Stefan Rädiker, Udo Kuckartz

Focused Analysis of Qualitative Interviews with MAXQDA

Step by Step

MAXQDA PRESS

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Content

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Foreword

When we wrote this book, we thought of the many workshops and courses on research methods we have led. We wanted to write a book that would be a good resource for such a course; in this case a course on qualitative interview analysis. Our guiding principle in writing this book was to present – as briefly and concisely as possible – a step-by-step procedure for analyzing such data: a maximum of 120 pages including bibliography and glossary. That was our intention, which we almost stayed true to.

For whom have we written this book? Students, first and foremost, and by that we mean students at various stages of their studies: students carrying out interviews for research projects who may be asking themselves how they should analyze them, but of course also students who are analyzing interviews in the context of their bachelor's or master's thesis. This book is equally aimed at doctoral students and researchers who might already have gained some experience in interview analysis. Finally, when writing this book, we also had people working outside the academic context in mind, who may be faced with the task of analyzing interviews and often work within rigorous time constraints, e.g. in market research, NGOs or companies.

In the many workshops and seminars we have conducted over the years at universities and research institutes in a wide variety of disciplines, we have repeatedly faced the problem of teaching analysis procedures for qualitative interviews and their practical implementation with MAXQDA in a one- or two-day workshop. This has resulted in a great deal of experience, including experience in how the essential procedures for interview analysis can be taught successfully in a relatively short period of time. Over time, we came up with the idea of recording these experiences in a textbook. The result is this book, for which we have chosen a concentrated format according to the motto "Keep it short!" The desired brevity requires some degree of reduction, and so from the outset we have concentrated on the most common form of interviews in qualitative research, namely interviews conducted using an interview guide. Guided interviews, such as problem-centered interviews (Witzel & Reiter, 2012) or expert interviews (Bogner et al., 2009), may contain narrative elements, but they differ in principle from narrative interviews, such as those conceived and described by Schütze (1983) and Wengraf (2001), as far as their structure and questioning technique is con-

cerned. The background here is that a research project deals with a research question that already forms the basis of the data collection in the form of a guideline, i.e. the empirical research is structured, systematic, and targeted within a certain range. We have designed this book for this research style and for qualitative interviews of this type.

When we describe our approach as *focused analysis*, we consciously pick up an adjective that Robert Merton and Patricia Kendall originally chose to describe a certain type of data collection, the *focused interview* (Hopf, 2004; Merton & Kendall, 1946) which pre-defined subjects of conversation are at the center of the data collection process. This describes a situation which is very similar to that of many current research projects in which qualitative interviews are used for data collection. The subjects of discussion are usually recorded in a guideline that can be handled flexibly so that research participants can also address aspects that have not been anticipated. The methods of analysis presented in this book are designed precisely for such interviews. In this respect, the term *focused analysis of interviews* seemed to us to be appropriate; it also clarifies the reference to the tradition of qualitative-empirical research. In the following introductory chapter, we describe which further considerations contributed to the choice for the *focused analysis of interviews*.

We then present the process of focused analysis in six steps: from the preparation of the data to the writing of the research report and the documentation of the analysis steps. In all six steps we present the implementation with the software MAXQDA and give examples from research practice. The focus of the description is always on the practical implementation, while methodological and epistemological aspects are only rarely addressed. This may attract some criticism, but in our view this is justifiable, since the literature on general questions and the methodology of qualitative research is already abundant (e.g. Bryman, 2016; Creswell, 2014, 2016; Denzin & Lincoln, 2018; Flick, 2018, 2020; Flick et al., 2010). However, there is a need for practical instructions on how to proceed step by step in an empirical project. For this reason, each of the six chapters ends with a checklist of the actions required in the respective analysis step and a short list of further resources that are suitable for deepening the subject matter covered.

Regarding the use of MAXQDA, we recommend that you watch the introductory tutorial on YouTube and/or read the Getting Started Guide available at maxqda.com. For a more in-depth introduction, please refer to our book “Analyzing qualitative data with MAXQDA”, which was published by Springer Nature in 2019 and is available via springerlink.com.

Before we get started with the introductory chapter, we would like to thank all those who supported us in writing this book, gave us valuable feedback, or improved our text with interesting ideas. For their feedback on our manuscript, we would like to express our special thanks to Inka Bormann, Uwe Flick, Camilla Kuckartz, Sabine Lauber-Pohle, Andre Morgenstern-Einenkel, Sebastian Niedlich, and Herwig Reiter. Very special thanks go to Sean Ohlendorf: he actively supported us with the translation of this book into English and contributed countless valuable suggestions.

Stefan Rädiker and Udo Kuckartz, September 2020

Introduction: Systematic and focused analysis of qualitative interviews

In this chapter:

- ✓ Understanding the meaning of the term "systematic analysis"
- ✓ Knowing about the benefits of using QDA software
- ✓ Understanding the meaning of the term "focused"
- ✓ Learning about the methodological background for a focused analysis of interviews
- ✓ Gaining an overview of the six steps of interview analysis

What does systematic analysis mean?

Anyone attending a national or international scientific conference is confronted with a huge variety of research topics, research projects, and research questions. In the vast majority of cases, the research is *empirical*, i.e. data is collected to answer a research question, and this is done using very different methods: for example, interviews or focus groups are conducted, people are interviewed by phone or online, observations are made, documents are analyzed, data from Twitter or Facebook is analyzed, and much more. The respective data can consist of texts, images, audio and video recordings, but also of measurements and figures. The latter are analyzed using statistical methods; the non-numerical data are collectively referred to as "qualitative data", for which there are a wide range of possible analysis methods. Of the qualitative methods of data collection mentioned above, interviews are by far the most frequently conducted – and this book deals with their systematic analysis.

Why is it useful to systematically analyze qualitative interviews? And what does *systematic* mean? At first glance, it may seem irritating to ask such a question at all. Is it not a matter of course that in scientific research the data collected is systematically analyzed? The answer is: "unfortunately no". How problematic an unsystematic approach is can be illustrated by an example from everyday media reporting. Imagine a reporter interviewing car drivers who are stuck in traffic jams due to a blockade by climate activists. Can you be sure that the "voices of the citizens" selected for the tel-

evision report accurately reflect the opinions of those stuck in the traffic jam? Probably not. An editor might even send a reporter out into the world specifically in order to collect voices that fit into a pre-existing ideological frame. This step is not so far away from the fabrication of reports and data, as in the case of the German journalist Claas Relotius (J. Moreno, 2019), who faked reports for several popular magazines and even received numerous awards for his supposedly outstanding articles. Precisely such incidents in the field of non-scientific research or journalistic investigation would be a strong argument for *systematic analysis*, *scientific honesty*, and the *ethical obligation* of scientists not to sweep anything under the carpet and simply leave it out. Beyond the deliberate, ideologically motivated selection of certain data, there is a second argument for systematic analysis, namely the avoidance of jumping to hasty conclusions based on the plausibility of a few cases. In everyday life, we tend to get a quick overview, to interpret situations and the actions of other actors based on our own previous experiences and (pre-)judgments in order to be able to take action. In research, however, there is the possibility – relieved of the pressure to act – to take a step back, to consider all the information, to adopt different perspectives, and to reveal one's own prejudices and previous experiences and to set them aside as much as possible.

Systematic analysis for us means the following:

- Firstly, that all of the interviews relevant to the research questions are included in the analysis. This means that no episodic and no arbitrary approach is taken.
- Secondly, that the interviews are analyzed in the same way, which means, for example, that each interview is first read in full before it is analyzed in detail.
- Thirdly, that the instruments of data collection and analysis as well as the procedure of the entire research process are disclosed and can thus be understood and analyzed by the recipients of the study.
- Fourthly, that suitable procedures are used to ensure that the analysis itself also meets intersubjective standards, i.e. that several people involved in the research arrive at comparable results.

The latter will not be possible for every project for reasons of research economics alone, for example if a project – for instance in the context of a dissertation – is carried out by only one person. In this case, the third point becomes all the more important, namely that the entire analysis should be transparent, and the individual steps should be described in detail and comprehensibly.

For us, a systematic analysis in 2020 also includes the use of suitable QDA software (QDA stands for Qualitative Data Analysis). QDA software offers the optimal conditions for systematic analysis. This provides researchers with a wide range of analytical

options (Kuckartz & Rädiker, 2019) That these are by no means limited to the organizational potential of a computer is shown by the interview analysis steps presented in this book: working with category systems, multilevel coding processes, diverse commentary and memo functions are among the many available functions, as is the option of working with thematic summaries and visualizations. Another major advantage of QDA software is that complete transparency can be established over the working process and that there is always a connection between the original data, the analytical categories, one's own notes, comments, analysis results, and developed interpretations and theories. Teamwork can also benefit from the use of QDA software.

What does focused analysis mean?

The term "focused" is not unknown in the field of social research methods. For example, focus groups are a very common method of data collection and are increasingly used in research projects. In the tradition of social science methods, the *focused interview* according to Merton and Kendall (1946) is widely known. The authors initially used the term focused for those interviews that work with a defined stimulus, such as a film or film clip. In the context of mass communication research in the 1940s, they first showed a film to their research participants and then, focusing on this topic, conducted guided interviews in group situations. Later, the term "focused interview" was extended to include individual interviews. The focused interview is used very frequently, especially in market research, classroom research, and educational research. It shows certain similarities to the *problem-centered interview*, which also works with an interview guide (Witzel & Reiter, 2012). However, the latter is more open and has an explicit accentuation of narrative elements, which in fact also play a role in the focused interview. Here, too, the interviewees can bring in free associations to the subject of the interview, for example connections to their own biography in the form of narratives.

We first considered if we should use the term "problem-centered interview analysis" for the approach to analyze qualitative interviews presented in this book. In fact, the two terms "centered" and "focused" are similar to each other. Both terms have the meaning of concentration or bundling in common. The term focus connotes a viewpoint or focal point that may be associated with the field of optics and photography. Here, the objective of qualitative research or research in general seems to us to be better represented than by the term "centered", which connotes a "central point", and has a spatial reference or association with geometry. But why then did we not call

the approach *problem-focused interview analysis?* The reasoning is quite simple in this case: qualitative research, like empirical research in general, is not limited to the investigation of "problems". Research can investigate very different phenomena and have different objectives, ranging from descriptive research to biographically oriented research, from evaluation research to transformation research, and much more. Thus, it is by no means always a "problem" which is studied, unless one were to operate with a very broad concept of a problem that encompasses everything that can be formulated as a research question.

Methodological background for a systematic and focused analysis of interviews

In the following chapters we will describe in detail how to proceed in a systematic and focused analysis of qualitative interviews. Our proposal is based on a large number of more or less detailed approaches on methods for analyzing qualitative data. These are

- first, our own work on qualitative content analysis (Kuckartz, 2014a), on computer-aided analysis of qualitative data (Kuckartz & Rädiker, 2019), and on mixed methods (Kuckartz, 2014b),
- the numerous other works on qualitative content analysis, in particular Mayring (2014) and Schreier (2012) as well as the two special issues of the journal "Forum: Qualitative Social Research (FQS)" on Qualitative Content Analysis I and II (Janssen et al., 2019; Stamann et al., 2020),
- the work of Guest, MacQueen, and Namey (2012) on "Applied Thematic Analysis",
- textbooks on Grounded Theory (Bryant & Charmaz, 2011; Corbin & Strauss, 2015; Flick, 2017), which are especially interesting for their description of the different coding phases and of the important role of analytical memos,
- the work of Saldaña, in which he addresses questions of categories and coding in a comprehensive manner (Saldaña, 2015),
- the works of Bazeley (2013) and Creswell (2014, 2016), which deals with many practical aspects of qualitative data analysis,
- the highly multifaceted ideas and proposals for the display and visualization of analyses and results of Miles and Huberman (1994) and Miles, Huberman, and Saldaña (2014),
- the texts combining qualitative and quantitative methods by Creswell and Plano Clark (2018), Kelle (2015), Morgan (2014), and Bazeley (2017),

- numerous other texts that provide valuable suggestions on individual aspects; Flick (2018, 2020), as well as Witzel and Reiter (2012) should be mentioned here as examples.

