Grounded Theory Approaches:
A Comprehensive Examination of
Systematic Design Data Coding

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Abstract

This study focuses on Grounded Theory, which is one of the qualitative research designs. Glaser and Strauss developed the Grounded Theory; it has been revised by other scientists, resulting in three distinct Grounded Theory approaches: the systematic design (Corbin and Strauss approach), the classical design (Glaser approach), and the constructivist approach (Charmaz approach). This research aims to discover the key characteristics of grounded theory through a comprehensive examination of these three methods and to show the systematic design in depth. In Grounded Theory research, the systematic design is favoured above other designs, so it is essential to understand the application steps carefully. As a result, the systematic design, which is similar to other designs in terms of fundamental characteristics, exhibits coding stage variances. In this regard, it is intended that the study will alleviate ambiguity in Grounded Theory research, particularly during the coding phase.

Keywords: Grounded Theory, Systematic design, Classic design, Constructivist approach, Data coding.

Introduction

Scientists have always been fascinated by people's perceptions, interpretations, and thoughts regarding their environment, social and cultural lives, situations, and occurrences. The paradigms of scientific study are classified in several ways. One of them is the positivist paradigm, critical paradigm, and hermeneutic paradigm classification. The first of these classifications is quantitative the others are approaches used in qualitative research.

In recent years, qualitative research has begun challenging the positivist paradigm's dominance, which seeks the ultimate truth. Attempts are being made to interpret, through a qualitative study, the facts and ideas disregarded by positivism. Instead of relying on existing theories and hypotheses, qualitative research methods attempt to explain social realities based on the individuals and interpersonal interactions that reveal these truths. Numerous research designs, including grounded theory, ethnography, phenomenology, case study, and action research, are utilized in qualitative research. The grounded theory of these research patterns is the focus of this study.

Glaser and Strauss developed grounded theory, although it was later amended by several scientists. As a result, in GT, three distinct designs emerged: I systematic design (Corbin and Strauss approach), (ii) classical design (Glaser approach), and (iii) constructivist approach (Charmaz approach). Corbin and Strauss' systematic pattern; preset categories to associate categories with one other; it also employs assumptions to make visuals and connections evident. In contrast, the Glaserian classical pattern attempts to study social reality without preset classifications. Charmaz's constructivist method, on the other hand, falls somewhere in the midst between systematic and classical design. A constructivist approach challenges the notion of measured objective reality, arguing that meaning develops from interactions between persons rather than passively and ineffectively waiting to be discovered in objects. Although these patterns differ in practice, they all share the following characteristics: I process approach, (ii) theoretical sensitivity, (iii) theoretical sampling, (iv) continuous comparative analysis, (v) core category, (vi) theoretical note (memo) writing, and (vi) production (elik and Ekşi, 2015). These eight traits, along with the similarities of the three patterns, indicate the overall characteristics of GT and the concepts that should be understood about the theory. As a result, the concepts that are crucial in GT have been investigated by incorporating these features and are provided under the following title.

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Furthermore, distinct coding methods were discovered in the literature research among the three patterns in the data analysis. The classical pattern, for example, consists of the steps I open coding, (ii) theoretical coding, (iii) continuous comparative coding, and (iv) selective coding (McDonald, 2001). The constructivist method includes I initial coding, (ii) focused coding, and (iii) theoretical coding (Charmaz, 2006). The systematic pattern employs I open coding, (ii) axial coding, and (iii) selective coding (Corbin and Strauss, 1990).

However, due to the constraints of this research report, precise coding types for all of these patterns are not possible. According to Creswell (2012), Corbin and Strauss' systematic design comprises plainly recognized steps and is often utilized in GT research. As a result, it is critical to thoroughly read the application phases. In this regard, it is anticipated that the research will add to the body of knowledge. First, the definition and theoretical framework of Grounded Theory are discussed below, followed by the historical evolution. The basic elements of the grounded theory, as well as the basic concepts associated with the theory, are next analyzed. Finally, in accordance with the goal of this study, Systematic Grounded Theory and systematic design data coding were thoroughly studied.

Grounded Theory: Definition and Theoretical Framework

Grounded theory (GT), also known as theory formation, grounded theory, sub-theory, implicit theory, grounded theory, and structuring theory in the literature, is a theory that explains how to create a theory from systematically collected data (Kaya, 2015), particularly in psychology, education, and medicine. It is a commonly utilized research method (Mills, Bonner, & Francis, 2006).

The primary goal of research conducted from a positivist perspective is to verify or reject current theories. Qualitative research aims to establish new theories (Çelik & Ekşi, 2015). GT is a methodological technique that derives theory directly from knowledge, bridges theoretical and practical unknowns, and gives researchers a more liberating perspective (Goulding, 1998, cited in Çelik and Ekşi, 2015).

GT is the process of developing a theory using an inductive approach based on data collected while investigating a phenomenon (Corbin & Strauss, 2008). According to Goulding (2002), GT is a strategy that explains behaviors and the consequences of behaviors to extract and convey the theory that is grounded in the data intelligibly. Creswell (2012), on the other hand, defined GT as a qualitative research approach employed when a systematic theory or process relating to a genuine issue needs to be revealed systematically. Many researchers use GT to extract previously unknown theories grounded in data (Sonmez and Alacapnar, 2013); a method used when one wants to create a theory, change a theory, or develop a general abstraction about a process, people's actions, and interactions (Anderson, 2007); a method that allows solving the puzzle in the data collected from the research field by providing a set of systematic and flexible instructions and examples.

Quantitative research was not able to respond to any study in the field of sociology, and GT emerged as a result of the search of these researchers (Çelik and Ekşi, 2015). The theory is one of the research methodologies utilized when more specific facts, explanations, and a theory are required to examine any social issue. Rather than imposing the truth under study on an existing theory, GT is one of the systematic and comparative qualitative research approaches used to construct a theory that may explain reality most exactly and consistently feasible (Creswell, 2007). GT is both a method and a methodology, according to Balc (2015). It is a method since research can be conducted as a standalone application of GT. GT is a design because it can be used as a data collection approach with or without other data collection techniques.

GT seeks to derive theory from evidence acquired through interviews, observation, or document analysis, which distinguishes it from other methods of qualitative research (Glaser & Strauss, 2006). This is not the only element that distinguishes GT from other qualitative research approaches. Table 1 summarizes the discrepancies found in Charmaz (2006) and Creswell (2013) research.

Table 1. Grounded Theory Compared to Other Qualitative Research Methods

	Other Qualitative Research Methods	**Grounded Theory**
Data collection and analysis	The process of collecting and analyzing data is made up of a series of steps that are connected and go in a straight line.	Data gathering and analysis (as well as theory development) are carried out concurrently.

Creation and coding of categories	Hypotheses that have been tried before or that were made at the start of the research are used to make categories, which are then used to code the data.	Data is used to creating categories. The coding procedure begins immediately after the first meeting) without waiting for the categories to form.
Coding purpose	Coding is done to reach the themes.	Coding is used to get to the theory.
literature review	The literature is examined before data collection, and a theoretical framework is created.	A preliminary review of the literature is carried out. However, the researcher disregards the concepts gleaned from the literature. The literature, however, is carefully examined once the data has been processed and the linkages between the data have been considered.

