



## Formulation of Themes in Qualitative Research: Logical Procedures and Analytical Paths

### Formulação de temas em pesquisa qualitativa: procedimentos lógicos e demarcadores analíticos

### Formulación de temas en investigación cualitativa: procedimientos lógicos y vías analíticas

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#### Abstract

Thematic analysis is one of the qualitative methods most widely used in psychological research. The aim of this paper is to situate the thematic analysis within the inferential diversity that characterizes qualitative research methods. We first present the schools of thematic analysis and their respective inferential logics, emphasizing the logical and analytical procedures that support the constitution of themes in these modalities of analysis. Secondly, in order to exemplify aspects of the technique, the article presents the steps of a thematic analysis conducted in a narrative study regarding impacts of incarceration on the lives of people released from the Brazilian prison system. We then highlight the logical process of formulating the themes from the participants' narratives. Finally, the article presents a description of the different analytical steps involved in the thematization process and proposes a new classification of the steps of identification of themes in qualitative research to develop higher analytical quality.

#### RESUMO

A análise temática tem se notabilizado como um dos métodos qualitativos mais utilizados na pesquisa em Psicologia. O objetivo deste artigo é situar a análise temática na diversidade inferencial que caracteriza o conjunto de métodos qualitativos de pesquisa. Para isso, as escolas de análise temática são apresentadas com suas respectivas lógicas inferenciais, enfatizando os procedimentos lógicos e analíticos que subsidiam a constituição de temas. Com o intuito de exemplificar aspectos da técnica, o artigo apresenta os passos da análise temática em uma pesquisa narrativa com egressos do sistema prisional sobre os impactos do encarceramento em suas vidas, com destaque para o processo lógico de formulação dos temas a partir das narrativas dos egressos. Por fim, o artigo apresenta uma descrição de diferentes passos analíticos integrantes do processo de tematização e propõe uma nova classificação dos passos de identificação de temas em pesquisa qualitativa, a fim de garantir maior qualidade analítica.

## Resumen

El análisis temático se ha señalado como uno de los métodos cualitativos más utilizados en investigación en psicología. El objetivo de este artículo es situar el análisis temático en la diversidad inferencial que caracteriza el conjunto de métodos de investigación cualitativa. Para esto, las escuelas de análisis temático son presentadas con sus respectivas lógicas inferenciales, enfatizando los procedimientos lógicos y analíticos que apoyan la constitución de temas en estas modalidades de análisis. Con el fin de ejemplificar aspectos de la técnica, el artículo presenta los pasos del análisis temático en una investigación narrativa con egresos del sistema penitenciario sobre los impactos del encarcelamiento en sus vidas, destacando el proceso lógico de formulación de los temas basado en las narrativas de los participantes. Finalmente, el artículo presenta una descripción de los diferentes pasos analíticos que forman parte del proceso de tematización y propone una nueva clasificación de los pasos de identificación de temas en la investigación cualitativa, a fin de garantizar una mayor calidad analítica.

**Keywords** Thematic analysis · Qualitative research · Methodology · Inference

**Palavras-chave** Análise temática · pesquisa qualitativa · metodologia · inferência

**Palabras clave** Análisis temático · investigación cualitativa · metodología · inferencia

## Qualitative Research and Inferential Diversity

Qualitative research encompasses a diverse set of approaches that investigate evidence in the natural language format and in expressions of experience (Levitt et al. 2018). The rules for analyzing these types of evidence are varied; however, they coincide in the search for patterns of narrative manifestation as an index for interpreting or describing the experience. The points of diversity between qualitative approaches start when defining the very nature of a qualitative pattern, for example, whether implicit (e.g., Carlozzi et al. 2018) or explicit (e.g., Charles and Meyrick 2018), with regard to the procedures for identifying a pattern, for example, whether by repeating statements and words (e.g., Halfon et al. 2017) or the centrality of a statement/theme (e.g., Finlay et al. 2018) and also in relation to the methods of extracting and composing the syntheses of the qualitative patterns, for example, whether by essential structures of experience (e.g., Ahn et al. 2017) or by general thematic schemes of the content of the experience (e.g., McGuire et al. 2016). There is also the possibility of combining strategies, which makes the methodological diversity more expressive. The significance of this diversity is that all hermeneutic operations are linked to iterations that can present very different evidence identification and logical analysis, even in cases of analysis procedures with the same nomenclature.