In almost all of the above-mentioned works, the coding of the data plays a prominent role. Coding means assigning a category (code) to a text passage of an interview. All the details about categories and codes are covered in Chapter 2. Hence only a very brief definition of the term "code" by Miles et al. (2014, pp. 71–72) is mentioned at this point:

> "Codes are labels that assign symbolic meaning to the descriptive or inferential information compiled during a study. Codes usually are attached to data 'chunks' of varying size and can take the form of a straightforward, descriptive label or a more evocative and complex one (e.g. a metaphor)."

Flick distinguishes two main strategies for analyzing qualitative data: the first aims at summarizing the data and reducing complexity; the most important methodological step here, according to Flick, is the coding of the data (Flick, 2014, p. 11). The second strategy takes a more interpretive approach, sometimes working with very extensive or several competing interpretations, and tends to expand rather than reduce the data. Taking this differentiation as a yardstick, the *focused analysis of interviews* we propose can be clearly assigned to the first strategy. Analyzing the data systematically and with a focus on answering research questions is done with a generalizing objective, i.e. there is a requirement that the results have a wider range and are not limited to the sample and setting under investigation. Only in rare cases, however, will it be possible to generalize in a qualitative interview study in the same way as in survey research, namely by means of the methods of statistical inference based on a random sample. The sample size of a qualitative interview study is usually too small for this and the samples do not meet the conditions of a random selection. What can also be achieved with a qualitative interview study, however, is on the one hand generalization in the sense of the transferability of insights to other settings. This requires precise information on the setting and an analysis of the respective contexts. Secondly, generalization can also take the form of discovering patterns and formulating a (new) theory, the validity of which must then be investigated in further research projects.

Qualitative research is very diverse. Over time, many very different research traditions have developed, for example phenomenological research, narrative research, ethnographic research, case studies, grounded theory, the documentary method, and many others. Some scholars speak of "approaches" (Creswell & Poth, 2018), others of "analytical strategies" (Flick, 2014), and still others of "methodologies" or "methods"

(Bernard, 2013). Some approaches are explicitly theory-oriented, such as ethnography or grounded theory, whose objective is even explicitly to develop a theory, namely an empirically based theory, as implied by the name. Other approaches pursue the goal of a (dense) description or aim to evaluate projects or programs.

In almost all approaches the interview plays a role as a method of data collection, i.e. it is not assigned to a specific approach. The same goes for the method as it is presented in this book: it is not assigned to a specific approach of qualitative research but is understood as a method that can be used profitably within different approaches. This is particularly true for the analysis options described in Chapter 5 following the coding steps ("beyond coding"), which can be used both for description and theory-building, and even for theory review. Theory, as Creswell (2016, pp. 43–44) points out, can play a role in every phase of a project; at the beginning of a project, it can already be decisive in formulating the research question and the sampling strategy; during the course of a project, it can set the direction of the analysis and control the choice of analytical techniques; and at the end of a project, theory can be generated, as in the case of grounded theory, or it can provide the framework in which the results of the project are placed. The role of theory is thus a matter for the researchers; the method of focused analysis does not dictate it. It can be used for a variety of purposes, which is why we will not explain in the individual chapters whether the analysis technique in question is more descriptive or more related to theory-building; in most cases, it can be used for both.

Interview analysis in six steps

The method presented in this textbook proceeds in six steps, each of which is covered in a separate chapter:

- *Step 1: Prepare, organize, and explore your data*
  The first chapter deals with the preparation and organization of the data. It also describes the beginning of the analysis, such as the intensive reading of the interviews and the writing of initial memos and case summaries.
- *Step 2: Develop categories for your analysis*
  In the second chapter, we describe how the path from the interview guide to the analysis categories proceeds and which criteria categories should fulfil.
- *Step 3: Code your interviews* ("*basic coding*")
  In steps 3 and 4, the focus is on coding. The third chapter describes the first coding cycle, which we call *basic coding*.

- *Step 4: Develop your category system further and the second coding cycle ("fine coding")*
  Step 4 continues the coding process and the work on the category system. The coded text passages are systematically processed, categories are differentiated, and the data is coded accordingly in a second coding cycle.
- *Step 5: Analysis options after coding*
  This step addresses the following questions: How to proceed after coding? Which analysis options are available and how the results look like?
- *Step 6: Write the research report and document the analysis process*
  The final sixth step is dedicated to writing: How do I write the research report or the empirical parts of my dissertation or master thesis? How can transparency be created such that the readers of my research can understand it as well as possible?

The contents of the six steps of the analysis can be found in a similar form in other methodological presentations such as those of Creswell (2016) or Roulston (2014). It does not matter how the contents are distributed to individual phases or steps, or whether a process model is divided into four, five, six, or seven phases or steps. We deliberately speak of steps, and by doing so we want to express that the analysis is progressing: from the preparation of the data to the writing of the research results and the archiving of the data. The choice of the metaphor of progress is not intended to imply that the process of analysis does not or should not also contain circular elements. The opposite is the case: steps 3 to 5 in particular are not to be thought of as strictly separate. Results can very well be written down already during the basic coding of the interviews (step 3), which will be incorporated into the in-depth analysis in step 5. The opposite can also be the case, namely that new aspects and findings emerge in step 5 that suggest a new step of coding. The step metaphor should therefore not be interpreted as a tight corset, but rather as an orientation model that reminds the researchers that further steps are necessary to achieve their goal – and the goal for research projects is to produce a research report. This report represents the feedback of the study conducted to the scientific community. The report must meet standards and quality criteria and must relate to the current state of research.

But the step metaphor should not be taken too loosely either. The sequence of steps cannot be arbitrarily twisted or even reversed; of course the analysis process must begin with the preparation of the data, and of course the organization of the data and its categorization must take place before it can be interpreted, and before the interpretations and conclusions are written down.

An overview of the six steps is shown in Fig. 1. On the one hand, the figure is intended to illustrate that the first three steps can be regarded as the basis for steps 4 to 6 and, on the other hand, that the research questions take on a leading and supporting role for all steps of the focused analysis of interviews.

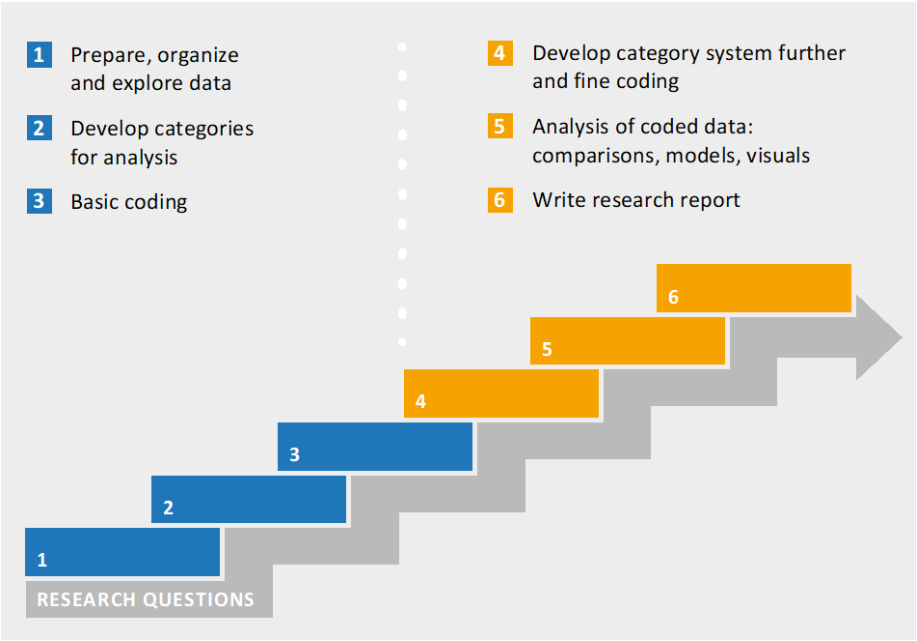


Fig. 1: Focused analysis of interviews in six steps

1 Prepare, organize, and explore your data

In this chapter:

- ✓ Transcribing interviews according to rules and organizing them in document groups
- ✓ Including sociodemographic data as document variables
- ✓ Getting to know criteria for the evaluation of research questions
- ✓ Keeping research questions in mind as a guideline
- ✓ Reflecting on your own point of view and assumptions
- ✓ Learning different techniques for exploring the interviews
- ✓ Recording important findings for further analysis

Preparing and organizing your data

Every computer-aided interview analysis starts with preparing the data and importing the data into the software. If the qualitative interviews were collected specifically for the project and not as a secondary analysis of already existing interviews, the first task is to transcribe the interviews. With qualitative written online interviews, this time-consuming work is not necessary, since with this type of data collection the research participants type in their answers themselves. However, such qualitative online interviews have been used relatively rarely so far. As far as transcribing is concerned, things have recently changed at a rapid pace. The dream of automatic transcription, which qualitative researchers have had at the top of their wish list for many years, is now within reach. With software such as Trint, AmberScript, Google's Live Transcribe, or f4x, you can already save a lot of time today compared to transcribing interviews manually. However, post-processing is still absolutely necessary (just as with transcriptions from external transcription services) and this requires an often underestimated amount of time. Since things are changing so quickly in this area, we will refrain from comparing the available software for automatic transcriptions and describing how to use these programs.

The topic of transcription rules remains important, however, as these determine the appearance of the interview texts to be analyzed and also affect the analysis options. For this reason, we would like to briefly present a simple transcription system that is practicable for guided interviews. This is a system which we developed over the course of an evaluation project (Kuckartz et al., 2008, pp. 27–28) and which have since expanded on with our own experiences and with additional suggestions from Dresing and Pehl (2015):

1. Each speech contribution is transcribed as a separate paragraph. To increase readability, changes of speakers are made clear by a blank line between the paragraphs.
2. Paragraphs for interviewer(s) or moderator(s) are introduced by "I:" or "M:", those for the interviewee(s) by unique abbreviations, e.g. "R:". Numbers are added to the abbreviations ("M1:", "M2:", "R1:", "R2:", etc.) to distinguish between several people in a recording. As an alternative to abbreviations, names or pseudonyms can be used. Labels for speakers are written in bold for better recognition.
3. Speech is transcribed verbatim, i.e. not phonetically or in summary form. Dialects are not transcribed but translated as accurately as possible into the standard form, e.g. standard English.
4. Language and punctuation are standardized slightly where necessary, i.e. to approximate written language. For example, from "He's gonna write a book" → "He is going to write a book". The word order, definite and indefinite articles, etc. are retained even if they contain errors.
5. Clear, longer pauses are indicated by dots in brackets "(...)". Depending on the length of the pause in seconds, one, two, or three points are used; for longer pauses, a number (in digits) corresponding to the duration in seconds.
6. Intentionally stressed words are underlined.
7. Very loud speech is indicated by writing in capital letters.
8. Affirmative or agreeing utterances made by interviewers (mhm, aha etc.) are not transcribed so long as they do not interrupt the flow of speech of the interviewee.
9. Short interjections made by the other person, such as "Yes" or "No", are included in brackets in the speech without starting a new paragraph. The abbreviation of the person speaking is prefixed without a colon.
10. External interruptions or interferences are noted in double brackets stating the cause, e.g. "((cell phone rings))".
11. Vocal utterances made by both the interviewee and the interviewer are noted in simple brackets, e.g. "(laughs)", "(groans)", or similar.