Source: Based on research by Creswell (2013) and Charmaz (2006).

GT differs from other qualitative research designs in steps such as the activities performed during data collection and analysis, the creation of categories and the path followed during the coding process, the coding process's purpose, and the literature review's length, as shown in Table 1.

In addition to the differences listed in Table 1, GT focuses on theory development at each stage of data collection and analysis, enables comparisons by employing the "continuous comparison method" at each stage of analysis, and is used to determine the characteristics of the categories, their similarities and differences, from the initial meeting to the report writing. It is a qualitative research technique that permits drafting theoretical notes (memo) that outline the key paths of inquiry (Charmaz, 2006). According to Sonmez and Alacapnar (2013), both qualitative and quantitative research methods are utilized in the GT. According to the researchers, the qualitative research approach is utilized to acquire the data, and then the quantitative research method is implemented.

As with other forms of qualitative research, the theory employs an inductive methodology and attempts to make meaning of the data (Merriam, 2013). Attempts are made to interpret the examples in light of the acquired data and to derive a theory from the collected facts by considering perception, subjectivity, and sensitivity (Birgili, 2015). GT formed its own principles, according to Glaser and Strauss (2006), which is another commonality between the theory and other qualitative research methodologies. According to Row (2003) (quoted in Balc, 2015), the theory's guiding ideas are as follows:

I. The investigation of social reality does not commence with a hypothesis. In other words, data is not treated from a well-established, widely accepted perspective.

II. GT should be based on local accounts and experience in addition to the underlying facts.

III. A method of continuous comparison should be utilized. To achieve this objective, the data should be categorized to build concepts and light the data, and these categories should be placed within a general analytic framework and populated with instances pertaining to the examined event. In addition, errors should be mentioned in the categories that are generated.

IV. Data analysis should not rely on hypotheses or coding schemes that have been preconceived. The researcher should be open and transparent during the analysis process.

V. In GT, the literature research is utilized in coding additional data and comparing agreed-upon codings. The developed theory will direct the researcher to the literature that best explains the results.

In qualitative research, interviews are typically recorded. In GT, however, this is viewed as a time-wasting activity, thus, the researcher captures the data in "field notes."

If the researcher discusses the idea before it is complete, it will lower his motivational energy, lead to criticism, and have the added benefit of delivering a reward. Therefore, it is suggested that the researcher remain silent.

Following the ideas as mentioned above, GT can be said to have two primary principles. Research is not initiated to prove, deny, or develop a new theory. Attempts are being made to formulate a previously undiscovered theory

based on the GT data. Thus, the potential that another theory or body of literature will influence the researcher has already been eliminated. According to the second principle, the continuous comparison method is vital for GT. Because the hypothesis was discovered using this way to determine the relationship between events and characteristics (Glaser & Strauss, 2006).

According to Charmaz (2006), the perspective of GT on social events is also a pillar in the construction of the research's intended theory.

From the perspective of GT, all social reality notions are interconnected and interdependent. In other words, no reality is uncaused; rather, it formed as a result of the influence of another reality. Therefore, the event under investigation should be accessible in practice and drawn from everyday life.

According to Glaser and Strauss (2006), a theory developed via GT is always applicable and permits the explanation of the investigated behavior and its causes. In addition, this theory, which was developed as a result of the research, gives verifiable hypotheses and serves as a guide for subsequent researchers studying the behaviors that are the subject of the theory. Considering these explanations, it can be stated that the researchers of GT and the researchers who started their research based on an existing theory and tried to confirm or refute this theory had different perspectives and were in opposition to each other as the theory was derived from the research.

Development of Grounded Theory

Barney G. Glaser and Anselm L. Strauss conceptualized grounded theory, one of the qualitative research designs. The methodological and theoretical basis of the theory as established in the 1965 publication "An Awareness of Dying," which resulted from a qualitative investigation of the experiences of inpatient and dying patients at the University of California-San Francisco Medical Center (Creswell, 2008). The method, referred to as the "continuous comparison method" in the book, has undergone numerous improvements and is now known as "grounded theory" (Balcı, 2015; Çelik & Ekşi, 2015). Glaser and Strauss, who laid the basis of the theory in their work "The Awareness of Death," initially and thoroughly articulated GT in their 1967 book "The Discovery of Grounded Theory" (Merriam, 2013).

Glaser and Strauss, the pioneers of the idea, are two researchers who grew up with completely different philosophies. Strauss is a qualitative researcher at the University of Chicago, whereas Glaser is a researcher at Columbia University, which has a long quantitative and theoretical study history. Despite their various perspectives, they integrated their study into the book "Discovery of GT," which is still the topic of several studies and describes GT (Creswell, 2007). Developed initially by two researchers, GT diverged in its early phases because of these researchers' divergent ideas, resulting in a dichotomy in practice. This paradox has a substantial bearing on the approach and methodology chosen for the research. In Strauss's approach, for instance, the researcher has a concept of where to begin his inquiry. In contrast, Glaser's method requires the researcher to begin with an empty mind. Moreover, according to Glaser, the theory is revealed by the facts in which it is concealed, whereas according to Strauss, data must be compelled for theory development (Jones & Alony, 2011). Some scholars accept Glaser's methodology, whereas others adopt Strauss' methodology, which correlates to the terms "Glaserian" and "Straussian" in the literature. Table 2 details the differences between the two approaches.

Table 2: Distinctions between the Glaserian and Straussian Methodologies

The Glaserian Approach	Straussian Approach
It begins with general interest (with a blank mind).	It begins with an overview of where to begin.
Developing theory through the use of objective questions.	Using structured questions, the hypothesis is tested.
A conceptual theory is constructed.	There is a conceptual definition (description of situations).
Theoretical sensitivity (the capacity to perceive variables and correlations) emerges with a concentration of data.	Approaches and tools facilitate the development of theoretical sensitivity.
The theory's groundedness in the data contributes to its plausibility or support.	The precision of the procedure reveals the veracity of the theory.

A fundamental social process must be specified.	The fundamental social process requires no definition.
The researcher is a passive participant.	The investigator is active.
Data reveals theory.	Data is structured to reveal theory.
Coding is not particularly stringent. Continuous comparison between occurrences, impartial inquiries, and categorization improve coding. Care is required to avoid over-conceptualization when defining the key points.	Coding is performed with greater rigor and precision. The type of comparison is determined by the coding technique. Microanalysis, which involves "word-by-word" data analysis, is used for coding.
There are two types of coding procedures: **Simple coding**. In this process, data is broken down into parts and then grouped conceptually. **Substantive coding.** It is performed to reveal the categories and priorities.	There are three types of encoding procedures:**Open coding**. It includes the phases of defining, naming, classifying, and defining the phenomena. **Axially coding**. It is designed to assign codes to one another. **Coding on a selective basis**. It is performed in order to select a core category and correlate it with additional categories.

