & Corbin, 1998), a more specific method for understanding the relationships among the categories can be helpful.

Let us consider two example studies in which doctoral students were guided by Strauss and Corbin's (1998) investigative questions via a matrix called a conditional relationship guide (see Table 1). In the first example Howell (2006) studied nine occupational therapy students from four interdisciplinary collaborative learning programs at three universities who had participated in collaborative learning with students from other allied health disciplines, to discover a theory that explains the interdisciplinary collaborative learning process. In the second example study, to discover a theory that explained strategies that influenced men and their behavior in a rape culture, McCray (2004) studied 18 college men at three universities who had taken part in rape prevention efforts (i.e., general presentations, men's groups, and campus rape prevention awareness campaigns). Both studies were approved by the University of Idaho Human Assurances Committee. I (Scott) served on the doctoral committees of both studies, as committee chair for Howell's study and as a committee member for McCray's, and was consulted by each specific to managing axial coding. In Howell's words,

> While Strauss and Corbin (1998) describe the theoretical foundation of axial coding and to some extent offer procedural advice on how to perform axial coding, the process of how to move from open coding to axial coding was not entirely clear to me. To provide more structure, I implemented the Conditional Relationship Guide developed by Scott (2004). . . . This method also began to help the dimension of time, or process, to emerge, and moved the concepts from a flat, linear conceptualization to a more complex pattern of understanding. (p. 83)

The conditional relationship guide is completed by selecting a category and placing the category name in the far-left column. Ultimately this process will be completed for all categories identified in the study. The format is designed to ask and answer each relational question about the category named in the left column.

Table 1. Conditional relationship guide example categories from Howell (2006) and McCray (2004)

Conditional Relationship Guide						
Category	**What**	**When**	**Where**	**Why**	**How**	**Consequence**
Howell (2006) *Bring ideas together*	Process of each discipline sharing their ideas with one another	Collaboration Brainstorming Disagreement Creating goals for treatment Group process	Teams (groups and partners) Informal meetings Work outside and inside of class Safe environment	Educated opinions Need practical information Problem solving Steps to generating outcomes Stretches my understanding	Contribute Present ideas Support good ideas Use the idea Let the idea evolve Not being self-centered in your ideas	Open to new ideas
McCray (2004) *Characteristic presentations*	Covered basic information Covered legal guidelines Some things clarified No means no	Presentations once a semester Once a year Freshman year	Fraternity houses Lecture halls Team meeting rooms Classes	Provide rules and regulations Meet requirements Increase knowledge, attitude, behavior	Lots of facts Pretty hard hitting In-your-face details Basically lecturing us Utilization of shock factor	The whole spectrum of feelings is present. Too much info not enough solutions. Minimal impact

- *What* is [the category]? (Using a participant's words helps avoid bias)
- *When* does [the category] occur? (Using "during . . ." helps form the answer)
- *Where* does [the category] occur? (Using "in . . ." helps form the answer)
- *Why* does [the category] occur? (Using "because . . ." helps form the answer)
- *How* does [the category] occur? (Using "by . . ." helps form the answer)
- With what *consequence* does [the category] occur or is [the category] understood? (Scott, 2004, p. 204)

An exemplar of Howell's (2006) 33 primary categories is Bring Ideas Together, so the question to be asked would be What is Bring Ideas Together? The category was defined by the participants (emic) through the compilation of responses during data analysis as "the process of each discipline sharing their ideas with one another" (p. 84). It works to either paraphrase the participants' collective definition or to use the words of a specific participant that seem to capture the collective intent of all participants who contributed to this category. In this case Howell provided a collective definition; however, for most categories the words of a specific participant were used to avoid researcher bias and the possibility of blending researcher meaning with that of the participants. McCray's (2004) study of strategies that influenced men and their behavior in a rape culture yielded 74 primary categories, one of which was Characteristic Presentations. For the conditional relationship guide McCray's first question was What were Characteristic Presentations? "Characteristic Presentations were described by participants as the typical campus presentations. These presentations covered basic information, legal guidelines, clarified some things, and basically relayed the message that 'no means no' " (p. 82). McCray used etic (researcher) definitions "only when participants' words were not clear, such as when using slang or when speaking of concepts that could only be understood by hearing the full context of the conversation" (p. 82).