12. For videos: non-verbal actions are placed in simple brackets, such as "(opens the window)", "(turns away)", or similar.
13. Incomprehensible words and sections are identified by "(unclear)".
14. All information that would allow an interviewee to be identified is to be rendered anonymous.

A short excerpt from an interview, which was transcribed according to these rules, is shown in Fig. Fig. 1-1.

I: And you're meeting up just now at the end (**R** Yes, exactly.) or have you been meeting up for a while.

R: Well, during the practice sessions we often had lunch together and did other things but yes, we've only met up for this at the end.

I: Right, right. What grade are you expecting in your exam?

R: You mean as a final grade? (...) I guess probably around a B+ or A-. I mean I'm pretty confident I'll get through it (laughs). So old papers are going around and when I look at them I think, yeah, they're definitely doable. And even just the mock exam took a lot of the anxiety around it out of it for me.

Fig. 1-1: Example of a transcript

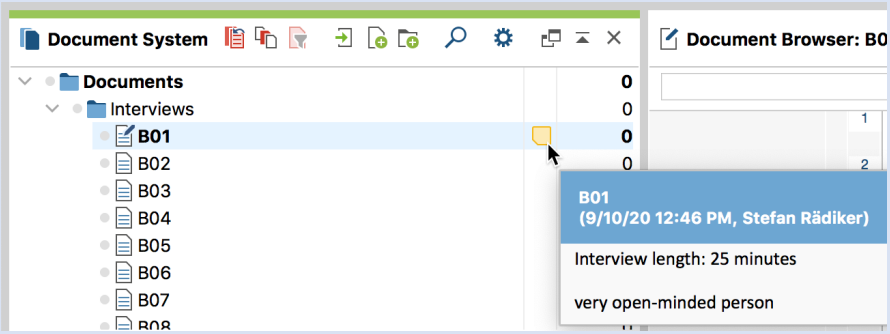
If you are transcribing your interviews yourself, you can import the audio recordings into MAXQDA and transcribe them here directly. MAXQDA provides numerous basic functions for transcription including autotext, foot pedal support, and adjustment of the playback speed. If you need more advanced transcription functions, you can use special software such as Easytranscript or Inqscribe. All these programs allow the transcripts to be exported as text files so that they can be imported into MAXQDA together with the audio recordings. When exporting, you should ensure that timestamps are inserted into the transcript. After importing the transcripts in MAXQDA, you can click on a timestamp symbol to listen to the audio for parts that are incomprehensible or difficult to interpret.

Tip: Many commercial transcription services add meta-information at the beginning of interview transcripts, e.g. the duration of the interview, a list of abbreviations, or anonymization notices. This information is better placed in a document memo or, in the case of sociodemographic data, imported as document variables. Both features are described later in this chapter.

Before importing your data into MAXQDA, it is advisable to think about their general organization. MAXQDA allows you to organize your documents into document groups; these are like the folders of a file system in Windows or macOS. If, for example, interviews with young people were conducted in different cities, it can be useful to distinguish between corresponding document groups ("New York", "Tokyo", "Berlin", etc.). The respective interviews can then be assigned to these groups. Document groups do not have to be defined at the beginning of the analysis; a corresponding breakdown can also be made afterwards.

Import your interviews and organize them in document groups

1. By clicking on the ***New Document Group*** icon in the header of the "Document System" window, you create a new document group.
2. Via ***Import > Transcripts*** you can then import transcripts directly into the currently selected document group. If the transcripts contain timestamps, MAXQDA will ask you for the corresponding audio files during import.
3. Create additional document groups if required and import additional documents. The documents can be moved between the document groups with the mouse.



Hints and tips:

- To transcribe an audio file, you can import it via ***Import > Audios***. Start the transcription by right-clicking on the name of the audio recording in the "Document System" and selecting the function ***Transcribe Audio File***.
- MAXQDA displays paragraph numbers next to the text, which can be used to cite interview passages. To switch to line numbering, you can right-click in the text and select ***Convert to Line Numbered Text***.

- If the interview transcript contains meta-information at the beginning: switch on Edit Mode, cut the information from the transcript, and paste it into a document memo (right-click on the document name and select ***Memo***). In the document memo, you can also add your notes on the interview situation and the interview process.
- If you have written extensive notes about the interview, it is better to import them as stand-alone documents.

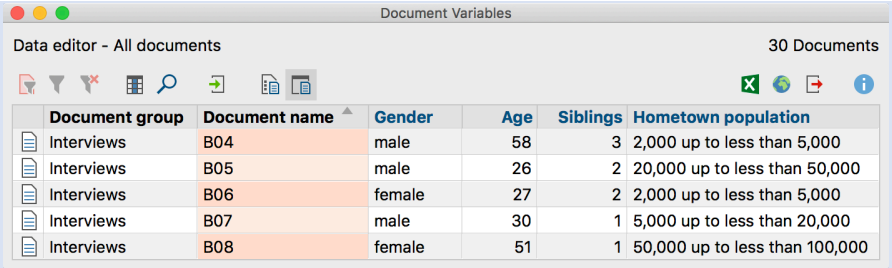
Adding sociodemographic and background data

In addition to the interview data, interviewees usually provide sociodemographic data, such as their age or place of residence, as well as further background information. For example, many interview methods, such as the problem-centered interview (Witzel & Reiter, 2012), require the interviewees to complete a questionnaire with additional information. Sometimes interviewees are also asked to rate aspects of their lives on a scale (e.g. "How satisfied are you with your health on a scale from '0 = not at all' to '10 = very satisfied'?") and are then asked why they have chosen a particular scale value or how this aspect could be improved. Since qualitative studies usually make a conscious selection of interviewees based on various criteria, these can also be integrated into the analysis.

All these data with standardized response options can be entered into MAXQDA for each person. To this end, a set of characteristics, so-called document variables, can be defined and the values for each person are then entered into a data table. These personal data can be displayed at any time and integrated into the data exploration and later analysis. They can also be used to select cases according to specific criteria; for example, for data exploration or for comparing two or more groups.

Store sociodemographic and background data in document variables

1. Open ***Variables > List of Document Variables*** and create the required variables. The variable types "Text", "Integer", and "Decimal" are used most frequently.
2. Switch to the window ***Variables > Data Editor for Document Variables*** and enter the respective values for each interview.



Document group	Document name	Gender	Age	Siblings	Hometown population
Interviews	B04	male	58	3	2,000 up to less than 5,000
Interviews	B05	male	26	2	20,000 up to less than 50,000
Interviews	B06	female	27	2	2,000 up to less than 5,000
Interviews	B07	male	30	1	5,000 up to less than 20,000
Interviews	B08	female	51	1	50,000 up to less than 100,000

Use document variables for selecting cases

1. Click the ***Activate by ...*** icon in the header of the "Document System" window and select the ***Activate Documents by Variables*** option.
2. In the dialog window that appears, specify the conditions that the interviewees should fulfill, e.g. [Age > 21] AND [Hometown population = 2,000 up to less than 5,000].
3. By clicking on the button ***New Set***, a document set is created in the "Document System", which contains all interviews with the required conditions.

Hints and tips:

- In the "Document System" window you can select variables that are displayed when you hold the mouse over the name of an interview.
- Using ***Variables > Import Document Variables***, background information can also be inserted into the project directly from an Excel or SPSS file, e.g. if you want to add questionnaire data for each person interviewed in a mixed methods study.

Formulating your research questions

Clearly formulated research questions help you to not get lost in the data, but to take a focused look at the data right from the start. But what is actually meant by the term *research question*? And what are useful questions for researching an area or phenomenon?

Research questions are the starting point of an empirical study. They concretize the subject of a study and control both the collection of data and its analysis. They are the main thread by which a study is oriented and which helps to make decisions in the research process. All research efforts are aimed at finding answers to the research questions. In qualitative research, one or two main research questions are often for-

mulated, which are then substantiated by further questions. Research questions should not be confused with questions from an interview guide. Although the questions in such guides often also use phrases and terms from the research questions, they are usually more specific questions.

When advising and supervising research projects, we have often seen difficulties arise in data analysis because the research questions were not yet fully developed when the data collection began. For example, research questions were

- too broadly formulated,
- did not fit the title or subject of the study,
- related to a less interesting side aspect of the main topic, or
- were formulated in a linguistically or syntactically incorrect way.

When writing down research questions, it is important to reflect in detail on the meaning of the chosen wording, because, for example, the question "*What aspects* of taking responsibility for climate protection are revealed in the interviews?" aims at something different than the question "*How are aspects* of taking responsibility revealed in the interviews?" While the first question could be answered by listing various aspects, the second is much more comprehensive and more demanding in terms of the analysis.

For the systematic development of research questions, there are various model approaches that define important components of a question. One such model is the medical-related PICO model, whose acronym stands for patient, intervention, control, and outcome. Nordhausen and Hirt (2020) present the PICO model in their manual for systematic literature searches as a structuring aid for a question and also give a concrete example of this: "What is the effect of (I) early mobilization in (P) older patients with femoral neck fracture (C) compared to normal mobilization in regard to (O) restoration of physical function?" (p. 18). In their manual there are other schemes which are also intended for the construction of search queries, but which can also be easily transferred to the construction of research questions. In our experience, research questions formulated according to such a model are much easier to answer than a broadly defined question such as "How do patients deal with fractures?" In addition to such models for the construction of suitable questions, general quality criteria can also be used to assess research questions. Such criteria exist for the context of evaluation (Balzer & Beywl, 2015, p. 72; Beywl et al., 2011, p. 57), which we will reproduce here in general terms. A research question should satisfy the following characteristics:

- *focused:* it is clear to which components of the phenomena under investigation the question is directed.
- *opening and grading:* the question is not whether a fact is present (this could be answered with yes or no), but to what extent something can be determined.
- *realistic:* it refers to facts that are actually related to the subject matter under investigation.
- *clear:* it is comprehensible and contains terms that can be understood by potential readers of the study without further explanation.
- *empirically answerable:* it is possible to answer the question by collecting and analyzing data.
- *adapted to the resources:* it can be handled with existing resources and time budgets.
- *useful:* it refers to the information interests of the study's addressees.

Particularly in the case of data collection methods working with open-ended data, it is only natural that the data contains many aspects and that a great deal of effort is required to not let go of the reins entirely. Inevitably, questions arise such as: Is not everything important and worth analyzing? Isn't it a pity to put aside so many interesting questions and phenomena? Yes, that is certainly the case and, regrettable or not, every systematic analysis must reduce the level of complexity and focus its analytical scope. The first reason for this is the limited time that is generally available to researchers. The second is that the funding agencies and clients of a project usually only want to have specific questions answered, but in a more profound way. Doing research is like going on a journey: For example, Europe can only be explored very superficially in ten days. If you want to see more of certain details – e.g., if you want to explore coastal landscapes – you have to concentrate on particular areas, and if you are interested in Bavarian castles, your radius of action will be even smaller.