Source. Jones ve Alony, 2011.

GT, "Theoretical Sensitivity" by Glaser, published in 1978; "Qualitative Analysis for Social Scientists"by Corbin and Strauss, authored in 1987; and "Basics of Qualitative Research: Grounded," published in 1990. In the books, "Theory, Procedure, and Techniques" are elaborated and enhanced (Charmaz, 2006). Glaser claimed in his 1992 response to Corbin and Strauss's 1990 book, "The Foundations of Grounded Theory," that he rejected the perspectives of the researchers cited therein. The following are some of Glaser's criticisms of Corbin and Strauss (Charmaz, 2006):

- Systematic comparisons will afford the researcher considerable convenience in the process of theory construction. Therefore, researchers do not need to hear the tedious comparisons that Corbin and Strauss make.
- The desired hypothesis is concealed in the data. This notion can be revealed through coding and constant comparison.
- The GT researcher must operate freely and with flexibility. In contrast, Corbin and Strauss made the formation of the theory extremely rigid, irreversible, and difficult to comprehend.

These disagreements between Glaser and Corbin-Strauss have resulted in the development of distinct approaches to grounded theory. The following are examples of these approaches (Creswell, 2007):

1. The Corbin and Strauss method: a methodical design
2. The Glaser strategy: an evolving/classic design
3. Charmaz's method: a constructivist strategy

Obviously, there are three different designs in GT. The systematic design of Corbin and Strauss, predetermined categories to relate categories, and the use of hypotheses to clarify images and relationships. In contrast, the classical Glaserian design attempts to examine social reality without preset classifications. On the other hand, the constructivist method of Charmaz is situated between systematic design and classical design. It contends that meaning does not passively and ineffectually await discovery in objects but rather arises from interactions between persons. Although they differ in practice, they all share the following characteristics: I process approach; (ii) theoretical sensitivity; (iii) theoretical sampling; (iv) continuous comparative analysis; (v) core category; (vi) theoretical memo writing; and (v) they share some common features such as literature review and production. These eight traits, along with the similarities between the three designs, indicate the overall characteristics of GT and the theory's key concepts. Consequently, significant GT concepts have been examined by combining all of these factors.

Key Characteristics of Grounded Theory and Related Concepts

Under this heading, we examine the most essential aspects of grounded theory and the most essential concepts associated with it.

Process Orientation

In GT study, a single social reality is emphasized. Nonetheless, this reality cannot be considered apart from individuals and their interactions. Since the investigated social reality will be modified by the actions and interactions of individuals, researchers concentrate more on process analysis (Creswell, 2012). For instance, a GT researcher who wishes to investigate the notion of mentoring may frame the topic of her study as "the advisor-student interaction between thesis supervisors and doctorate students."

The GT research process (Çelik & Ekşi, 2015), which is typically expressed using noun-verb pairs (substance addiction, discovering GT, leadership skill, the effect of preschool education, the level of initiative, etc.), entails the researcher abstracting and defining the participant statements' actions. These constructed abstractions and definitions are referred to as categories (concepts). Categories; They are necessary touchstones for producing a theory that is proven, intelligible, and comprehensive (Creswell, 2012).

Theoretiacal Sensitivity

The capacity to interpret categories derived from research data, to differentiate between similar and distinct categories, and to construct relationships between categories constitutes theoretical sensitivity. This ability directly influences the completeness and precision of the theory to be derived from the facts. Consequently, the capacity to analyze and comprehend data with theoretical sensitivity is a crucial component of GT (Corbin & Strauss, 2008).

Probabilistic Sampling

It is based on facts gathered through observation, interview, a document study, and everyday experiences (Corbin & Strauss, 2008). Therefore, the acquired data should be extracted from the most representative sample of individuals or groups to provide the correct hypothesis. Creswell (2012) underlined the significance of determining the type of sampling method to employ to pick the individuals to be included in the research (purposive sampling) and indicated that theoretical sampling, which permits simultaneous data collecting and analysis procedures, should be considered. Theoretical sampling, according to the researcher, is selecting people who can supply helpful texts, images, or case studies to aid in the theory-building process. Based on this definition of Creswell (2012), the following are examples of theoretical sampling: Students, parents, Montessori educators, and others will be surveyed by a researcher examining the impact of Montessori education on the development of preschoolers.

Constant Comparative Evaluation

In GT, data coding and analysis are concurrent and adaptable processes. During this phase, the researcher uses continual comparative analysis to uncover and develop concepts concealed within the data. This strategy seeks to connect a data-identified event to other events, events to categories, and categories to other categories (Creswell, 2007). Figure 1 depicts the continuous comparative analysis method that Jones and Alony (2011) depicts.
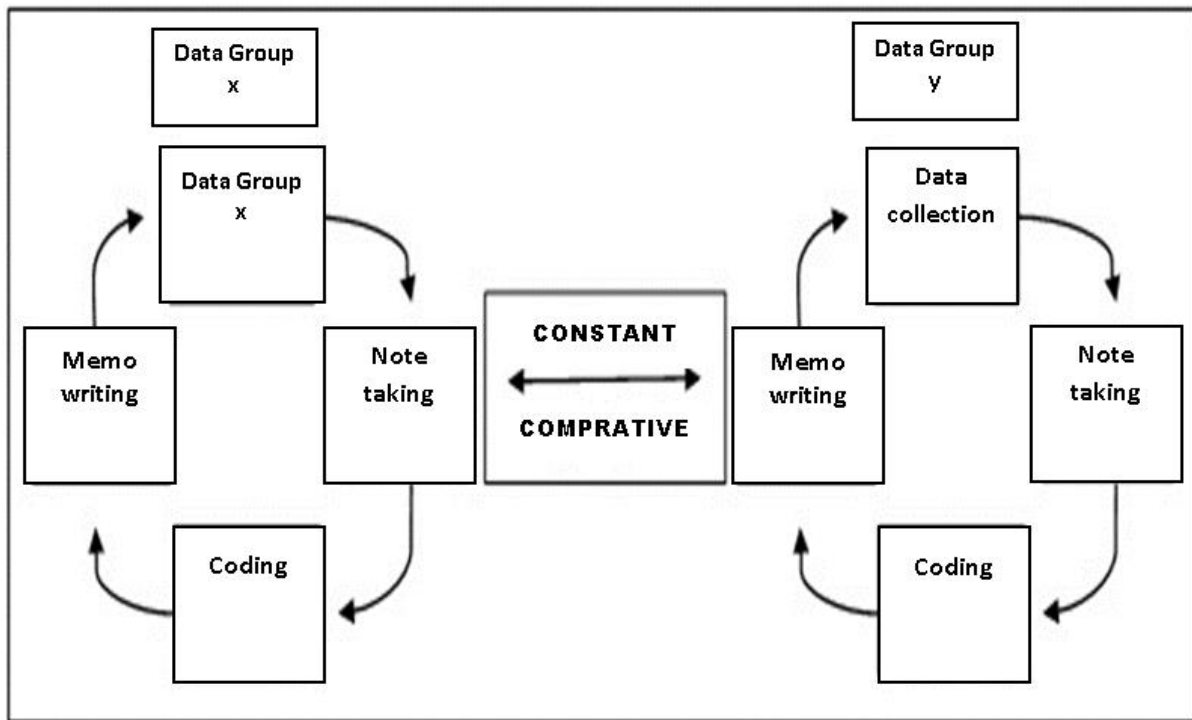
Figure 1. Constant Comprative. Source. Jones ve Alony, 2011.