Considering this diversity and the historical development of qualitative methods, it is understandable that a consensus on the logical operations of analysis is not the purpose of the large set of qualitative approaches. There are, however, trends in the literature, which are historically situated, with periodic prevalence of a restricted group of analyses within a specific language community. In the case of the Psychology and Social Health Science communities, the most widespread qualitative research trend in

current scientific productions is thematic analysis (Liamputtong 2019). Under the same name, a series of authors has been establishing technical sets for carrying out qualitative thematic analyses for at least 25 years (e.g., Aronson 1994; Vaismoradi et al. 2016). A set of procedures that became popular under this name are the six technical steps proposed by Braun and Clarke (2006). The analysis begins with a process of familiarization with the data (1), moving to a stage of assigning preliminary codes to the data (2), and then seeking patterns or themes in the codes among different interviews (3). This culminates in a review of the themes generated (4), definition and naming of the themes (5), and the production of the analysis report (6). The proponent authors of this model argue that their version of thematic analysis is advantageous, as it can be theoretically flexible in relation to the epistemological assumptions and the diversity of research questions.

In this context, epistemological and methodological flexibility signifies the adequacy of technical analytical steps for a wide range of research questions, research contexts, and theoretical assumptions. This flexibility is associated with the high and increasing application rates of thematic analysis in qualitative research. However, under careful analysis, doubts remain about what would differentiate the logical procedures for thematic demarcation of this type of analysis and procedures of linguistic categorization from other types of qualitative analysis.

For example, at the outset one might ask: what would differentiate a theme from a category? Or what would be the advantage of thematic analysis in relation to categorical content analysis? These are valid questions, since apparently the proponents of thematic analysis themselves recognize that the historical roots of the analysis coincides to a large extent with the inferential origins of content analysis, (e.g., Braun et al. 2019), even considering the fact that content analysis started as a technique for quantitative analysis of newspaper fragments in the early twentieth century (Leung and Chung 2019). However, the progression of both analyses around the natural language coding procedure brings them together logically, to the point that the American Psychological Association publications and communications task force (Levitt et al. 2018), in its guidelines for reporting qualitative research, present thematic analysis with reference to both content analysis (Finfgeld-Connett 2014) and thematic analysis (Braun and Clarke 2006).

The approximation of categorical content analysis and thematic analysis procedures is an example of the need to recognize logical convergences between some techniques and to highlight particularities of each method of analysis. Accordingly, this article aims (1) to situate the different uses of thematic analysis within inferential and logical processes in qualitative research (“[Inferential Differentiation in Thematic Analysis](#)” and “[Logical Procedures in Thematic Analysis: Similarity](#)” sections and (2) to describe and analyze the logical steps which are common among thematic analysis approaches, exemplifying with a narrative study that applied thematic analysis and emphasizing the logical experience of formulating the themes (“[Exemplification Through a Research Report](#)” section).

## **Inferential Differentiation in Thematic Analysis**

The inferential diversity in qualitative research is the result of the application of distinct analytical logics. The inferential processes of deduction, induction, and abduction

largely support the wide set of interpretations of qualitative data. Inferential differentiation can be found in the very definition of theme adhered to by the set of thematic analysis techniques. Reference is made to three general schools of thematic analysis—coding reliability, reflexive thematic analysis, and codebook thematic analysis—which differ in terms of understanding what a theme would be in the context of qualitative research (Braun et al. 2019). That is, schools that vary in relation to the inferential process of the transformation of natural language into themes.

The deductive logic, in this context, starts from conceptual and theoretical resources to analyze the data, with definition of predefined categories of analysis. Therefore, researchers have a more structured direction of theoretical aspects that they are looking for in the data under analysis (Gondim and Bendassolli 2014). The thematic analysis school of coding reliability would be more positioned as a deductive and partially qualitative approach, in which the reliability of the inferential process is judged by the accuracy and tuning of the coders in adapting a generally previously defined code to the natural language data. From this perspective, a theme would constitute a summary of the semantic domain associated with what a subject reported in relation to a specific topic or question. The theme takes on a nature of summarizing the linguistic surface in relation to the data collection procedures, such as answering a question in an interview that already foresees the occurrence of the theme content in the very conception of the investigation.