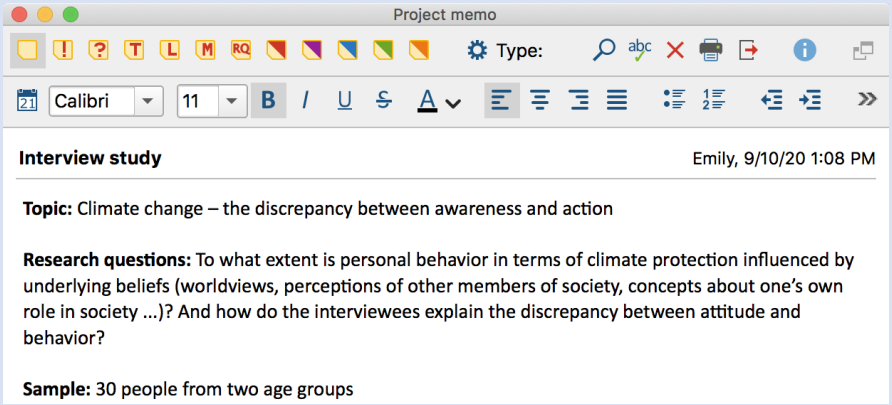
Focusing is therefore especially necessary in qualitative research and it is constantly being counteracted by the diversity of the data and the many aspects of the living world. In this respect, it is of elementary importance to remind oneself of the research question(s) again and again. The best way to do this is to print it out in large type on your desk or even stick it to the bottom of the screen; it also makes sense to include the question(s) in the MAXQDA project.

Assigning such a central role to research questions does not mean, however, that these cannot be modified in the course of the analysis. On the contrary, it is only during the analysis process that certain facets of the question will become visible and come increasingly to the fore. Of course, these new aspects can and must be taken

into account and a corresponding modification and specification of the research question(s) is therefore justified. At the beginning of the analysis, however, the principle is "Always keep your research question(s) in mind".

Record your research question(s) in MAXQDA

1. Switch to the ***Memos*** tab and select the ***Project Memo*** function. MAXQDA displays a memo window in which you can enter your research question(s) and other project-related information such as notes on research design.



2. When the window is closed, the memo is saved and is then available at the top of the "Document System" window by double-clicking on the yellow memo icon.

Hints and tips:

- It may also be useful to graphically present the research questions and the concepts addressed in them in a concept map at this stage. In Chapter 2, we present a simple map showing the relationships of the core concepts of an example study that we created with ***Visual Tools > MAXMaps***.
- ***Home > Logbook*** provides access to a digital project diary in which you can enter important developments and decisions in the analysis process.

Reflecting on and disclose your prior assumptions

When analyzing qualitative data, we as researchers should always be aware that we see the phenomena under investigation through the prism of our own preconceived perspectives (Finlay, 1998; Kelle, 2005). This can be seen quite clearly when research-

ers from different disciplines analyze the same data: psychologists tend to draw on their previous psychological knowledge, while sociologists tend to consider social contexts.

How can the greatest possible openness in the qualitative research process be achieved despite these existing preconceptions? How does one succeed in reflecting on existing 'prejudices' about the research topic? The first obvious step is to involve people from different disciplines in the analysis of data and phenomena in order to broaden the perspective, but this is not always possible due to a lack of resources. Irrespective of this, it is advisable to adopt a reflective position, to reveal one's prior understanding, and to examine it critically. For example, the following questions can serve as a starting point. They can also provide valuable assistance during the design of the study and the preparation of the interview guide:

- What assumptions do I have about the relationships examined?
- What do I implicitly assume when I ask this interview question? For example, do I imply the existence of a challenge or problem that may not be experienced as such?
- Or also as a paradoxical question as it is used in systemic therapy: In my opinion, how could the problem or phenomenon under investigation be intensified? How, for example, would teachers at a school have to behave so that pupils feel even more excluded from their school community?

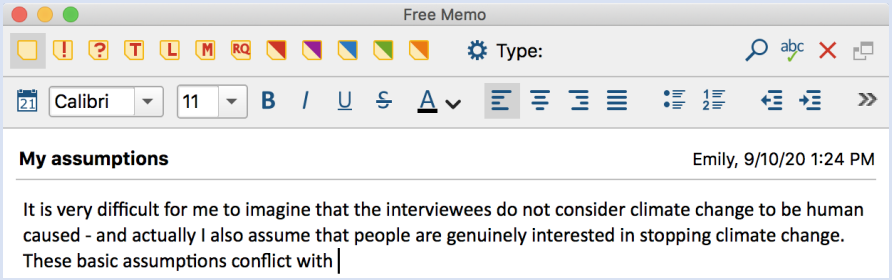
It can also be helpful to test the interview guide on yourself, i.e. to slip into the role of the interviewee and let someone else interview you. In the case of topics that do not directly concern the researchers themselves – such as dementia – only hypothetical answers can be given. But as Moreno impressively demonstrated with his consulting and research method "Psychodrama" (J. L. Moreno & Moreno, 1946), putting oneself in the shoes of other people is a thoroughly worthwhile affair – which sometimes produces astonishing results. The awareness of one's own presuppositions prevents one from seeing only what is expected and makes it possible to become open to alternative points of view. The result of reflection can also be very concrete assumptions about the phenomenon under investigation, which are then systematically put to the test during the research process.

The visualization of one's own assumptions and preconceptions also includes the examination of one's own ideas about how research creates knowledge (epistemology) and which idea of reality (ontology) is taken as a foundation. The set of underlying philosophical assumptions that guides one's own research practice is also referred to as a "worldview" (e.g. Creswell & Plano Clark, 2018).

Record your assumptions and preconceptions in MAXQDA

The use of *free memos* is recommended for jotting down your presuppositions:

1. Switch to the ***Memos*** tab and select ***New Free Memo***. In the memo window, first assign a suitable title for the memo and then note the results of the reflection and your presumptions about connections, etc.



2. If you want to access a free memo later, select ***Memos > Free Memos*** to list all free memos in MAXQDA's Memo Manager. You can also search for memos containing a specific word at any time by selecting ***Memos > Search Memos***.

Exploring the interviews

With the research questions and presumptions in mind, the exploration of the interview transcripts can now begin. This means reading the interviews and working with them. Exploration is about becoming familiar with the texts, discovering anomalies and patterns, and at the same time looking at the cases as a whole, without already slipping into a categorizing view of individual topics. Such exploration increases the understanding of the meaning that the research participants attach to the topics discussed in the interview. The benefits and costs of exploring the interviews in this way should of course be weighed up. In very time-restricted projects this step may be shortened or even skipped. Nevertheless, this step can lead to serendipitous discoveries of views or aspects that were not originally sought (Merton & Barber, 2004), and unexpected connections can become apparent that are worth analyzing in greater depth in the course of the study. It can also be helpful to pay attention to what was *not* said in the interviews.

The following options are particularly suitable for exploration:

- Conspicuous text passages can be marked in color.
- Word-based procedures can be used to search for specific terms.

- Word frequencies and word clouds serve to highlight frequent, but also rare and unexpected, possibly unusual words, terms, and metaphors.
- Ideas for analysis, interpretations, and conspicuous features relating to all or individual interviews or relating to a specific text passage can be recorded in memos.
- Important passages can be paraphrased, i.e. summarized in your own words.

Before the exploration can start, you must decide which texts you want to include. Do you want to concentrate on individual cases and explore them in more depth or is the goal to get an overview of as many cases as possible? A decision in this regard depends not only on aspects of content but also on the volume of data, the time available, and the importance that individual cases are to be given in the analysis. We believe it is important to ensure that the entire range of different cases is taken into account in the exploration. A selection based on sociodemographic information or on the length or complexity of an interview, for example, can be used for this purpose. The possible distribution of cases to different document groups in MAXQDA can also be used for the selection.

Regardless of which interviews you select: when you start exploring, the task is always "read, read, read". It is helpful to remember the hermeneutic circle or hermeneutic spiral according to which a previous understanding leads to a given understanding of a text, which in turn changes the previous understanding (Kuckartz, 2014a, p. 19). Your understanding of individual statements is improved by your understanding of the entire interview, and your understanding of the entire interview is improved by your understanding of individual passages. In concrete terms, this means that the entire interview text should be read first and text passages that are difficult to understand are to be set aside until the entire text has been understood. It can also be helpful to reread one or more interview texts once you have reviewed the other texts, since reading the other texts will have changed and expanded your overall understanding.

When working with MAXQDA, it is advisable to explore the data directly on the screen, but it is also possible to print out the interview texts if you prefer to work with paper and then transfer the findings, ideas, and conspicuous features later or directly into the MAXQDA file opened in parallel. By linking the transcripts with the audio recordings via timestamps, individual passages of the text can be monitored again in the original audio recording, which is particularly helpful in cases of uncertainty about how a statement was meant and should be interpreted.

Print a transcript with line/paragraph numbers

1. Open the interview transcript in the "Document Browser" window.
2. Click on the printer icon in the upper right corner of this window.
3. In the print dialog that appears, you can set the page margins to leave space for handwritten annotations next to the text (the options ***Display coded segments*** and ***Display memos*** automatically create space on the left margin).

Hints and tips:

- The line/paragraph numbers are particularly useful for joint discussion in a team or a research workshop.
- To play the sound clip, click on a timestamp (i.e. the icon) next to the text in the "Document Browser" window.

Highlighting important terms and sections

Most people have probably already highlighted passages when reading a scientific text. Colored markers are used to identify important terms, structures, and references in the text or entire sections. Even when working through interview texts, particular passages of text will inevitably stand out, either because they are (for the time being) difficult to understand, because they contain an aspect that is important for the research question but has not yet been considered, or because they seem particularly interesting for another reason. With MAXQDA it is possible to highlight such text passages with an electronic highlighter. The practical thing about the electronic highlighter is that the marked text passages can be compiled at any time later without having to scroll through all the interviews and look for colored markers.

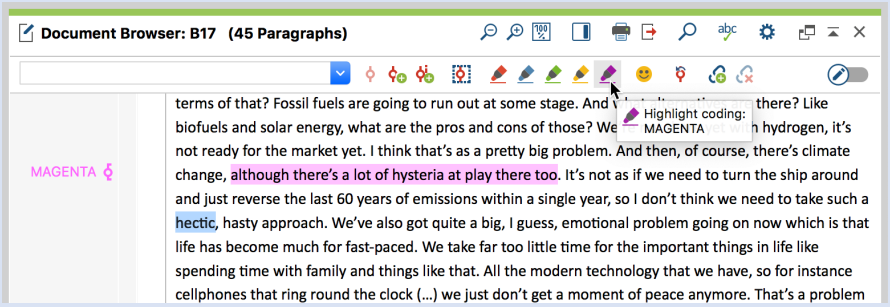
Mark important and/or special text passages

1. Open the interview transcript in the "Document Browser" window.
2. Select the text passage to be highlighted with the mouse and click on one of the symbols with a colored marker above the text.
3. MAXQDA then highlights the selected text with the chosen color.

Hints and tips:

- The same color should be used for the same types of highlighted sections, e.g. blue for language and red for contradictions within or between different interviews.

❖ The first use of a colored marker creates a code with the name of the color in the "Code System" window. A double click on this code opens an overview table with all highlighted text passages of the respective color.



Word-based procedures: Lexical search, word cloud, word frequencies

When using word-based procedures for exploration, a distinction can be made between two different approaches. In a *concept-driven* approach, words and word combinations of interest are searched for directly: if you have come across "fear regarding climate change" in an interview, you can search directly in all interviews to find out whether, and if so, how, fear is discussed. The search results can be coded including the surrounding sentence or paragraph so that they are always available for further analysis later (details on coding will follow in chapters 2 and 3).