Howell's second question was When does Bring Ideas Together occur? (Notice that it helps to use the word *during* in the answer to "when.") Howell (2006) found that "it occurred during brainstorming, collaboration, disagreement, creating goals for treatment, and group process" (p. 84). McCray (2004) found "*Characteristic Presentations* occurring at various times throughout the year and in their careers such as once a year, once a semester and/or during their freshman year" (p. 83, italics in originals of all quotations). Notice that answering these relational questions for a concrete concept like Characteristic Presentations can be more straightforward than for an abstract concept like Bring Ideas Together. It is important for the researcher to identify a perspective, based on an understanding of the data as a whole, and then maintain that perspective or way of thinking about the category through all six relationship questions. It is similarly important to be consistent with regard to the researcher's perspective on the investigative questions themselves. Does "when" consistently refer to a time or to a condition evoking a response or to something else? As unintended drift occurs with inconsistent treatment of the investigative questions, thoughtful planning is important in maintaining the purpose of the questions.

The third question for Howell (2006) was Where does Bring Ideas Together occur? (Using the word *in* helps to form the answer to "where.") Bring Ideas Together occurs "in teams (either with a group or a partner), in informal meetings, while working inside and outside of the classroom, and in a safe environment" (p. 84). McCray (2004) reported, "*Characteristic Presentations* occur in "various venues such as fraternity houses, lecture halls, team meeting rooms and classes" (p. 83). Note that another researcher might answer these questions from another perspective selecting different data. Howell describes struggling between the two questions *when* and *where*. She explains, "For example, *bring ideas together* could occur *during* brainstorming (when), or *in* a brainstorming session (where). I overcame this difficulty by asking myself, "What do the

participants really mean?" (p. 85). Maintaining a consistent emic (participants' reality) perspective helped her distinguish between the two questions. Protocol variability among researchers is inevitable; however, each researcher should purposefully determine an approach and make protocol decisions consistently to maintain study integrity and trustworthiness.

The fourth question Howell (2006) asked was Why does Bring Ideas Together occur? (It helps to begin with *because* in answering this question.) *Bring Ideas Together* occurred because participants "had educated opinions they wanted to share with others, and they also noted that their need for practical information and problem solving led to them to share ideas with one another" (p. 85). McCray (2004) found, "*Characteristic Presentations* occur "because there was a need to provide rules and regulations, meet requirements, such as in mandatory instances and to increase knowledge, attitude and behavior" (p. 83). He noted that the words *knowledge* and *behavior* were researcher clarifications that were later verified with the participants.

Notice that the when, where, and why questions identify contextual conditions and boundaries. The fifth question, asking how, identifies actions and interactions among the categories, including the notion of dynamic process over time. It is this last question that provides the depth that leads us to the participants' mode of understanding the consequences. (Using the word *by* helps form the answer to this question.) Howell's (2006) participants suggested that Bring Ideas Together occurs by contributing or presenting ideas, by supporting good ideas, and by using an idea (p. 85). In our second example study, McCray (2004) found, "*Characteristic Presentations* "are 'pretty hard hitting' delivered by providing lots of facts, in your face details and utilizing the 'shock factor.' All of this was summarized as 'basically lecturing us'" (p. 83).

The sixth and final investigative question Howell (2006) asked, "With what Consequence does *Bring Ideas Together* occur or with what Consequence is *Bring Ideas Together* understood"? Howell describes this question as exceptionally challenging "because it required me to reflect on the overall meaning of the entire category, and to compress it into a tight, concise, clarifying concept. This step was critical in capturing the participants' true meaning" (p. 85). The consequence of Bring Ideas Together was "*open to new ideas*. . . . This was a benefit of interdisciplinary collaborative learning" (p. 85). McCray (2004) found the question, with what consequence is Characteristic Presentations understood, answered by his respondents' data in two ways: " 'The whole spectrum of feelings are present' (which led to confusion) and 'Too much information, not enough solutions' " (p. 84). McCray describes stepping back and asking, "What are participants saying about how *Characteristic Presentations* are influencing them" (p. 84), which led him to summarize the consequence they experienced abstractly as Minimal Impact.