The objective of the constant comparison method is to produce diversity by correcting the categories disclosed during the process with newly obtained samples (Birgili, 2015). In GT research, comparisons are done continuously within and between conceptualization levels until a theory is developed (Merriam, 2013). Using the continuous comparison approach, a GT researcher I compares occurrences inside each category, (ii) identifies the categories and category features, (iii) delimits the theory, and (iv) writes the theory (Goulding, 2002).

Primary (Core) Category

The core category is the category with the potential to be the researched phenomenon's central theme. When there are approximately ten categories (this number can be increased or decreased based on the size of the database), the researcher selects a core category to serve as the foundation of the theory he will build. It then determines the link and frequency of the core category with other categories. The researcher creates further categories if the relationships between categories make sense and fit (Creswell, 2012).

Taking Theoretical Notes (Memo)

Researchers at GT jot down brief notes regarding the data gathered from the beginning to the finish of the study. These notes are known as memos. Memos provide the most concise description of recent scientific developments. These annotations can be as short as a few lines or as long as tens of pages (Charmaz, 2006).
Memos give researchers summative data during the data-questioning phase (Goulding, 2002). A researcher who writes a memo elevates qualitative research to an empirical and analytical level, according to Charmaz (2006). According to Goulding (2002), a GT researcher who does not produce a memo develops a theory that is unrelated to GT.

Literature Review

All GT designs highlight the importance and necessity of a literature review. However, there are variations in designs dependent on location and function. In systematic design, for instance, the literature study is conducted first in order to create theoretical sensitivity prior to data collection and analysis. However, the researcher should not rely on the literature too heavily, as doing so will make it more difficult to generate fresh ideas. The Glaserian approach (classical design); He disagrees with Strauss and Corbin's suggestion to conduct a literature study prior to beginning the investigation. According to this theory, literature review confines researchers and makes category development difficult. Consequently, the literature review should follow data analysis. Charmaz (2006), the founder of constructivist GT design, stated that researchers should use the literature to (i) learn about previous GT

studies, (ii) explain who did what, when, and why, (iii) identify gaps between existing knowledge and situations, and (iv) formulate their own contribution to the GT field

Theory Development

GT's ultimate objective is the development of a medium-scale theory. The researcher's GT theory is an abstract explanation or comprehension of a real subject that is concealed in the facts (Creswell, 2012). GT theory is developed using three major tactics (Çelik & Ekşi, 2015):

(i) Reducing the number of categories: During the initial stages of the research, a large number of distinct categories are identified and clustered based on their unique qualities.
(ii) Selective sample of the literature: The literature evaluated in GT serves as a type of data source and is incorporated into the produced theory, classifications, and subcategories.
(iii) Selective sampling of data: In GT, efforts are made to obtain additional data from the study region to develop and test hypotheses.

According to Corbin and Strauss (1990), the theory to be developed in GT research is a narrative or a brief summary of the investigation. The scholars as mentioned earlier suggested to GT researchers the following (Corbin and Strauss, 1990):

"...what occurred here?" "Sit down and compose a few sentences about the subject." "Express your ideas simply and compose a concluding narrative."

Based on the previous information, it can be concluded that the systematic and simultaneous collection and analysis of data is a prerequisite for the theory to be developed at the end of the study GT, regardless of the design (systematic, classical, constructivist).In the literature survey for this study, different coding strategies were discovered for the three data analysis designs. However, the limitations of this research report make it impossible to include detailed coding types for all of these patterns. The systematic design developed by Corbin and Strauss includes easily identifiable steps and is widely used in research GT (Creswell, 2012). For these reasons, only data coding according to the systematic design is examined in detail below.

Systematic Grounded Theory

This design, devised by Corbin and Strauss, is more rigid and canonical than the original GT design created by Glaser (Creswell, 2007). The systematic design is a GT design that emphasizes the development and visualization of theory through the use of preset coding phases (Corbin and Strauss, 1990).

The systematic design states that finding or accepting a known fact overlaps with positivist techniques, therefore, the goal of GT is not to affirm the known but rather to attempt to uncover the unknown. Strauss and Corbin defined data collecting and analysis procedures as a "open buffet" and argued that each researcher should select approaches according to his or her preferences (Creswell, 2007). Corbin and Strauss (Corbin and Strauss, 1990) enumerated the processes to be followed and the rules to be considered by researchers who utilize the systematic GT design:

(i) The processes of data collection and analysis are interconnected. In GT, analysis commences with gathering initial data, and the resulting information is utilized in the subsequent interview or observation.
(ii) The researcher does not utilize pre-existing conceptions, conceptualizes the data, and employs conceptual labels. An exact labeling is performed if a label is met with a particular frequency. One of the participants, for instance, used the statement "Women avoid taking chances and flee from danger. In addition, they are extremely emotional and cannot act professionally as a result." statement may be classified a "stereotype." "by the investigator. If other participants use this term in the same manner, the label "stereotype" is recorded.
(iii) Similarities and differences are highlighted through the creation of categories. For instance, additional concepts such as "time pressure" and "role conflict" can be developed in addition to "performing numerous roles." While coding, the researcher recognizes that these notions are distinct but interrelated, therefore they can be categorized as "individual factors."
(iv) Sampling is predicated on concepts and the diversity of concepts, not on groupings of individuals. For instance, if the researcher is conducting a study on the "organizational dimension of the glass ceiling," she should examine female managers in their workplaces. However, the researcher should not sample

female managers. Instead, she should investigate the organizational reasons that prevent women managers from advancing.

(v)   The event under study is often compared to other events in terms of similarity and dissimilarity. This is called the "method of continuous comparison." Continuous comparison is a method that keeps the researcher from bias, allows him to question each new piece of information and concept, and corrects coding errors.

(vi)   Obtained data should be evaluated for compatibility with a design and system because relevance promotes the advancement and integration of data.

(vii)   It is quite challenging for the researcher to keep up with the ever-changing categories, hypotheses, and queries. A mechanism is required to support the researcher in this process. This method is referred to as "theoretical memo writing." It begins with the first coding phase and continues till the conclusion of the research. Too many concepts are missed if the researcher skips annotation and moves directly from the coding process to report writing.

(viii)   In order to comprehend the links between categories, hypotheses are established. Throughout the research, these hypotheses are regularly amended until all the findings gathered from documents, observations, and interviews are confirmed.

(ix)   The researcher should compare the concepts and relationships he has discovered with those of other researchers and, if necessary, seek their assistance.

(x)   Higher (macro) conditions that affect the phenomenon should be included in the analysis, not just those intimately related to the phenomenon. The term for this is "situational matrix." For instance, economic position, culture, and political leanings should be incorporated into the investigation.