In a *data-driven* approach, you examine which words and word combinations occur in the data and how often. This allows you to discover frequently used words and phrases but also unusual words and phrases. The word cloud then displays the most frequent words in an (interactive) display.

Search for words in your interviews

1. Start the function ***Analysis > Lexical Search*** and enter a search term in the list. The search term can contain spaces. You can also enter several search terms and search for their co-occurrence in a document, paragraph, or sentence.
2. The results table lists all the locations where the data was found. A click on a hit opens the interview and highlights the term found.

Create a word cloud and word frequency table

1. Right-click on a document, a document group, or the topmost entry in the "Document System" and select ***Word Cloud***. MAXQDA creates a word cloud with the most frequent words for the documents of the level clicked on.
2. In the word cloud window, open the tabular list of all words via ***Start > Word Frequencies.*** Mark all words that do not make sense and transfer them to the stop list with the words to be excluded by clicking on the red symbol ⛔.
3. Update the word cloud by clicking on the icon ***Refresh and apply stop list*** in the Word Frequencies window.

Hints and tips:

❖ Via ***MAXDictio > Word Combinations*** you request a list of 2- to 5-word combinations.

Writing notes in memos

The results of the data exploration should be recorded immediately in the MAXQDA project so that they are available throughout the course of the project and for documentation purposes. The following memos, which can be attached to various objects in a project, are best suited for this purpose:

❖ The *project memo* is located at the top of the "Document System". It is very well suited to recording general notes on the study.

❖ *Document group memos* are associated with a document group. Here, for example, information can be noted that affects all documents in this group.

❖ *Document memos* allow you to record notes on the interview situation, on the interview as a whole, on formal aspects such as the length, but also a summary of important contents. MAXQDA allows creating one document memo per interview in the "Document System" window.

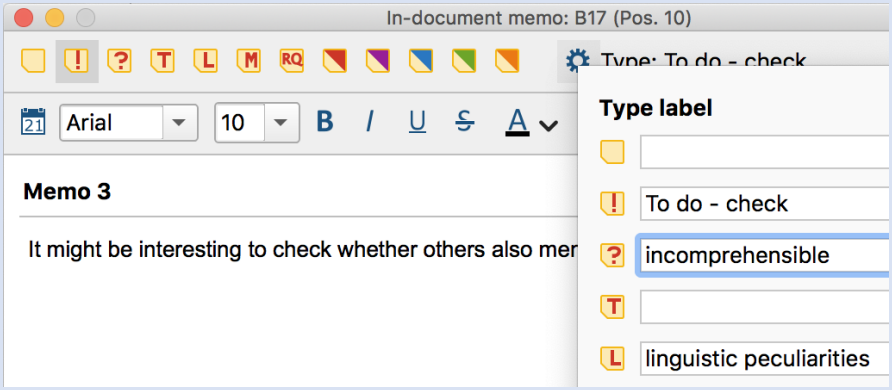
❖ *In-document memos* are the perfect tool to write down conspicuous features of individual text passages, formulations, and metaphors used. They are displayed right next to the text, just as if you had written a note by hand in the margin of the text. In-document memos are also suitable for text passages that are difficult to understand.

❖ *Free memos* differ from the other types of memos in that they are not assigned to specific elements in a MAXQDA project such as documents or codes. They are

therefore very well suited for recording general ideas, notes, hypotheses, or analysis ideas that do not relate to individual interviews, but rather to different interviews. Initial answers to research questions can also be noted here.

Write in-document memos in the "Document Browser"

1. Click with the right mouse button on a marked text passage and choose ***Insert Memo for Selection***.
2. In the memo window, you can assign a title for the memo and select a memo icon. The memo icons can be used to distinguish between different types of memos. You can assign labels to the individual memo symbols by clicking on the gear symbol.



Hints and tips:

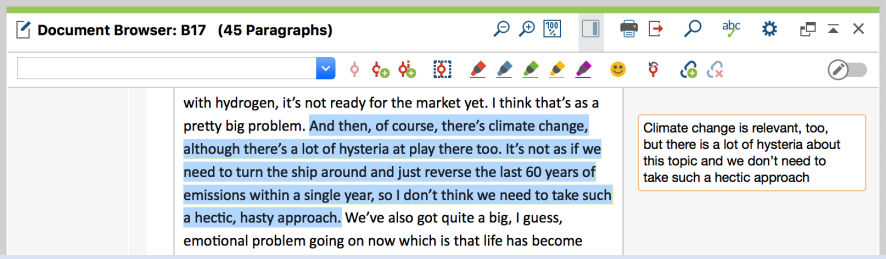
- The ***Memos*** tab provides access to the different types of memos at any time. Here you can also open a search function for the contents of your memos.

Paraphrasing text passages

Paraphrasing text passages can be very helpful, especially for beginners, when approaching a text and grasping the meaning of statements. Paraphrasing can also support the data-driven development of categories or form the basis for case summaries (see next section). It is, however, a very time-consuming process, which means that large amounts of text or even the entire data are rarely paraphrased as a whole.

Paraphrase sections of text in the "Document Browser"

1. Open the interview you want to paraphrase and switch to Paraphrase Mode via ***Analysis > Paraphrase***.
2. As soon as you mark a text section, a window appears in which you can type in the paraphrase for the section (max. 255 characters, approx. 2-3 sentences). The paraphrases then appear next to the text.



Hints and tips:

- You can also print an interview with the paraphrases displayed in the margin: ***Analysis > Paraphrasing > Print Document With Paraphrases***.
- The "Overview Paraphrases", available in the context menu of a document, provides an overview of all paraphrases written in the interview.

Writing first case summaries

During the data exploration, the most important contents of an interview for the research question(s) can also be summarized in a condensed form. Such summaries can be supplemented with a fitting title that picks up on the key points of the interview. As part of the evaluation of a university course on statistics, we have written the following summary of an interview using key points:

B7: The Junior Tutor

- At the beginning of the semester, she participated in the lecture and the exercise, at the end also in the tutorial, but less often in the lecture.
- She works through the material together with her boyfriend, explaining many things to him repeatedly and thus understanding it herself.
- She likes statistics, which she did not expect at the beginning.
- She emphasizes that the tutorial was always helpful.

- Due to some errors and its structure, the course reader sometimes leads to some confusion and is therefore in need of improvement.
- She feels well prepared for the exam in which she expects to receive a good grade through intensive practice, revision, and attending the tutorial.

Writing a short summary like this helps you to identify the essential contents of a case. Summaries can be used in a team to inform each other about the interviews without all team members having to read them in detail. In the style of "profiles", short case summaries can also be inserted in the methods section of the results report for the brief description of the individual interviewees. This has the advantage of making the readers of the report more familiar with the data, which means they are better able to assign later quotations in the report to the interviewees. However, it should be noted that such condensed summaries with a fitting title necessarily reduce the complexity of a case. Their primary function is to serve as a contextualization tool, keeping the context of a case in view.

Case summaries are best saved in MAXQDA as document memos in the "Document System" so that the contents are available at any time. Summaries are descriptive and do not contain interpretations – if these are integrated, they should be clearly noted as such, e.g. using a different font color or square brackets. The summaries can be written in key points as in the example or alternatively as continuous text. It may also be interesting to integrate sociodemographic data and background information into the summaries.

Summary

During the preparation, organization, and exploration of the data, the aim is to systematically organize the interviews in the MAXQDA project and to familiarize oneself with the contents. From a methodical-reflexive point of view, this phase involves recalling the research questions and examining one's own assumptions and preconceptions with regard to the research topic. The technical preparations include clarifying which transcription rules are to be followed and how the interview texts are to be organized in document groups. The exploration of the data is carried out by intensive reading of selected interviews. As a result of the exploration, comments, notes, analysis ideas, paraphrases, and/or first case summaries will become available. MAXQDA's various memo types are particularly suitable for recording the findings of this exploration phase.

Checklist

- ☐ Transcribe interviews according to well-established rules
- ☐ Review and correct transcripts generated automatically or by external transcription services
- ☐ Create suitable document groups in the MAXQDA project
- ☐ Import interviews into the document groups
- ☐ Enter sociodemographic and (if available) further background information as document variables
- ☐ Recall your research question(s) and record them in the project memo
- ☐ Record your own assumptions in a "free" memo
- ☐ Select interviews for data exploration
- ☐ Explore data using lexical search and word cloud
- ☐ Color code important terms and paraphrase text passages if appropriate
- ☐ Record initial findings and analysis ideas in memos; if appropriate, save initial case summaries in document memos

Further reading

Creswell, J. W. (2016). *30 essential skills for the qualitative researcher*. SAGE. (pp. 93–102)

Bazeley, P. (2013). *Qualitative data analysis: Practical strategies*. SAGE. (pp. 101–124)

Kuckartz, U. (2014). *Qualitative text analysis: A guide to methods, practice & using software*. SAGE. (pp. 49–54)

Kuckartz, U., & Rädiker, S. (2019). *Analyzing qualitative data with MAXQDA. Text, audio, and video*. Springer Nature Switzerland. (pp. 21–64 and pp. 123–134)

2 Develop categories for your analysis

In this chapter:

- ✓ Recognizing the different uses of the terms "codes", "categories", and "concepts" in the literature
- ✓ Differentiating the different types and purposes of categories
- ✓ Understanding the relevance of the interview guide
- ✓ Developing categories from the interview guide
- ✓ Getting to know the criteria for the quality of a category system
- ✓ Setting up the category system in a MAXQDA project

The tools of analysis: Codes, categories, concepts

Let us recapitulate what has been done up to this point in the analysis process. The researchers have followed clear methodological guidelines: using an interview guide, they have structured the interviews and conducted them with the participants. They have recorded the interviews as audio files, taken notes on the course of the interview, transcribed the interviews according to well-established rules, and prepared the data for computer-aided analysis. In addition, the researchers have already familiarized themselves with the data, marked important text passages, recorded ideas for the analysis, and perhaps even written initial case summaries.

The relatively free step of data exploration is now followed by a systematic step – and in our opinion, such a systematic analysis of the interviews requires working with codes, categories, and concepts. "Sure, but which one?" the reader might ask: codes or categories or concepts? This already addresses the problem of a certain confusion of terms, which we would like to discuss in more detail here. Let's start from the beginning: what is a code? Saldaña provides the following definition: "A code in qualitative inquiry is most often a word or short phrase that symbolically assigns a summative, salient, essence-capturing, and/or evocative attribute for a portion of language-based or visual data" (Saldaña, 2015, p. 4). Furthermore, he also states: "I advocate that qualitative codes are essence-capturing and essential elements of the research

story that, when clustered together according to similarity and regularity (a pattern), they actively facilitate the development of categories and thus analysis of their connections" (Saldaña, 2015, p. 9).

In these short quotations Saldaña establishes a hierarchy between codes and categories. Codes are grouped and this makes it easier to form categories and analyze their relationships with each other. Other scholars also describe a process of further development of the codes in the course of the analysis, which they try to grasp with other terms. For Creswell, for example, the analysis begins with *codes* or *code labels* that condense into *themes*, which then form *dimensions* at a higher level (Creswell, 2016, pp. 152–180).