Responses to the six investigative questions may be categories, such as Minimal Impact. Many times a few categories are listed multiple times in response to the Consequence question. Considering the importance of the Consequence (mode of understanding) for the participants, those categories emerging as multiple Consequence categories in the guide become primary categories with regard to relationships and linkages to the other categories.

Howell (2006) found that by working through the questions with each of her 33 categories as she placed them on the conditional relationship guide she was able to "construct meaning from the linear open codes and categories" (p. 86). As she maintained a constructivist approach, her categories nearly all held an emic (participant) view. Howell rigorously worked and reworked the data through multiple iterations before she constructed a configuration that made sense every time she viewed it. She describes "alternat[ing] between open coding and axial coding frequently, by returning to open coding to expand the codes, and returning to [her] major category list to rework the categories" (p. 85).

Now that we have developed relationships among our study categories with the use of the conditional relationship guide, it is time to look closely at those relationships for patterns that support a central phenomenon. The reflective coding matrix is useful for developing a central phenomenon and a story line explaining its dimensions and conditions. The Consequence categories emerging on the guide are the first to consider for developing a central phenomenon using the reflective coding matrix (see Tables 2a and 2b). Those categories in the guide that are not Consequences are likely to be dimensions of Consequences and therefore likely to be dimensions on a reflective coding matrix. Again, it is important to mention the art of this process (Glaser & Strauss, 1967; Strauss & Corbin, 1998). Subjectivity is one reason for applying crystallized verification (Richardson, 2000) of the emergent relationships with data collected in various forms. It is also a reason for the highly recommended practice of memoing (Glaser & Strauss, 1967; Glaser, 1978) or journaling (Richardson, 1994). McCray (2004) suggested that his memos for axial analysis "indicated [his] thought process for categories" (p. 84) placed on the conditional relationship guide. Memos during this phase of analysis are invaluable both during analysis and later in report writing.

Reflective coding matrix

The conditional relationship guide identifies the relationships and interactions of the categories one with the others and also describes how the consequences of each category are understood. We will focus primarily on the group of Consequence categories to move forward to the next phase of analysis. The emergence of these key properties and modes of understanding the consequences is an indicator that we are reaching theoretical saturation (Glaser, 1978). Tables 2a and 2b are examples of the reflective coding matrix, a tool to depict a story line of the many patterns discovered in the conditional relationship guide.

A primary objective of constructing a reflective coding matrix as a relational hierarchy is to develop and contextualize the core category, the central phenomenon about which all other major and minor categories relate (Strauss & Corbin, 1998). Once a core category is identified, all other categories become subcategories. The subcategories in the relational hierarchy become the core category descriptors: the properties, processes, dimensions, contexts, and modes for understanding the consequences of the central phenomenon of interest. The method for identifying the reflective coding matrix descriptors begins and is contingent on the relationships established by the conditional relationship guide.

The reflective coding matrix is ultimately designed to paint a picture of the central phenomenon, defining and describing it in a manner sufficient to account for the study data holistically as a narrative or story explaining the substantive theory of the central phenomenon. The core category is intended to name the central phenomenon. There are many possible approaches to developing the core category. The approach both researchers of our example studies took was to step back to gain a more holistic constructivist perspective of the data. Howell (2006) described her first step in constructing the reflective coding matrix as identifying "the essential processes, defined as action or interaction of the category" (p. 101). She identified 33 consequences, and selected 13 that could be considered a process (she desired to begin with "Processes" on the reflective coding matrix template; however, other researchers may choose to start elsewhere on the template). Howell then narrowed the list by comparing each process candidate with the other descriptors (properties, dimensions, contexts, and modes of understanding). She states,