Systematic Grounded Theory Research Procedures

According to Creswell (2012), eight steps will assist systematic GT researchers in their approach

> **Step 1**: *Selection of the most appropriate design.* This is the stage where decisions are made about the research design depending on the research topic's nature, scope, and sensitivity. For example, it is appropriate to use GT for topics where participant privacy must be protected (such as sexual abuse) because this design allows the researcher to conduct a macro-analysis rather than a micro-analysis and see the big picture.
> **Step 2**: *Determine the process.* In research, the first step is to determine the process because the main purpose of GT is to explain the process. The people who interact and act reciprocally in the systematic GT design should also be included in the research process.
> **Step 3**: *Confirmation and access.* As with any scientific research, research permission must be obtained and the sample to be collected must be accessible at GT.
> **Step 4:** *Theoretical Sampling.* Data collection is one of the most important phases of a systematic GT. Therefore, this step - selecting the sample that can provide detailed and rich information and choosing the technique to collect data from the sample - refers to the process of obtaining new data by returning to the field until the theory develops and matures.
> **Step 5:** *Coding the data.* This involves dividing the research data into categories and subcategories, identifying and explaining the relationships among the categories, and creating an overall picture of the research processes.
> **Step 6:** *Selective coding and theory development.* In this process, the theory begins to develop. In this step, the researcher presents the theory as a series of theses or subtheses.
> **Step 7:** *Verification of the theory.* This stage determines whether the researcher's theoretical explanations are logical and whether they describe events hierarchically.
> **Step 8:** *Writing the research report.* GT Research report; It consists of four parts: (i) problem, (ii) method, (iii) discussion, and (iv) results. The researcher usually writes the report in the third person, paying attention to both structure and objective style. The report ends with a detailed explanation of the theory.

The Process Of Data Analysis and Theory Construction in Systematic Grounded Theory Research

Coding is performed in a systematic design to analyze and conceive the data and show the data's design. Using predetermined analysis steps, the theory is meant to be disclosed (Corbin & Strauss, 2008). Charmaz (2006) compared the codes to the bones constituting the research's skeleton. According to the researcher, it is through these codes that the connection between the data analysis and the theory drawn from the data is made. Systematic GT's coding procedure consists of three sequential phases. These procedures are categorized as I open coding, (ii) axial coding, and (iii) selective coding (Corbin and Strauss, 2008).

Open coding (Leve I/substantive coding). Open coding is the initial coding process in which the data are broken into sections in order to conceive and categorize them (Creswell, 2012). It is also known as "coding on the first pass through the data" (Neuman, 2008). At this level, data are separated into smaller units (Vatansever, Çalşkan, & Işık, 2014). Open coding labels similarities and differences between events, actions, and interactions that are compared to other events, actions, and interactions. Similarities permit the construction of subcategories deriving from the categories (Corbin & Strauss, 1990).

Systematic GT relies on "Who? What? Where? When? Why?" queries and comparisons as its code foundation. In order to determine the similarities and differences between categories, the researcher must ask productive and comparative questions. In addition, the data must be collected in the proper category for accurate and exhaustive analysis. Even if the researcher misclassifies the data, he has the option to rectify his error by employing the continuous comparison method. Open coding can utilize dissimilar coding types that do not have a linear relationship and can be used transformatively (Corbin & Strauss, 2008). These coding methods are detailed below: word-by-word coding, line-by-line coding, event-by-event coding, and in vivo coding.

Word-by-word coding Coding data obtained from the study of documents and electronic resources typically employs word-by-word coding, which allows for a methodical GT analysis of data in great detail (Charmaz, 2006). In this sort of word coding, attention must be paid to the meaning of words and the flow of sentences.

Line-by-line coding. Line-by-line coding is one of the most prevalent forms of coding in systematic GT, in which each line of participant statements is designated by name. Although this creates some coding challenges because occasionally, each line does not contain a complete sentence, it allows researchers to swiftly code the data. Researchers should follow the following adaptable procedures for line-by-line coding (Charmaz, 2006): I dissecting the data, (ii) identifying the activities on which the data are based, (iii) paying attention to implicit assumptions, (iv) discovering implicit actions and meanings, (v) focusing on the significance of emphasis, (vi) comparing the data with other data, and (vii) highlighting data gaps.
According to Charmaz (2006), line-by-line examination of coded data prevents researchers from being mired in existing one-word codes and opens the door to novel concepts and ideas. Charmaz (2006) noted that, during this procedure, how do I describe data on this topic? (ii) How does the procedure function? How do the participants conduct themselves? (iv) How do people communicate their ideas? Why and how does the procedure evolve? What are the results of the procedure? He stated that asking yourself questions facilitates a critical examination of the data (see APPENDIX 1 for an example of how this works).

Event Coding. Event coding is a sort of coding in which the researcher compares an event to one or more other events and, if a match is found, seeks to compare the new event to the event conceptualizations he or she has previously coded (Çelik & Ekşi, 2015). According to Charmaz (2006), event coding yields more significant results when researchers lack sufficient knowledge about participants, have trouble connecting with them, or can simply observe them. Moreover, studying people's behavior in public locations and coding it line by line can result in data loss if the observation is interrupted. Instead, occurrences should be researched independently, then compared, and events with similar characteristics should be coded together.

In- Vivo coding. In-vivo refers to the phrases that participants use. In vivo codes do not exist in the scientific literature or as notions invented by researchers. In other words, in vivo codes are the symbolic coding of the expressions of participants (Charmaz, 2006). For instance, one participant used "relativity" instead of "relativity theory" in the field of science and general physics, "theory according to Du-Mir" in the field of nuclear physics, "creditor" instead of "proton," and "electron" instead of "neutron." The participant's usage of the term "borrower" is an example of unique coding. These original codes should be stored as "in vivo codes" by the researcher. Since in vivo codes are conveyed by the participants, they give the researcher information about the participants' feelings, thoughts, and attitudes towards concepts, events, and circumstances. In addition, these codes were utilized to describe how individuals who expressed their opinions about a scientific concept in their own terms understood that concept.

Axial coding (Level II/theoretical coding). It is a second review of the collected research data (Neuman, 2008). Axial coding, defined as "creating a dense network of relations around the axis of a category," is a sort of coding that began to be employed with creating primary categories. In this coding phase, the material broken into small meaning units in the open coding phase is synthesized and attempts are made to create higher-level structures (Strauss and Corbin, 1998, as quoted in Vatansever, alşkan, and Işk, 2014). In axial coding, categories are paired with their subcategories, and these associations are evaluated based on data (Corbin & Strauss, 1990). Axial coding is typically favored for encoding huge quantities and varieties of data. This coding style aims to explain the codes established using open coding more precisely and reduce uncertainty (Charmaz, 2006; Glaser & Strauss,

2006). This coding process needs inductive and deductive reasoning, the formulation of questions and suggestions (McCann & Clark, 2003, quoted by Onat Kocabyk, 2016). According to Strauss and Corbin (1990), as reported by Charmaz (2006), a GT researcher conducting axial coding will perform the following tasks:

(i) A category is selected from the categories established during the open coding procedure, and coding is continued by focusing on this concept in the subsequent procedure. The term for this category is "core phenomenon."