Similar sequences can be found among scholars from the field of Grounded Theory: *codes – axial codes – selective codes* in Strauss and Corbin (1990), *concepts – categories – core category* in Corbin and Strauss (2015), and *codes – focused codes* in Charmaz (2014). The term *concepts* is found in Grounded Theory, in general treatises (Goertz, 2006) as well as in texts authored by scholars oriented towards critical rationalism. The term "concepts" refers to combinations of terms that play an important role in empirical social research in theory formation, e.g. concepts such as "ethnic identity", "responsible consumption", "sustainable management".

The variety of conceptual uses of the terms code, concept, and category sounds confusing and the confusion is perhaps even greater when one realizes that the methodological literature in the field of communication and media studies almost exclusively uses the term "category" and not the term "code". However, the categorization of a text is also referred to as "coding" in communication science, and those who do so are the "coders".

Let us note that all the scholars mentioned agree that the data are coded with the help of analytical tools; the tools are just described using different terms. There is also agreement that these tools (whether they are called codes, categories, concepts, or themes, etc.) are further developed in the course of the qualitative analysis process through various procedures such as grouping, summarizing, differentiating, focusing, and identifying key categories, etc.

We do not want to define our own terms or develop a new hierarchy of terms in this book but rather use the term "category". On the user interface of MAXQDA (and other QDA software), you will only find the term "code", so there is no distinction between different types of categories or between codes, categories, concepts, topics, etc. on a technical level. This task is in the responsibility of the researchers, which means that they must always keep in mind what function a MAXQDA code takes on for the analysis in a specific case.

Category names and category types

Categories are an important tool for the analysis of qualitative data (Kelle, 2010). They are used for classification, reduction, abstraction, and attribution of meaning and can be used for indexing, describing, and explaining the data (Kelle & Kluge, 2010, p. 60). Categories usually consist of one word or a two- to four-word combination. For example, Schwab (2016) published a journal article entitled "Subjective perception, patterns of explanation, and motives of educational professionals in communicating with parents whose children exhibit challenging behavior"[1]. The topics of the study expressed in the title can be found one-to-one in the analysis categories used, which all consist of a combination of two to six words (p. 94):

- Perception of professionals
- Explicit motives of professionals
- Wishes of professionals
- Perceived changes
- Explanation and interpretation patterns of professionals

When working with categories, you should be aware that they differ not only in length and wording, but that in practice different types of categories are used. We distinguish the following types of categories:

- *Fact categories* refer to verifiable, unambiguous circumstances, or events. Examples are "membership of a nature conservation organization", "duration of study" or "use a budget airline". Fact categories can therefore be used to classify information that is easily standardized.
- *Thematic categories* denote topics, arguments, or patterns of thinking and are very common in practice. The examples of categories mentioned above ("perception of managers" etc.) all belong to this category type, another example is "biggest world problems".
- *Evaluative, scaling categories* are used to assess the degree or the characteristics of an aspect or a phenomenon. A dichotomous scale can be used here ("present", "not present"), but more often an ordinal scale is used, for example an evaluative category "awareness of climate change" with the values "low", "medium", and "high". The evaluation of the interview statements and the grading on the scale is done by the researchers according to defined criteria.

[1] Translated by the authors.

- *Analytical categories* arise as a result of the analysis of the data. Compared to thematic categories, analytical categories are characterized by a higher degree of abstraction and interpretation and can also express an explanation of phenomena, such as the categories "compulsion to compensate" and "opportunism".
- *Theoretical categories are* categories that refer to an existing theory, for example "cognitive dissonance reduction" based on the theory of Festinger (1957). A theoretical category can be deducted directly (without taking into account the data) from a theory. Alternatively, an analytical category can also become a theoretical category if theories are referred to in the process of its development.
- *Natural categories* are words and phrases used by the interviewees. Alternatively, they are also called in vivo categories, especially in the vocabulary of the Grounded Theory approach.
- *Formal categories* are categories for formal characteristics of the interviews, e.g. the number of words in the transcript or the number of speech contributions by a person.

In addition, there are also *ordering, structuring categories* that are not directly used in the analysis, i.e. which are not directly assigned to any text passage. They do not organize the data, but the categories themselves, and thus take on a structuring function for the category system to ensure clarity and a good structure. Very often, interview guides are grouped by subject areas, which can be adopted one-to-one as structuring categories.

As the previous considerations and the listing of different category types make clear, categories differ in terms of various characteristics. It is therefore helpful to bear in mind the following distinguishing criteria when analyzing the data:

- *Scope of content* – Categories can be very narrow ("waste separation") or very broad ("individual environmental behavior").
- *Degree of complexity and abstraction* – The previous example shows that categories can also be formulated at different levels of abstraction. Analytical and theoretical categories are by definition at a higher level of abstraction than natural categories.
- *Significance and relevance to the core topic of the study* – Important thematic categories have a different significance in the study than supplementary categories, which are used, for example, to record the context or biographical background of the people interviewed.

Developing your categories for basic coding

The interview guide as a starting point

The method of focused interview analysis is designed for interviews that are conducted with a structuring interview guide. How to design such a guide is not the subject of this book, but since the guide plays such an important role in the procedure of an interview-based study, at least some indications of its role and design should be outlined here. In problem-centered interviews (Witzel & Reiter, 2012), the guide has a twofold function: firstly, it focuses the interview on the topics that are relevant according to the researchers' previous knowledge and, secondly, it makes it possible to compare interviews. According to Witzel and Reiter (2012, p. 51), it is thus the bridge between the researchers' interests and the field. A guide should not be confused with open questions in a survey. It does not necessarily consist only of formulated questions, but of the topics that are to be discussed in the course of the interview. It may often be useful to formulate the individual points of the guide as questions that can also be used as a stimulus in the course of the interview.

Witzel and Reiter (2012, pp. 186–191) deal extensively with the design of an interview guide and also present two examples from research practice. In our experience, guides usually comprise between one and three pages, depending on the breadth of content and the planned duration of the interview. More extensive guides should be avoided, because the guide also serves as a kind of cheat sheet for researchers, reminding them which topics they want to discuss in each interview. An excessively detailed guide runs the risk of being a 'guide bureaucracy' (Hopf, 1978) in which the questions are "ticked off" one after the other and no communicative process is initiated.

In a study on climate awareness (Kuckartz, 2010) which we will use for some examples in this book, the following relatively short interview guide was developed in line with a planned interview duration of twenty minutes:

Conceptions of the world

- In your view, what are the world's biggest problems in the 21st century?
- How can these problems be dealt with? Can they be dealt with at all? By whom?
- When you think of climate change and the necessary reductions in carbon dioxide emissions: can a change in consumer habits in developed countries have a positive effect?

Conceptions of the others

- We often talk about the discrepancy between attitude and behavior. People talk a certain way but act differently. What do you think are the reasons for this?

Self-image

- How do you see yourself in relation to global development?
- Through which behaviors do you think you can influence this development?
- And how do you actually behave?
- Would you like to do more?
- Do you feel a responsibility to deal with the problems of the 21st century?

Closing

- Do you think it is possible to learn how to deal with these problems? If so: How? And where?

In addition to the "questions about how" and "questions about what" common in interview guides, this guide also contained some questions which could initially be answered with yes or no. The interviewees were then asked to follow up and ask more precisely about motives and reasons. This procedure was chosen because the questions starting with "To what extent" might have been too suggestive at these points, and would have increased the social desirability factor, which is presumably a strong factor in the research field of "climate awareness".

In this study, four thematic blocks (Fig. 2-1) are addressed in the interview guide, with the "self-image" being the focus of the research: How do participants see their relationship to global problems, especially climate change? Do they feel responsible and how do they describe their own behavior regarding climate protection?

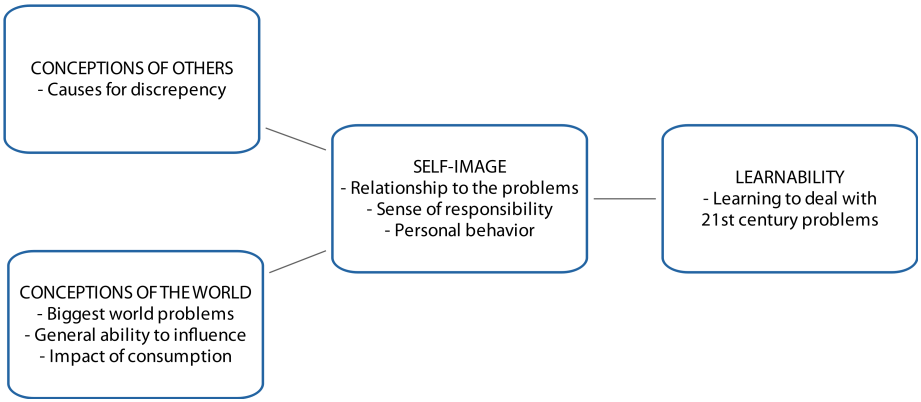


Fig. 2-1: The four content blocks of the interview guide

Developing categories from the interview guide

As already mentioned, we assume that in the focused analysis of qualitative interviews the interviews are conducted using a structuring interview guide. A great deal of preliminary work will have gone into this guide at the outset: The state of knowledge on the research topic is reviewed and possibly summarized in a condensed exposé. Gaps in knowledge are identified, the focus and interest of the study are translated into research questions and the structure and content of the interview guide are developed with the intended outcome of the study in mind. The guide is therefore not just a survey instrument; the entire preliminary work is expressed in it. Therefore, in the second step of the focused interview analysis, categories are developed based on the interview guide.

Table 2-1 shows how categories can be developed from the interview guide presented above. The questions in the guide are translated one after the other into categories, with the essential core points from the question being summarized in one or more appropriate words. It is advisable to choose the labels of the categories in such a way that their correspondence to the questions in the guide remains discernible. Particularly if a large number of categories are created, the thematic blocks can be used as structuring categories for a better overview.

Tab. 2-1:Categories developed from the interview guide

Topics and questions of the interview guide	Category
CONCEPTIONS OF THE WORLD	
1) In your view, what are the world's biggest problems in the 21st century?	biggest world problems
2) How can these problems be dealt with? Can they be dealt with at all? By whom?	societal efficacy
3) When you think of climate change and the necessary reduction of carbon dioxide emissions: can a change in consumer habits in developed countries have a positive effect?	consumption and climate
CONCEPTIONS OF THE OTHERS	
4) We often talk about the discrepancy between attitude and behavior. People talk a certain way but act differently. What do you think are the reasons for this?	causes for discrepancy
SELF-IMAGE	
5) How do you see yourself in relation to global development?	relation
6a) Through which behaviors do you think you can influence this development?	action
6b) And how do you actually behave?	
6c) Would you like to do more?	
7) Do you feel a responsibility to deal with the problems of the 21st century?	responsibility
CLOSING	
8) Do you think it is possible to learn how to deal with these problems? If so: How? And where?	learnability

There are always several possibilities to develop categories from an interview guide, i.e. there is no 100% correct solution for the wording of the categories. In this example project, we have deliberately chosen short names for the categories, for example "relation", "action", and "responsibility". This is useful for the further analysis and readability of tables and visualizations, which we describe in Chapter 5 "Analysis options after coding". Short category labels also facilitate communication within the scientific community. After all, a category such as "responsibility" in the context of the climate issue is an excellent way to conduct a scientific debate that makes reference to the

existing debates and theories developed in the community. The meaning of a category such as "action" in the analysis of the interview data of the climate awareness study must then be described in detail in the category definition (see next section). In this way of developing categories, no attempt is made to integrate the possibly complex and differentiated understanding of a category completely into the category name. During the first coding cycle, as we will explain in Chapter 3 "Coding your interviews ('basic coding')", we first work with rough categories, comparable to the way Max Weber did in his book *Economy and Society*, where he started with basic categories like "meaning" or "action" and then elaborated in great detail what is meant by "meaning" or "action".