Table 2a. Reflective coding matrix example from Howell (2006, p. 106)

Reflective Coding Matrix					
Core category	***Learning in a culture of mutual respect among disciplines***				
Processes (action/interaction)	Representing the profession of occupational therapy (OT)	Holding your weight	Solving problems	Working as a team	Learning
Properties (characteristics of category)	Value the unique perspective of OT	Confidence	Open to ideas	Efficiency	Ownership
Dimensions (property location on continuum)	OT not well recognized Sense of responsibility Educate about OT Knowledge of your own field Define yourself Want respect from other disciplines	Gauge the feel of the group Learn personal styles of communication Leadership skills Team skills Equal participation Pecking order	Bring ideas together Think out of the box Help each other Disagreement Can't change thinking Acceptance	Work well with teammate Time management Share time Respect of others Support Give feedback	Open to making mistakes Push boundaries Not always knowing Become more knowledgeable Learn from each other Individual learning
Contexts	Building respect	Balancing the playing field	Establishing mutual goals	Being on the same page	Getting the most out of the experience
Modes for understanding the consequences (process outcome)	Understand other perspectives	Awareness of professional self	Trust the process	Enjoy collaboration	Learn to work on a team in practice

Table 2b. Reflective coding matrix modified example from McCray (2004, p. 102)

Reflective Coding Matrix						
Core category	***Connecting men to new ideals***					
Processes (action/interaction)	Disassociation	Connection	Provoking thought of new ideals	Dynamic struggle	Continuous exposure	Programming
Properties (characteristics of category)	Against the flow	Personal relevance	Motivation	Individual variance	Confirmation	Effectiveness
Dimensions (Property location on continuum)	Adverse reactions Moral foundation Dynamic manhood Content with who you are Right to vocalize sex Unequal responsibility Preconceived assumptions Seeking confirmation/ support	Men as the primary focus Empathy for women Sharing experiences External influences Stimulating levels of reflection Increased awareness Positive reactions	Redefining manhood Attitude influence Need for training Practicing skills Taking action Men's groups Involved in the movement Outreach	Continuous struggle Levels of contribution (every man comfortable contributing to a level) Situational caution Recognizing opportunity for action Presenter anxiety Radical feminist confrontations Feeling unappreciated Message weakening	Ingraining messages Motivation Seeking support Witnessing reactions Increase strength/ capacity Interaction Sharing experiences Fulfillment and retention	Mandatory participation Presenter competencies Ideal environment Comfort for openness Positive challenges Demonstrating consequences Alcohol as a factor Including women's view Using skits, plays Addressing power imbalances Interaction
Contexts	Dynamic struggle Minimal impact	Applicability	Buy-in	Message weakening	Reassurance	Comprehensiveness
Modes for understanding the consequences (process outcome)	Feeling singled out	Maintain interest	Behavior influence	Lack of appreciation (lack of confirmation)	Comfort	Influence

> It was a process of reflection about how each descriptor helped to understand the process, and consequently, the core category. After many tries, I narrowed the list of processes to five: *holding your weight*, *representing field*, *problem solving*, *learning*, and *working as a team*. These processes represented the main actions that the participants engaged in during interdisciplinary collaborative learning. (p. 102)

During this process the researcher is likely to identify for early placement on the reflective coding matrix certain "low-hanging fruit" categories that just seem to make sense in one descriptor block or another. For example, the subcategories set aside earlier are likely to continue to become dimensions, though it might not yet be clear in which columns specifically they will finally reside, and it is possible that a few will yet emerge as primary categories. The researcher continues to set the possible dimension categories aside to work with primary categories. Howell (2006) began with processes as, arguably, the easiest descriptor to work with first (taking advantage of low-hanging fruit). As is typical, the "processes" to fill the process blocks on the matrix were identified among Howell's primary (Consequence) categories. She specifically looked for consequences involving action and procedure qualities, and tried each in the process blocks of the matrix. The processes guide the construction of the matrix and are pivotal to the construction of the story line. As contexts connote the environment or ecology of the processes, the researcher should aim to notice consequences that seem to describe the ecology of one of the processes placed on the matrix previously and place that consequence in the context block located in the column of the corresponding process. The researcher continues this process until all of the data are placed in a way that best explains them.