(ii) The gaps created by open coding between categories and subcategories are identified, and axial coding is utilized to diminish the discrepancies between categories and establish links.

(iii) By evaluating and comparing data, connections between categories and subcategories are attempted to be built and expanded.

To make the relationships between the categories in axial coding clearer and more understandable, researchers must pay attention to the conditions affecting the social phenomenon they are studying, the routine and strategic reactions of the participants, and the outcomes of these actions and interactions. Conditions "why? where? how? when?" are their questions; actions and interactions "by whom? how?" are their questions; and the consequence "what is the effect of this action?" demands answering the query "what is the outcome of this action?" (Corbin & Strauss, 2008). According to Creswell (2012), axial coding should employ the conditional matrix approach, which involves building links between conditions, outcomes, and subsequent actions. According to the researcher, once the linkages have been formed, micro and macro factors influencing these relationships should be generated, and the data should be analyzed from a broader viewpoint. In addition, the core phenomena and the circumstances influencing the core phenomenon, the strategy derived from the core phenomenon, the specific and contextual circumstances influencing the strategy, and the outcomes should be given in detail. Figure 2 depicts the axis-coding procedure as depicted by Creswell (2012).
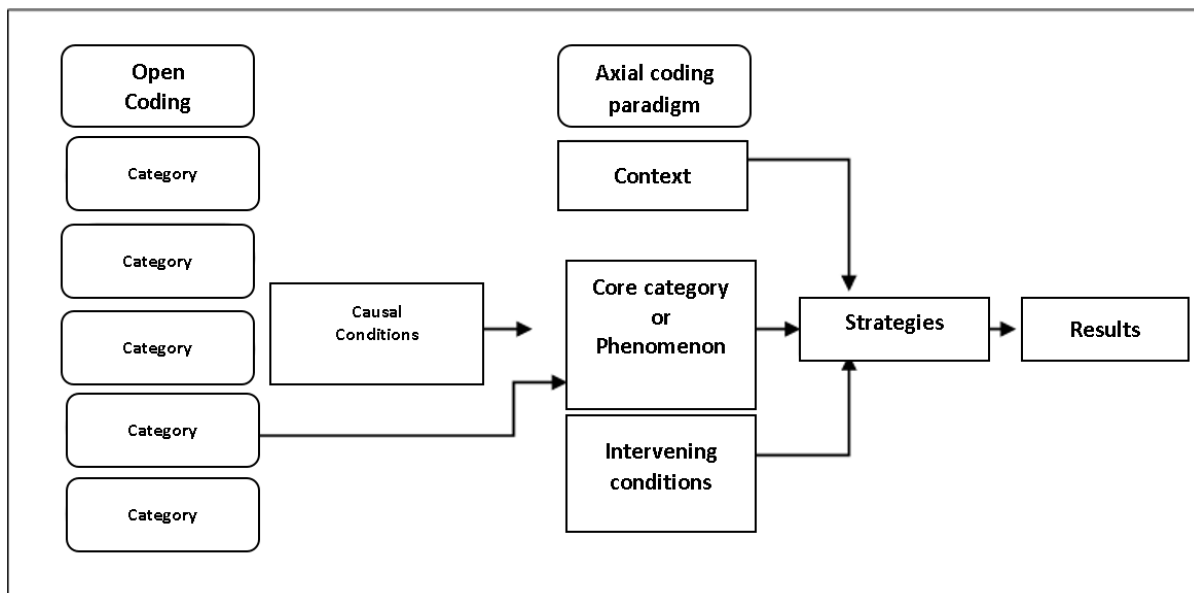

Figure 2. Axial Coding. Source. Creswell, 2012.

Selective coding (level III coding). Simply put, the selective coding procedure in systematic GT is the primary category selection mechanism (Corbin & Strauss, 2008). After a continuous comparative analysis (McCan & Clark, 2003, as quoted by Onat Kocabıyık, 2016), the "core category" (Corbin & Strauss, 1990) is selected to represent the central phenomenon of the study. All previously determined categories are organized around the "central category" and systematically related in selective coding (Creswell, 2012). (Corbin & Strauss, 2008). (Strauss and Corbin, 1990, as referenced by Creswell, 2012): I description of the event design, (ii) combination of the supplementary categories around the core category, (iii) linkage of the categories, (iv) data evaluation, and (v) saturation of the categories. In selective coding, the most significant processes are thought to be theoretical coding and note taking. Theoretical coding incorporates classification and saturation based on theory, so the data are interpreted as theoretical instead of descriptive. In this context, "classification" refers to organizing the data into meaningful categories, while "saturation" refers to determining the number of concepts in each category and subcategory (Eaves, 2001).

As can be seen, three distinct processes are involved in coding the systematic GT. It is important to note that at the core of all three types of coding are processes that involve thoroughly examining all the data, the creation of codes and categories, focusing on the relationships between categories, and the ultimate goal of uncovering the theory buried in the data. Nevertheless, the sub-digits of each coding type represent distinct operations. Figure 3 from Eaves (2001) illustrates these variances (quoted in Çelik and Ekşi, 2015).
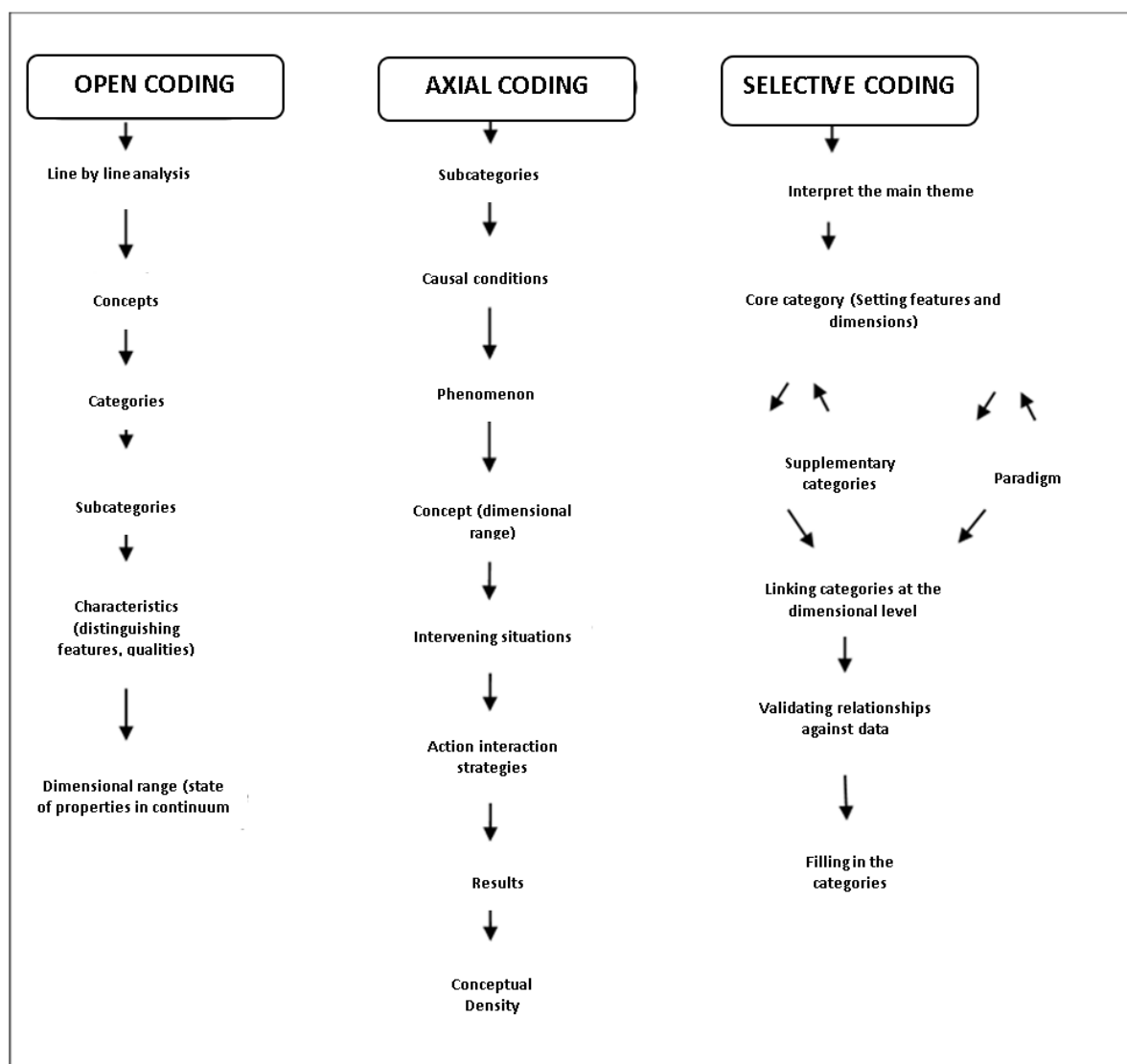