It must be stated explicitly that the presented decision for the wording of the category names is not the only option. Instead of "relation", the term "own position" would also have been conceivable, and instead of "consumption and climate", one could have chosen "potential influence of consumption on climate" to emphasize the cause-effect relationship.

When translating the interview guide into categories, the rule that one question should result in one category does not necessarily apply, because as questions 2 and 6 show, several questions can be covered by a single category. Conversely, several categories can also be created if several clearly different aspects are addressed in one question. However, this is not the case in the example given.

For bachelor's and master's theses as well as for dissertations, it may be useful to integrate a table "interview guide – corresponding category", similar to the one in Tab. 2-1, into the methods section or the appendix for documentation purposes. The table can also be expanded to include additional columns such as "aspired insights" and "justification". For smaller projects, however, it is usually sufficient to create the categories directly in the "Code System" in MAXQDA (as described below) and to dispense with a correspondence table.

Adding categories with a theoretical reference

Categories can be developed not only from the interview guide. Already during the data exploration step, aspects relevant to the interest of the study may have emerged which are not covered by the guide and for which it is worth adding further categories. The same applies to theory-driven projects or studies that work with process models, for example. Further categories are developed from the theory or process model and are also added to the category system. For instance, the category "self-efficacy" can be included in a category system to represent the approach of Bandura (1997) and

categories for the different phases of teaching can be included to represent a particular teaching model.

Formulating first category definitions

All categories that are developed require a definition that is as precise as possible and concisely describes which aspects are to be assigned to the category; this definition is recorded in MAXQDA in a code memo. In addition to one or two sentences describing the category, the definition may also contain detailed inclusion and exclusion criteria for categories that are difficult to apply (Kuckartz & Rädiker, 2019, pp. 98–99). Therefore, if problems of distinction from other categories are to be expected for one category, it is advisable to mention in the definition when the other category is to be used. For example, one might specify that the category "efficacy" only covers the influence of society as a whole and is therefore not used when the personal influence of individual respondents is involved. In addition, the definition can also include references to key terms that are typical for the application of the category, e.g. "fast food" for the category "consumption". Later, when working through the interview texts, original quotes from the interviews should also be added to illustrate the use of the category.

Typically, definitions of categories begin with phrases such as "This category is used when ..." or "This category includes all statements in which ...". Two simple definitions are given here as examples:

- *Biggest world problems* – This category is used when current world problems are named, explained, or related to each other. Included are the respondents' own positions and evaluations of the world problems.
- *Societal efficacy* – This category is used for statements about the society's potential to take action in regard to major world problems, including statements about the relevant actors. The category is not used when it comes to the difference that can be made by individual respondents.

Developing a good category system

A category rarely comes alone; we are rather dealing with a *category system* consisting of numerous categories. The category system is also known as the *coding frame* (Schreier, 2012) or *codebook* (Guest et al., 2012) The categories of a category system can be organized linearly in a long list or they can form a network-like structure. Usually, they are arranged hierarchically in a category tree – as in MAXQDA. This means that categories can have subcategories, which in turn can also be subdivided into sub-subcategories. Most category systems work with two to five levels, whereby the high

number of levels in more complex systems is often the result of structuring categories. These categories are very helpful because in MAXQDA, entire sections of the category system can be collapsed and thus temporarily hidden.

At this point, the question arises as to how a useful system of categories can be identified that supports the analysis effectively (i.e. in a goal-oriented manner) and efficiently (i.e. without unnecessary effort). So how is the quality of a category system assessed? In the following, we have compiled important criteria that allow an evaluation of a category system and then go into more detail:

- The categories are closely related to the research questions.
- The categories are exhaustive.
- The categories are selective.
- The categories are well-worded.
- The subcategories are characteristics/aspects of their superordinate category.
- The categories together form a configuration, a "gestalt".
- The categories are comprehensible.

Are the categories related to the research questions? This is one of the most important points because the categories are an important analytical tool for answering the research questions. The categories help to structure the data and thus also the analysis process. To check this criterion, a concept map can be created in MAXQDA with ***Visual Tools > MAXMaps***, in which the leading categories and the research questions are placed in relation to each other. Figure Fig. 2-2 shows such a concept map for the climate awareness study. The category "action" is visually highlighted and placed at the center. Factors that are likely to influence action are grouped around this category; arrows symbolize the direction of influence. Connecting lines without arrows symbolize reciprocal relationships.

Are the categories exhaustive? This is an empirical question. If the coding in step 3 reveals that there are relevant text passages that cannot be adequately captured by the existing categories, this indicates that the categories are not exhaustive. However, a new category should not be created immediately; it makes more sense to first define a category "other" and assign it to this kind of text passages. At a later stage of the analysis, one can then decide how important this aspect is in the study, whether it was potentially mentioned even more frequently, and whether it would make sense to add a further category for this topic or aspect.

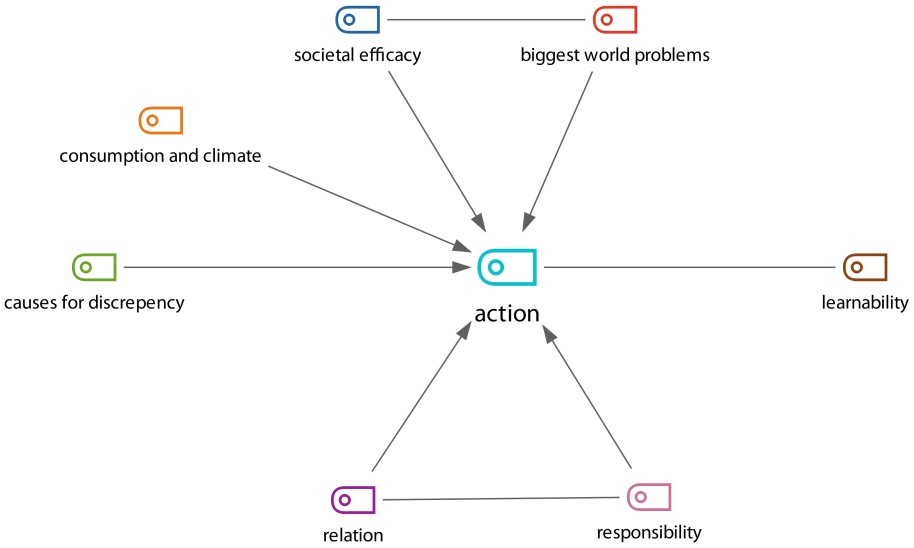


Fig. 2-2: Concept map of important categories in the climate awareness project

Are the categories selective (distinct)? Selective means that the categories are well distinguished from each other. This is also partly an empirical question and the final assessment of the selectivity can only be made when applying the categories, i.e. when coding. At this point, we would like to point out a common misunderstanding that we will go into in more detail in step 3: Selective does not necessarily mean that only one category may be applied to one text passage. It is quite possible that a statement addresses several aspects, e.g. both societal efficacy and the efficacy of consumer behavior on climate change, and thus two categories should be applied here. Selectivity means that it is always clear whether a statement belongs (or not) to one category and whether it (also or only) belongs to another category.

Are the categories well-worded? It is important that category names accurately reflect what they are intended to capture and what they stand for. They should therefore be carefully worded. For example, it makes a difference whether I name a category "motives" or "attitudes". Here a look in dictionaries, thesauri or encyclopedias can help. Of course, one should not overdo it when it comes to semantics, and it is not necessary to put every word on a scale, especially since it is also the task of category definitions to specify how a category should be understood. In any case, it is helpful to present the category system and the category definitions to colleagues and to ask

their understanding of the terms and to check the consistency between the definition and the term.

Are subcategories (in terms of content and language) characteristics or aspects of their parent category? This criterion also often concerns the chosen wording. A simple example: If I create "health", "education", "opportunities for social participation", and "shopping" as subcategories of "quality of life", then the category "shopping" does not quite fit in because, unlike the other subcategories, it denotes an activity. A better relation to quality of life can be achieved by reformulating it as "shopping facilities".

Do the categories together form a configuration ("*gestalt*")*?* A category system should be more than a mere stringing together of unrelated categories. It should express a clear structure and a sense of connection and coherence. This is almost always the case when the categories follow the order of an interview guide, which itself follows a structure: at the beginning there is an introductory question, followed by thematic blocks that build on each other, and at the end there may be a section on the collection of future prognoses. Apart from checking the structure, one should also be rather skeptical if one category already has subcategories with several sublevels, but all other categories do not. One should also check whether the level of abstraction of the individual categories is appropriate for the analysis and whether the subcategories of a category are at the same level.

Are the categories comprehensible to the recipients? Since the categories are often stated in the research report, in lectures, and posters, it is advisable to keep the wording relatively simple, keeping the recipients of the study in mind. In this respect, it can be useful to get feedback on the categories, e.g. by presenting and discussing them and their meanings in the working group, a workshop, or a research colloquium.

Dealing with different perspectives

Very often category systems have to represent different perspectives on the data. This is the case, for example, when supplementary theory-based categories such as "self-efficacy" are included or when the statements of teachers are to be analyzed not only according to topics but also differentiated according to teaching phases. In a study on climate change, for example, the perception of closeness and distance to environmental problems or the sense of responsibility expressed in statements can be analyzed as a supplementary perspective. These are therefore mostly aspects that do not appear directly as a topic in the interview guide, but which take an additional perspective of analysis into account. These can also be formal or linguistic aspects, e.g.

metaphors used or whether interviewees uses the generic "you" but actually mostly talks about themselves.

The question, therefore, arises as to how such parallel perspectives, aspects, or concepts can be integrated into the structure of the category system, which we will illustrate here with a simple example. Suppose you have conducted interviews with patients suffering from a chronic wound and one of your research interests is related to the patients' own knowledge. Then you can look at this knowledge from two angles: First, what knowledge is mentioned at all; is it knowledge about medication, the causes of illness, or wound care, etc.? Second, however, it is also of interest whether, from a medical point of view, this knowledge is correct or incorrect, and whether the interviewees explicitly state that they have no knowledge in a certain area. The following subcategory system could be constructed for this example:

Knowledge
- about medication
- about causes of illness
- about wound care
- about other medical topics
- ---
- Correct medical knowledge
- False medical knowledge
- No knowledge

The first subcategories are thus used to capture the subject area and the three subcategories at the very bottom are used to assess knowledge in terms of correctness. Of course, the subcategories could also have been divided into the superordinate categories "knowledge" and "assessment of knowledge"; here, the pragmatic variant of combining everything under one superordinate category was chosen. As in the example, categories can be added to the category system from complementary perspectives in almost every study. In a study on climate change, for example, the category "closeness-distance perception" could be supplemented with two subcategories "local, personal sense of connection" and "distant, unfamiliar sense of connection".

How many categories are useful?

The question of how many categories should be developed is one of the most frequently asked questions in our workshops and consultations. The answer to this question naturally depends on various factors, most importantly the type of catego-

ries, the length of the interview guide, the number of interviews, and the complexity of the topic.