The inductive operation, in turn, is used for the coding of raw data without the pre-definition of categories. In the inductive logic, an atheoretical perspective assumes that the categories must start exclusively from the data. It is recognized, however, that even the inductive process originates from a theoretical contribution, which leads it, in one way or another, to go through the deductive process at some point. That is, even if the categories are not pre-defined, the researchers' view is permeated by a theoretical-epistemological lens that guides them to be sensitive and to give meaning to the data from some framework basis (Gondim and Bendassolli 2014). The reflexive school of thematic analysis, identified as the closest to the proposal of Braun and Clarke, would be alongside the inductive approach of familiarization with the data and subsequent definition of codes and themes. From this perspective, a theme would be defined as a pattern with shared meanings organized around a central concept or idea (Braun et al. 2014). Themes, from this definition, would unify apparently disconnected data or evident meanings in varied contexts and for this reason would be characterized as more abstract entities and ideas implicit and/or explicit in the data.

The qualitative analysis steps presented by Gibbs (2007) illustrate inductive logic in three stages: coding, categorizing, and thematizing. Coding consists of a process of selecting and “tagging” the data to be later classified into clusters in the “categorizing” stage. Categories are classificatory groupings of codes based on a descriptive denominator. Subsequently, the categories can be grouped or connected into themes, which consist of analytical statements to identify underlying patterns and commonality between the categories to answer the research questions. In this way, Gibbs (2007) presents a thematic analysis script that specifies the initial steps and presents an expected level of analytical complexity. However, the explanation of these procedures does not imply the full execution of the three stages of analysis, given that the limit between one stage and another is interpretative and determined by whoever conducts the research, leading to a “volatility” in the criteria that distinguish each stage of the analysis or the strictly classificatory and descriptive statements.

The third inferential logic, abduction, may combine elements of the two previous logics. Timmermans and Tavory (2012) propose abductive logic as more suitable for proposing new theories, for example, through Grounded Theory (Corbin and Strauss 2008; Glaser and Strauss 1967). Abduction, based on the Pragmatic Theory of Inference, is a logic that perceives the phenomenon related to other observations and proposes new theoretical insights (Peirce 1935). It recognizes the existence of causes and effects that are not immediately observed. That is, it proposes the provision of explanations that are not evident in the data itself, but that can explain the phenomenon. Abductive logic starts from the relationship between previous theoretical amplitude, positionality, and creativity to interpret anomalous data in relation to previous theoretical formulations (Peirce 1935). The codebook school of thematic analysis refers to an abductive logic, since it is open to the review of conceptual premises faced with the data without thereby dispensing with a foundation of prior theoretical comprehension regarding the organization of the narrative patterns of evidence (Gondim and Bendassolli 2014). It combines elements of prior data coding with coding adjustments and later thematization in the process of progressive contact with the natural language (e.g., Nowell et al. 2017).

### Logical Procedures in Thematic Analysis: Similarity

In addition to inferential logic, logical procedures organize and unify qualitative methodologies. Just as statistics constitutes a theoretical organization that unifies quantitative methodologies, two distinct logical procedures, derived from linguistic sciences, divide qualitative analyses into similarity and contiguity procedures. The distinction between similarity and contiguity was first formulated in Linguistics by Ferdinand Saussure (1857–1913) and empirically validated in Jakobson's neuropsychological research (Jakobson 1956) on two types of aphasia, called the "similarity disorder" and the "contiguity disorder." The distinction between similarity and contiguity was incorporated into semiotics and structuralism, challenged by post-structuralist approaches, and recovered by Bruner's narrative study (Bruner 1986), which discussed a distinction between the way of paradigmatic thinking (based on similarity) and the way of narrative thinking (based on contiguity).