Identifying the reflective coding matrix descriptors is rather like putting a jigsaw puzzle together, trying a piece at a time through multiple iterations until all of the pieces form a narrative picture that fits with verisimilitude as perceived by the researcher, the participants, and the extant literature. Next the researcher identifies which of the primary consequence categories is the mode for understanding the consequences of a core category. As with the context, there should be a good fit with the process. Early in the process it might seem that some selected categories fit in multiple descriptor blocks. Howell states, "I constructed several blank matrices, and tried many different combinations until each column made sense" (p. 102). The researcher's artistic creativity gains sensitivity as the categories are arranged and rearranged with subsequent iterations, steeped in the researcher's understanding of the data. The descriptor properties, defined by Strauss and Corbin (1998) as characteristics of the core category, are overarching and more abstract than the processes. As such, properties are often left for last as they describe the character of the processes, context, and mode of understanding depicted in that matrix column.

At this stage of analysis it is time to make an educated guess at what the core category might be and place it in the appropriate block on the reflective coding matrix. The core category is the one category or category-hybrid that all other categories describe. Strauss and Corbin (1998) have suggested that the core category should appear frequently in the data and that the data clearly fit without being forced. Howell (2006) examined her list of 33 consequences purposefully searching for a potential core category. She states,

> One consistently made sense: *build mutual respect*. As I examined *build mutual respect*, I realized that it did fit the Strauss and Corbin (1998) criteria. Although not expressly mentioned more than once as a consequence, the core word of *respect* had been identified as part of five separate codes, and had also emerged as a major category. Working with the concept of respect was the only concept that I did not have to force to fit, and I could see that all other categories related to it. (p. 103)

In determining a core category, McCray (2004) found two major categories listed as consequences on the guide: Connection and Provoking Thought of New Ideals. He first selected Levels of Connection as a placeholder and continued filling categories on the matrix. McCray states that he realized,

> For men, the ideals of rape prevention efforts were new ideals or as men described "went against the flow" . . . in order for men to be receptive, and maintain interest, they needed some level(s) of connection. The participants were really describing the phenomenon of *Connecting Men to New Ideals* and *Levels of Connection* was part of this. Consequently, the idea of *Levels of Connection* led to development of the property *Individual Variance.* (p. 99)

McCray identified the core category as Connecting Men to New Ideals. With the core category block filled, we can fill in any empty blocks with categories that we have reason to believe might work and verify that each sufficiently supports the core category and the process in that column. This iterative process weaves continually back to the open coding and back further to the data and the literature to sort and verify relevance and fit. In addition, both authors used extensive memoing during data analysis, which provided further direction for identification of the core category and an improved understanding of the relationships among the data.

Now the researcher is advised to observe of the order of (relationship between) the columns on the reflective coding matrix, looking specifically at the flow of the processes from one to another beginning with the process in the leftmost column and proceeding from top to bottom while moving from left to right. Each column to the right flows from and builds on those to the left such that the participants' story is understood only through the evolution.

To satisfy themselves that the process and the picture was complete, both Howell (2006) and McCray (2004) took time arranging and rearranging the categories and columns on the matrix until a story line that fit the data and the extant literature could be read left to right. Howell describes the experience:

> It was necessary to move columns into new positions to make the story effective. It was also necessary to continue working on the core category. . . . Participants described wanting to have a relationship built on respect among all disciplines, and much of their collaborative process revolved around trying to accomplish some level of respect. However, I realized that respect meant little to the participants if it was not accompanied by learning . . . [which] fit the criteria of a core category as expressed by Strauss and Corbin (1998). I decided to expand the wording of the core category to . . . *learning in a culture of mutual respect among disciplines*. (p. 104)

The next and final phase in the grounded theory analytical process, selective coding, includes integrating, interpreting, and refining the theory (McCaslin & Scott, 2003; Strauss & Corbin, 1998). During the selective coding phase we develop the story line and interpret the emerging theory.