Figure 3. Data coding and categorization steps in Strauss and Corbin approach. Source. Eaves, 2001.

In summary, researchers begin the process of coding with "open coding" and the creation of categories. In the next phase, axial coding, the categories are seen and combined. In the final step of coding, known as "selected coding," the core category is identified and a theory is constructed (Ilgar and Coşgun-Ilgar, 2013).

Reporting Grounded Theory Research

After coding, explaining, and categorizing the data gathered during the research GT, the research report is drafted. Coding, explanation, and classification help the research report writing process. As a means of condensing the theory and enhancing the readability of the concepts, the report may use a combination of tables and figures. By offering a literature review, the theory is situated in a scientific perspective. Review and presentation of the report in terms of style and language (Balcı, 2015).

Testing Validity in Grounded Theory Research

According to Yıldırım and Şimşek (2013), validity in qualitative research refers to the accuracy of the research findings and denotes that the researcher views the phenomenon objectively. Contrary to other studies, according to Elliott and Lazenbatt (2004), GT uses four criteria: appropriateness, relatedness, interoperability, and changeability (as cited in Kaya, 2015). The following is a brief explanation of these standards (Balcı, 2015):

    (i)   *Fit*. The degree to which concepts and events they reflect are relevant.
   (ii)   *Relevance*. The researcher focuses on the participants' genuine interests.
  (iii)   *Workability*. The theory demonstrates how to address the problem.
  (iv)   *Modifiability*. As new situations and data become accessible, the theory can be modified.

Conclusion

In recent years, qualitative research methodologies have become increasingly prevalent in scientific studies and more popular among researchers. In qualitative research that emphasizes the significance of interpersonal relationships and interactions in developing social facts, numerous distinct designs are employed. An example of one of these study designs is grounded theory.

In its broadest definition, grounded theory is the theory awaiting discovery in data that has been methodically collected, arranged, and evaluated. The theory was developed by Glaser and Strauss and then revised by many scientists. In addition to influencing other scholars, disagreements among the theory's founders led to the development of three distinct GT approaches: systematic design, classical design, and a constructivist approach.

In practice, Strauss and Corbin's systematic design, which uses predetermined categories to associate categories with one another, Glaser's classical design, which attempts to discover social reality without predetermined categories, and Charmaz's constructivist approach, which is situated between systematic design and classical design, differ in several ways. aspect; process approach, theoretical sensitivity, theoretical sampling, continuous comparative analysis, core category, memo writing, and theory production. In addition to pointing to the fundamental concepts, rules, and principles of GT and the application processes, these eight characteristics aid researchers in practice.

In this study, the systematic design (Corbin and Strauss approach), the classical design (Glaser approach), and the constructivist approach (Charmaz approach) from the Grounded Theory research techniques were analyzed in detail, and the parallel components in all three approaches were identified. The fundamental characteristics of GT were thus exposed. In addition, a literature analysis conducted within the scope of the study revealed that researchers in GT investigations frequently select the systematic design; thus, this design was explored in depth. Due to this, it has been determined that the systematic design is in a significantly different stage of coding than other designs.

Recommendations

Grounded theory is one of the qualitative research approaches; comparing designs that differ in the coding phase with a field study may aid in gaining a better grasp of the topic. In addition, it will be advantageous for other scholars to do field research to concretize the coding stages of the systematic design.

In the Grounded theory; there are three different approaches: systematic design (Corbin and Strauss approach), classical design (Glaser approach), and constructivist approach (Charmaz approach). There is a need in the literature for studies that show the similar and different characteristics of these approaches.

Conflicts of Interest

The author declares that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper. The corresponding author carried out the entire research process. The author have no conflict of interest to disclose.

References

Anderson, J. S. (2007). *Boys in crisis: A grounded theory study of male high school dropouts in a rural setting* [Unpublished doctoral dissertation], University of Phoenix.

Balcı, A. (2015). Sosyal bilimlerde araştırma: Yöntem, teknik ve ilkeler [Research in the social sciences: Methods, techniques and principles]. Pegem Akademi.

Birgili, B. (2015). Temellendirilmiş kuram [grounded theory]. F. N. Seggie ve Y. Bayyurt (Eds), *nitel araştırma: Yöntem, teknik, analiz ve yaklaşımları [qualitative research: Methods, techniques, analysis and approaches]*. Anı Yayıncılık.

Charmaz, K. (2006). *Constructing grounded theory: A practical guide through qualitative analysis*. SAGE Publications.

Corbin, J. and Strauss, A. (1990). Grounded theory research: Procedures, canons and evaluative criteria. *Qualitative Sociology, 13*(1), 3-21.

Corbin, J. and Strauss, A. (2008). *Basic of qualitative research: Techniques and procedures for developing grounded theory*. Sage Publication.

Creswell, J. W. (2007). *Qualitative inquiry & research design: Choosing among five design* (3.edition). Sage Publication.