The set of thematic analysis techniques—schools of coding reliability, reflexive thematic analysis, and codebook thematic analysis—follow the logical procedure of similarity (Braun et al. 2019). Similarity analysis organizes data into coding matrices or thematic matrices. The research strategies are called "classification strategies," such as coding and categorizing. Not only thematic analysis, but most qualitative research reflects the logical similarity procedure and operates by coding strategies, through the steps of highlighting, selecting, and decontextualizing parts of the analyzed content and then grouping and classifying it into categories. The procedure of similarity also involves the establishment of causal relationships between categories, but not between segments of the data itself.

Contiguity analysis organizes data into conditional and consequential matrices, event networks, and narrative summaries. The research strategies are called "connection strategies," such as narrative analysis and the case study. They consist of data reduction to essential and sequentially related aspects, as in case studies (Patton 1990)

and profile identification (Seidman 1998). Examples of strategies based on contiguity are Labov's functional analysis (Labov 1972), which analyzes the connection of sequences of actions, Seidman's "profile identification" (Seidman 1998), which identifies the fundamental elements of a person's life story, and Erickson's ethnographic microanalysis (Erickson 1992), which describes and analyzes elements, stages, and functions in sequences of interpersonal interactions.

The limitations of the logical procedure of similarity are decontextualization and absence of analysis concerning causal relationships between categorical entities. The limitations of the contiguity procedure are the difficulty of organizing the data due to its massive, and sometimes confusing, volume, of interpretation due to a "trapping" in the particularities of each case or narrative in its idiographic aspects, and of identification of commonalities (Maxwell and Miller 2008). A possible solution to these limitations would be to seek the integration of the logical analysis procedures by similarity and contiguity in the same research process, by explaining the differences and contributions of each of the analysis procedures. However, such a measure, while increasing the sophistication of the analytical process, would make the analysis work much more costly and prolonged in time.

To illustrate the logic of similarity and its analytical challenges, the following is an example of the application of reflexive thematic analysis in a narrative study with people released from the prison system. Narrative data presents a special characteristic that it can be analyzed in multiple levels—such as content (themes), structure, and function (McAdams 2012)—applying both similarity and contiguity logical procedures (Maxwell and Miller 2008). This manuscript presents excerpts from interviews and formulated themes in order to discuss the logical procedures and the process of formulating themes. The data in question (narratives of former prisoners) were analyzed in other publications, focusing on the following phenomena: impacts of incarceration, trajectories of social reintegration, and perspectives of former prisoners regarding the prison policy. The present manuscript addresses inferential processes in qualitative research, without analyzing the issue of the prison system.

## Exemplification Through a Research Report

A qualitative research report using thematic analysis of the reflexive school, following the similarity logical procedure, is presented. Even though the theoretical frame of the study was organized towards the analysis of psychological themes from narrative accounts (McAdams 2012), this research report is focused on the metatheoretical (or transtheoretical) aspects of thematic analysis and its inferential processes and logical procedures. Based on this research report, a description and classification of the steps to formulate themes with analytical quality at different levels of thematic complexity are proposed. The different levels of thematic complexity presented in this manuscript does not imply in a new or specific technique of data organization and analysis, consisting in a clarification of inferential processes that are common among similarity-based analysis.

The exemplified study used data resulting from an autobiographical narrative interview regarding the life trajectories of people that had left the prison system and the meanings associated with the experiences of incarceration and social reintegration,

interpreted by thematic analysis steps. The interviews were transcribed in full and organized by the first author of the study. An open (“floating”) reading of each transcribed interview was carried out in the familiarization stage, and then a new reading was performed for the generation of codes, in a process of “line-by-line open coding” (Gibbs 2007). After the generation of a large volume of codes (such as “receiving charity,” “temporary work,” “illness,” “violence in prison”), the codes were grouped by similarity and classified into categories with descriptive functions, such as “work” and “health.”

The theme identification stage consisted of an analytical process of formulating semantic relationships between categories and grouping them into themes that described more general aspects of the contents. Accordingly, contents referring to categories such as “work,” “hunger,” and “economic difficulties” were grouped under the theme “economic needs.” In this step, all the codes identified in the line-by-line coding stage were grouped into categories and subsequently into themes, including those that were not in the scope of the research, generating additional themes that were later discarded. An example of a discarded theme was the “injustice in the penal system” theme, which grouped categories such as “arbitrariness” and “bureaucracy,” due to its strictly descriptive character and not presenting relevance in the moment of life after leaving prison. As a result of this stage, the themes formulated were (1) economic needs; (2) physical impairment; (3) continuous and disproportionate punishment; and (4) traumatic memories, which described the consequences of incarceration episodes from the perspective of former prisoners. The steps used to formulate the themes described here are presented in Table 1.