Interpretation and theory

Selective coding, the final coding phase, integrates all the interpretive work of analysis. The primary objective of selective coding, to explain the story line (Strauss & Corbin, 1998), is advanced through the work of establishing categorical relationships via the conditional relationship guide and the reflective coding matrix. Through those two instruments the researcher has asked and answered questions of the data to describe the central phenomenon structure and to

discuss its process as it exists dynamically in its ecology. As with open coding and axial coding, there is considerable overlap between the analysis of axial coding and the interpretation of selective coding analysis. During axial coding in the example studies the researchers asked and answered, What is the central phenomenon? Refinement occurs during selective coding with the deeper question, In the participants' perspective, how does this phenomenon proceed, with what variability and what conditions, in both macro and micro environments? The reflective coding matrix reveals the story.

Development of the story line

The remainder of the selective coding process entails refining the order and sequence of the categories, always maintaining the central phenomenon at the heart. The conditions and dimensions of the core category are more fully developed at this time, and the threads are developed to reflect the variability and boundaries of the central phenomenon.

In the example studies the conditional relationship guide and the reflective coding matrix facilitated development of categorical relationships and patterns were revealed that led to a cohesive, trustworthy story line. The reflective coding matrix, read from left to right, describes the participants' story of the central phenomenon. Howell (2006) states,

> I used the Reflective Coding Matrix as a guide to develop the storyline. Each concept on the matrix, including processes, properties, dimensions, contexts, and modes of understanding the consequences helped me to articulate the core category of *learning in a* culture *of mutual respect among disciplines*. The story is told . . . beginning with the five processes of *representing the profession of OT*, *holding your weight*, *solving problems*, *working as a team*, and *learning*. Each process is described and supported with statements from the participants. (p. 108)

McCray (2004) describes a similar experience with moving from reflective coding matrix to story line:

> The Reflective Coding Matrix was valuable in helping to fully develop the properties, processes, dimensions, contexts and modes for understanding the core category of *Connecting Men to New Ideals*. The matrix clearly displayed as described by participants that connecting men to new ideals involved six related phenomena or processes. . . . *Disassociation*, *Connection*, *Provoking Thought of New Ideals*, *Dynamic Struggle*, *Continuous Exposure* and *Program Effectiveness*. As these major processes, their contents and variability's became clear, so did the story line. It was as simple as reading the matrix from left to right. Each process of the story was verified with informant's words. (p. 104)

Through providing trustworthiness of the story line, emergent theory is largely accomplished. Again, Howell (2006) explains,

> As I described the storyline, my depth of understanding about the collaborative learning process between an OT student and other allied health students deepened. I began to conceptualize a theory of effective interdisciplinary collaborative learning as a progression of learned skills. (p. 142)

McCray (2004) concludes,

> Summarizing the story line to explain the process of effective programming naturally moved me to a more abstract depiction of the story that prepared me to identify the emerging theory. In analyzing the data this way, I observed that every participant in the study talked about the need for connection prior to any exposure of new ideals. (p. 130)

Each researcher constructed a conditional matrix based on his or her study's reflective coding matrix that serves as a model representing the emergent theory.

Summary

Relating the categories in grounded theory analysis weaves together all of the threads unraveled during open coding and names the central phenomenon of the study. This higher level of analysis views the data holistically and develops clear relationships among the categories. We discussed two principal instruments for developing those relationships, explained via the Howell's (2006) and McCray's (2004) example studies. The conditional relationship guide related the structure with the process by answering the investigative questions what, when, where, why, how, and with what consequence. The conditional relationship guide provides the researcher with an understanding of relationships among the categories necessary to complete the second tool, the reflective coding matrix, which captures the higher level of abstraction necessary to move to the final phase of grounded theory analysis, selective coding and interpretation of the theory in a story line. Together, the conditional relationship guide and the reflective coding matrix provide a bridge from analysis to interpretation and ultimately to emergence of a substantive theory.

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