Creswell, J. W. (2012). *Educational research: Planning, conducting and evaluating quantative and qualitative research*. Pearson Publication.

Çelik, H. & Ekşi, H. (2015). *Gömülü teori* [grounded theory]. EDAM Yayınları.

Eaves, Y. D. (2001). A synthesis technique for grounded theory data analysis. *Journal of Advanced Nursing, 35*(5), 654-663.

Glaser, B. G. & Strauss, A. L. (2006). *The discovery of grounded theory: Strategies for qualitative research*. Aldine.

Goulding, C. (2002). *Grounded theory a practical guide for management, business and market researchers*. SAGE Publications.

Hildenbrand, B. (2004). Anselm Strauss. U. Flick, E. v. Kardoff and I. Steinke (Eds), *A compain to qualitaive research*. SAGE Publications.

Ilgar, M. Z. & Coşgun Ilgar, S. (2013). Nitel bir araştırma deseni olarak gömülü teori [Grounded theory as a qualitative research design]. *Sebahattin Zaim Üniversitesi Dergisi*, 197-247.

Jones, M. & Alony, I. (2011). Guiding the use of grounded theory in doctoral studies-An example from the Australian film industry. *International Journal of Doctoral Studies*(6), 95-114.

Kaya, Ö. (2015). Temellendirilmiş teori [grounded theory]. M. Metin (Ed.) *kuramdan uygulamaya eğitimde bilimsel araştırma yöntemleri* [scientific research methods in education from theory to practice]. Pegem Akademi Yayınları.

Locke, K. D. (2003). *Grounded theory in management research* (2. edition). SAGE Publications.

Merriam, S. B. (2013). *Nitel araştırma: Desen ve uygulama için bir rehber [Qualitative research: A guide to design and implementation]*. Nobel Yayıncılık.

Mills, J., Bonner, A. & Francis, K. (2006). The Development of Constructivist Grounded Theory. *İnternational Journal of Qualitative Methods, 5*(1), 10-19.

Moriarty, J. (2011). Qualitative Methods Overview. *Methods Review, 1,* 10-42.

Neuman, W. L. (2008). *Toplumsal araştırma yöntemleri: Nitel ve nicel yaklaşımlar [Qualitative and quantitative approaches]*. Yayınodası.

Onat Kocabıyık, O. (2016). Olgubilim ve gömülü kuram: Bazı özellikler açısından karşılaştırma [Phenomenology and grounded theory: Comparison in terms of some features]. *Trakya Üniversitesi Eğitim Fakültesi Dergisi, 6*(1), 55-66.

Sönmez, V. & Alacapınar, F. (2013). *Örneklendirilmiş bilimsel araştırma yöntemleri* [Illustrated scientific research methods]. Anı Yayıncılık.

Vatansever, Ç., Çalışkan, S. & Işık, İ. (2014). Bir dünya şirketinin Türkiye'deki çalışanlarına göre çeşitliliklerin yönetimi: Gömülü kuram analiziyle modelleme [Diversity management according to the employees of a global company in Turkey: Modeling with grounded theory analysis.]. *Başkent Üniversitesi İİBF Yönetim Araştırmaları Dergisi, 12*(1), 10-44.

Yıldırım, A. ve Şimşek, H. (2013). *Sosyal bilimlerde nitel araştırma yöntemleri [Qualitative research methods in the social sciences*. Seçkin Yayıncılık.

ANNEXES

Annex-1. *Line by line coding example.*

| Line-by-line coding	Participant: OYe1, 37 years old, school administrator
Problem	It will prevent women from rising in management
Do not accept	I don't think there is a second glass ceiling. Even though they
Charging responsibility	are other sources . So it is. After all, legally
Supporting his thinking on legal grounds	If he and I both want to rise to the highest position
Blame	We have the right. If women can't get high it's their own fault
Blame	Because I can't see any obstacles other than themselves
Prejudice	I, there are no barriers other than my own personality traits.
Prejudice	They are very emotional for once. Then with a problem
Prejudice	They panic when they meet. Other than that, he has other jobs.
Gender attribution	Of course, they need to get their work done in the 10th house first.
Gender attribution	If he doesn't, there will be problems with his wife.

Annex-2. *Axial coding example.*
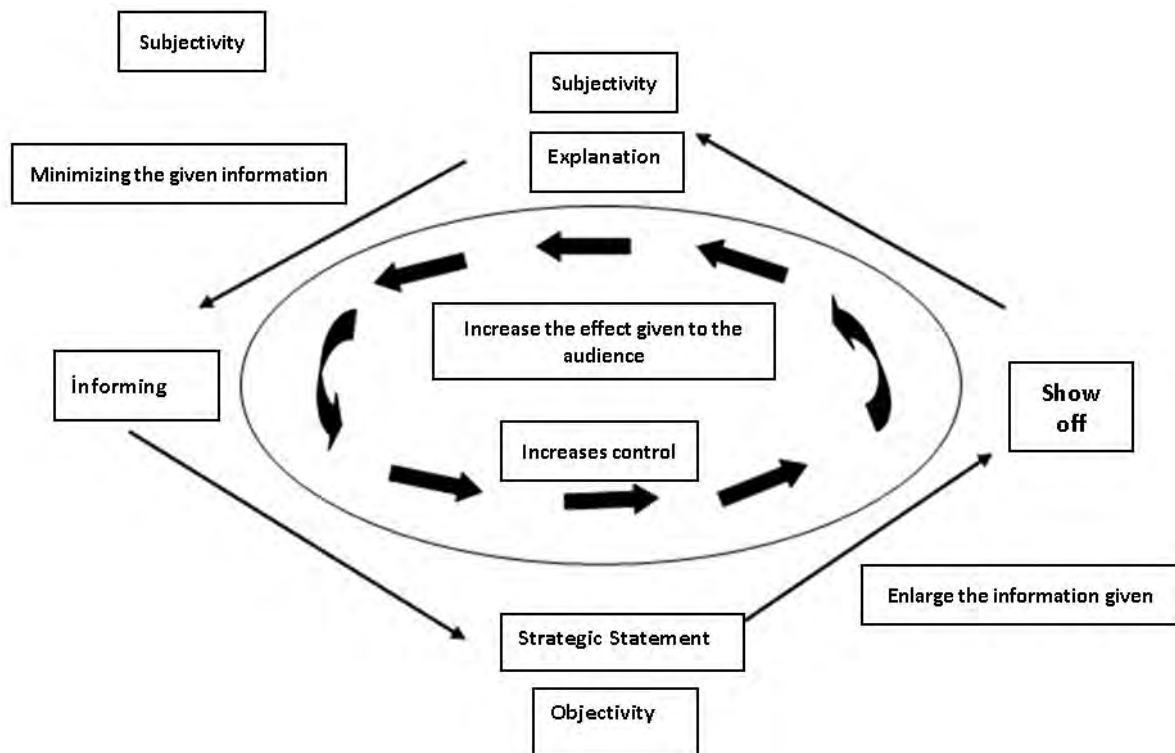
Figure. Axial coding of the collected data on expression designs. Source. Charmaz, 2006, s.62.