In sequence, refinement of the formulated themes was sought to provide greater analytical quality and theoretical relevance and to make the identified themes more explicit and self-explanatory. For this, the themes were named again in order to make the referenced content explicit and affirmative. In this stage, the themes were formulated as affirmative in order to assume a hypothetical character—capable of being verified or falsified—and to facilitate the comprehension of the study’s theoretical findings and contributions. Considering the aim of the study (to investigate the impacts of incarceration from the perspective of those that were released from the prison system), the themes formulated should respond to the aim of the study in an affirmative manner (i.e.: “The main impacts of incarceration, from the perspective of former prisoners, are...”). After the process of refinement of its analytical character and explicit content, the themes identified were (1) basic economic needs remain unfulfilled, (2) physical impairment resulting from the action of the penal system, (3) feeling of continuous and disproportionate punishment, and (4) incarceration as a traumatic memory. In this way, the study analyzed was able to present verifiable statements as theoretical statements, such as “a consequence of the experience of incarceration is that the basic economic needs remain unfulfilled in the long-term” or “incarceration is perceived by former prisoners as a generator of traumatic memories,” which can be tested in other studies or used to support the construction of theories.

The process of refining the themes to make them more explicit and analytical in the form of statements resulted in the identification of different analytical processes present in the stage called “thematization,” which consists of establishing analytical relationships between the categories. The present study identified three different levels of analytical complexity present in the “thematization” stage: a descriptive level, an

**Table 1** Thematic analysis

Example quote	Codes	Categories	Theme
“I do not know if one day I might end up committing a crime again ... The need... we never foresee... When you have young children, your children ask for milk... They do not know if you have any today, if you do not have any today...” (Tony, 41)	Uncertainty about the future Poverty Supporting the family Need for work Hunger	Work Material	deprivation Uncertainty about the future
Economic needs			
“From that day until I had been there four months I was beaten every day. I have three broken vertebrae... chronic hepatitis that I also got there... I have a lung problem...” (Clarice, 51)	Sickness in prison Medical neglect Violence Chronic physical harm	Illness Violence	Physical impairment
“I thought it was like this: you did it, paid it and it was done. (...) But it is not. People keep bringing it up until... I think until the day I die. (...) This is the pain... It’s me passing by and seeing my daughter going the same way...” (Clarice, 51)	Disproportionate punishment Extending the punishment to family members Violation of dignity Humiliations	Suffering of family members Humiliation Continued suffering	Continuous and disproportionate punishment
I could tell you many things that I saw inside there... People being killed... (...) But... I think we have to put the bad things out of our minds.” (Santos, 50)	Temporal uncertainty related to the prison “Life of suffering” Few words Avoid thinking about prison	Temporal	uncertainty Refuse to speak Traumatic episodes
Traumatic memories			

analytical level, and a thematic statement level. The descriptive level of thematization consists of the identification of semantic relationships between the categories and their grouping into themes that describe more general aspects of the contents. The analytical level of thematization consists of making the content explicit in a self-explanatory way with theoretical relevance. The thematic statement level consists of the presentation of the themes identified in full in a theoretical statement capable of being verified or falsified.

Table 2 illustrates the different levels of thematic complexity, depicting the contents formulated in the different stages.

## Discussion

In the previous decades, qualitative research has advanced in the demonstration of methodological rigor through the implementation of transparency practices during the process of data collection, organization, and analysis, and in the deepening of the reflexivity and explicitness of the research positionalities, as illustrated in the



**Table 2** Levels of thematic complexity

Descriptive theme/ comprehensive category	Analytical theme	Thematic statement/hypothesis
Economic needs	Basic economic needs remain unfulfilled	The experience of incarceration has the consequence that basic economic needs remain unfulfilled in the long term
Physical weakening	Physical weakening resulting from direct action by the penal system	The experience of incarceration results in physical impairment as a consequence of direct action by the penal system
Continuous and disproportionate punishment	Feeling of continuous and disproportionate punishment	The experience of incarceration results in a feeling of continuous and disproportionate punishment after leaving prison
Traumatic memories	Incarceration as a traumatic memory	The experience of incarceration is perceived by former prisoners as generating traumatic memories

consolidated criteria guide for qualitative research reports (Tong et al. 2007) and the American Psychological Association recommendations for qualitative publications guidelines (Levitt et al. 2018). Several scripts and analysis perspectives are available in the literature, in addition to proposals for integration between different analytical procedures, expanding the analytical diversity in the field of qualitative research. However, the procedural, situational, and theoretical explicitness does not correspond directly to the clarity of the logical procedures adopted during the inferential process, with them also being insufficient to assess the analytical quality of the themes found, being limited to verifying their theoretical and methodological coherence.

In this context, the role of abductive reasoning in the qualitative analysis process should be highlighted, generating interpretations that are not limited to descriptions of native categories (induction) or the application of previously formulated categories (deduction). The interpretations resulting from abductive reasoning can, in addition to involving research teams in the creative process of generating new themes, be worked on and refined in order to formulate testable hypotheses. The formulation of hypotheses is a common contribution of qualitative research, situated in the context of discovery, towards theory construction (McAdams 2012). This provides an advance in the level of analytical complexity and approximation of the process of formulating themes in the process of theory construction, understood as one of the aims of qualitative research. Considering these aspects, situating thematic analysis in its inferential and logical procedures, in its different schools, and illustrating a case study allows the visualization of its procedural, situational, and theoretical application.

Thematic analysis is currently the most widely used method of qualitative data analysis in psychology and related fields. In recognizing this, the present article sought to situate thematic analysis from a panoramic viewpoint, contextualizing the different schools of thematic analysis and their respective logical procedures. It is possible that the dissemination of thematic analysis is due to the authors that proposed the six-step model (Braun and Clarke 2006), by didactically explaining data analysis procedures that, possibly, still seemed unclear to researchers. Although the incompatibility is

recognized, for example, between systematizing the volume of data typical of qualitative studies and the restriction of pages in the majority of scientific journals, it is possible that the lack of clarity in the analytical procedures in qualitative scientific articles is due to weaknesses in terms of training and execution of the analyses.

This article sought, through the presentation of a narrative research, to exemplify the logical and inferential processes of a thematic analysis. This was situated in the school of reflexive thematic analysis, which has the characteristic of using inductive inference, that is, without the establishment of predefined categories (Braun et al. 2019). It followed the similarity logical procedure when organizing the data by classification strategies (such as coding and categorizing), as opposed to the contiguity logical procedure, with strategies of data reduction to essential and sequential aspects (Patton 1990; Seidman 1998). The case also explained the steps in the process of formulating themes, clarifying the differentiation between code, category, and theme.

Finally, the article proposed the refinement of the formulated themes. A higher level of thematic/analytical complexity could lead to the presentation of hypotheses stated in an affirmative way that can be tested or falsified in later studies. Although not a consensus among thematic analysis researchers, formulation of hypotheses could allow the advancement of analyses beyond strictly descriptive themes, analogies, or identification of native categories. The formulation of themes as hypotheses can promote knowledge advancement by coupling, in a interactive way, exploratory and verification methodological strategies (McAdams 2012). Accordingly, the generation of hypotheses formulated at the level of the thematic statement works as an indicator of analytical quality and contributes to the operationalization of results found in qualitative research, directing new studies. The identification of different levels of complexity in the process of formulating themes can support greater analytical sophistication in qualitative research and foster later stages of theory construction, advancing beyond more descriptive ones.

The present study presents limitations as it does not explore in detail the inferential differences between thematic analysis and other qualitative research methods focused on the development of categories by similarity inferential criteria. Such a comparison would be desirable to better clarify the real specificities of methods with different names but similar analytical procedures. In addition, a test demonstrating the coupling of an abductive logical criterion over another type of logical criterion would help in elucidating the use of the creative conjecture in qualitative research. This resource is widely used in qualitative research, however, little described in the process of methodological reporting and results of publications.

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## Compliance with Ethical Standards

**Conflict of Interest** The authors declare that they have no conflict of interest.

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