In general, the recommendation is to keep the number of categories small at the beginning of the analysis. This usually means starting with seven to twelve categories, where we do not count the structuring categories. Of course, this is only a rule of thumb, and in small projects with a very specific research question, you may be able to get by with fewer categories. However, you should avoid starting with more than 20–30 categories because otherwise, category systems can become unwieldy and difficult to work with. When deciding on categories, it is advisable to always keep the research question(s) in mind on the one hand and to think about the later product, i.e. the journal article, report, theses, dissertation, etc., on the other hand. The categories created in this step should have the potential to form a chapter in the end product; whether this actually happens at the end of the project is not important at this stage in the initial steps of the analysis process. In the course of the analysis it will turn out that some categories are more interesting and important than others, or that the analysis will focus on a few categories. It is therefore by no means a prerequisite that all categories must be treated as equally important and processed with the same amount of work.

Adding general categories

Regardless of the topic, some special categories should always be part of a category system. These are categories that should be used in every interview analysis and are usually added at the bottom of the category tree:

- "Other" – This category is used to record aspects important for the research question for which there is no suitable category (yet). If the category system is divided into several hierarchical levels, the category can also be inserted at the bottom of each sub-level.
- "Flowers by the wayside" – It is quite possible that the interviewees address aspects that seem important to you but are superficially not relevant to answering the research question(s). It may be that these aspects are still important for the analysis or that they serve as a foundation stone for a subsequent research project. It is important to provide a spot for these observations at this stage so that you can ignore them in your subsequent analysis steps safe in the knowledge that you will find them again later; this helps you to focus on the research question at hand without getting lost down alternative paths.

- "Quotable passages" – This category is used to record statements of the interviewees in which a subject or phenomenon is presented in a particularly illustrative, interesting, or unusual way. This category is also helpful for data exploration in step 1 and can therefore be created earlier.

As soon as you have decided with which categories your analysis should start, you can create these categories as a code system in MAXQDA. An abbreviation at the beginning of the category name can help to identify the categories more quickly when working later, even if the name is not fully displayed. Instead of "biggest world problems", the category could be labeled with "BWP – biggest world problems". For a clear structure, you can alternatively or additionally number the order categories for the subject areas with letters and number the corresponding categories consecutively, e.g. "A1 – biggest world problems".

Setting up the category system in MAXQDA

1. In the "Code System" window you can define new (sub-)categories by clicking on ***New Code*** or the automatically appearing plus sign.
2. Assign different colors to categories for easy identification, either by main topic or for each category individually.
3. Record the (preliminary) category definitions in the code memos – either directly when creating a new code or later by right-clicking on a code name and selecting the ***Memo*** option.

Hints and tips:

- Once again as a reminder: in MAXQDA the term "code", not "category", is used.
- The name of a code can be up to 63 characters long.
- In the ***Codes*** menu tab, imports are available for category systems that were created in Excel or another MAXQDA project.

Summary

In the second step of the focused analysis of interviews, a mostly hierarchical system of categories is developed from the interview guide – with reference to the research questions and supplemented by important theoretical aspects if necessary. For the assessment of category systems, it is helpful to refer to quality criteria such as their discriminatory power, their wording, and their reference to the research questions. In

the methodological literature, the terms *codes* and *concepts* are often used in connection with categories, but the use of these terms is not uniform. As a rule, the different terms are used to make it clear that these analysis tools evolve as the analysis progresses. You should be aware that categories can differ in terms of various characteristics, such as their closeness to the interview text and degree of abstraction, and that different types of categories exist, such as *thematic* and *natural categories*.

Checklist

- ☐ Develop categories with reference to the interview guide and the exploration of your data
- ☐ Add categories that are related to theory or relevant to the research question but do not appear in the guide
- ☐ Set up the categories in MAXQDA's "Code System" window
- ☐ Add general categories to the category system: "other", "flowers by the wayside" and "quotable text passages"
- ☐ Record the (preliminary) category definitions in code memos

Further reading

Kuckartz, U. (2014). *Qualitative text analysis: A guide to methods, practice & using software*. SAGE. (pp. 54-63)

Saldaña, J. (2015). *The coding manual for qualitative researchers* (3rd ed.). SAGE. (pp. 1–9)

Schreier, M. (2012). *Qualitative content analysis in practice*. SAGE. (pp. 58–125)

3 Code your interviews ("basic coding")

In this chapter:

- ✓ Understanding the meaning of the term "coding"
- ✓ Defining coding rules for the scope of coded segments and the handling of repeated statements
- ✓ Coding interviews section by section
- ✓ Optimizing category definitions and add additional categories as needed

What does coding actually mean?

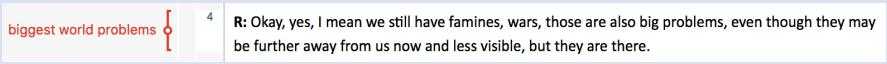
First of all, it is important to clarify what coding actually means in the context of interview analysis, because the term is used from espionage to electronic data processing and, last but not least, in quantitative social research, and has different meanings in each case. Often, the term coding might be associated with "encryption"; a message consisting of signs is encrypted with the help of a code, i.e. it is converted into a message consisting of other signs. This protects the message from unauthorized access, which is of eminent importance not least in the military sector. During the Second World War, for example, the English mathematician Alan Turing succeeded in decoding German radio messages encrypted with the "Enigma" code. The term coding, as used in qualitative research, has little to do with encryption or generally with the conversion of character strings by means of a mapping rule. Coding in the context of the analysis of an interview means that a section of text is selected and linked to a label (a code, a category).

From a formal point of view, a coded text segment always consists of two elements, a text passage and an assigned category (code). It is typically a statement on a specific topic (category) or on a specific aspect of a topic (subcategory).

Code text passages in MAXQDA

1. Mark a text passage in the interview.
2. Drag the marked passage with the mouse to the appropriate code in the "Code System".

Next to the text, a vertical coding stripe appears together with the code name:



Hints and tips:

- Clicking on the coding stripe or the category name highlights the coded text passage, which is helpful, for example, to check its boundaries.
- A double click on the coding stripe or the category name opens a window to enter a comment for the coded segment.
- In the context menu for a selected text passage, use the ***With New Code*** option to create a new category and assign it directly. If you select the ***In Vivo*** option, the selected text is also used as the category name.

Coding needs rules

The demand for transparency, as well as the principle that all data should be processed in the same way by everyone involved in the analysis, requires that there are coding rules. While category definitions are used to control the assignment of text passages to categories, there are usually two more technical aspects for which rules are needed:

- How should the scope of a coded segment be determined?
- How should repetitive statements be dealt with?

The scope of a coded segment – Although it is possible to code even a single word, this is rarely helpful, especially when it comes to assigning text passages to the basic categories. As a rule, a coherent statement, i.e. a unit of meaning, should be coded in each case. Since we want to continue working with the coded statements after the basic coding, i.e. to work out different dimensions and aspects, the coded segments should also be understandable outside their context. In this respect, a rule of thumb might be as follows: "Better to code too much than too little text". It is also advisable to specify that at least one sentence should be coded, sometimes only a sub-sentence is sufficient, particularly since it is not clear where to put a comma and where to put a full stop when transcribing an interview. The interviewer's question should only be

coded if the answer is not understandable on its own. So if someone in an interview says, “No, that doesn’t seem to be a world problem to me”, then for the understanding of this statement the corresponding question should also be coded.

Dealing with repeated statements – Often, respondents express the same information several times in an interview. How to deal with this in basic coding depends on the research interest being pursued and the type of categories involved. In the case of fact categories, it is usually sufficient to code the information only once, for example if a person repeatedly says that they donated to Greenpeace last year or that they are a member of a nature conservation organization. For other category types, it is usually recommended to code each occurrence in the interview. Sometimes it can be useful to provide the repeated text passage with an in-document memo that refers to the paragraph or line in which the information has already been mentioned. For the purposes of analysis, it can make a difference whether someone emphasizes four times in the interview – and possibly with varying intensity – how difficult it is to overcome comfort in order to do something for the climate, or whether this was stated once. Later, when it comes to evaluating how often a topic was mentioned at all, MAXQDA provides the option ***Count hits per document only once*** for many functions in order to take into account multiple codes in an interview only once (e.g. with ***Visual Tools > Code Matrix Browser***, see Chapter 5).

Record the coding rules for a project in MAXQDA

We recommend saving the coding rules in the MAXQDA project so that they can be looked up after the research project is completed. It is also helpful for teamwork if everyone in the team can access the agreed rules at any time. A good place for this is the project memo, which you can call up in the ***Memos*** tab and which is attached at the very top entry (the root) of the “Document System” window (the project memo was already used to record the research question in Chapter 1).

Working through the data and coding it

Now that the coding rules have been established, you can begin coding your interviews. The first coding cycle, which we will refer to as *basic coding* and which we will describe in this chapter, does not yet require you to think about the details expressed in the statements – there will be plenty of time for that later, and it is also easier to do it in a concentrated way on one topic. For example, in basic coding, it is not important which world problem a particular interview section is about; what is important is whether the interviewee talks about a world problem, and accordingly the category "biggest world problems" is used for coding.

Line by line, section by section, all interviews are worked through and coded one after the other:

- Sections that are relevant to the research question are marked and assigned to the appropriate category. If different relevant aspects are addressed in a section of text, multiple or overlapping coded segments may also occur, for example if someone talks – in the same passage – about their personal actions for climate protection and also mentions reasons for the discrepancy between talking and behaving (Fig. 3-1).
- If there is no category for an important aspect yet, you have to decide whether the aspect should be coded (for the time being) with a category "other" or whether a further category should be added for this purpose. It is also possible to create a new natural category, which in MAXQDA – based on Grounded Theory terminology – is called an "in vivo code". In doing so, a prominent term, i.e. a vocabulary of the interviewee, is directly used as the category name.
- In case of problems with selectivity between categories, the respective category definitions are improved and extended.
- Sections that do not contain statements relevant to the research question are ignored, i.e. not coded. If the statement is analytically interesting, the category "flowers by the wayside" can also be used, because sometimes the meaning and the connection to the research question can only be discovered at a later stage of analysis.
- Statements that describe a subject matter in a particularly exemplary or striking manner are not only assigned to the appropriate content categories but also to the category "quotable text passages".
- Any anomalies or questions that arise during basic coding are best recorded in the form of in-document memos, which are inserted directly next to the text at the appropriate position.

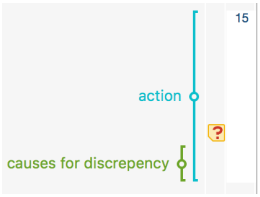


Fig. 3-1: Two overlapping codes and one in-document memo

If the questions of the interview guide have been adopted almost one-to-one as categories, the risk of error in coding is low and usually a “control” coding cycle by a second person is not necessary. It is nevertheless helpful to code and check at least the first interviews with several people to make sure that nothing has been overlooked. It is also possible that a second person, for example a research assistant, is asked to do a first coding, which you can then check and possibly modify. Alternatively, if you don’t have someone to do a second coding cycle to check the intercoder agreement, you can code the interview again after two weeks at the earliest, perform a so-called intracoder check, and optimize your coding if necessary.

For complex and difficult category systems or interviews, the following procedure has proven to be successful, for which at least a second person is required:

1. One or two not too complicated interviews are selected, and these are coded together to ensure a common understanding of the categories as well as the correct application of the coding rules. If necessary, the category definitions are optimized and specified.
2. The next, possibly somewhat more complicated interview is coded independently by the two people and the results are then discursively compared to consider the different views of the coders.
3. Depending on how good the matches are, the previous step is then repeated once or twice.

The aim of this process is not to calculate a coefficient of intercoder agreement (which could be reported as a quantified quality feature) but to ensure a high coding quality. Of course, a coefficient can be useful for this purpose too, but in the end it is important to improve the quality of the coding as swiftly as possible through discussion, focusing on the causes of non-matches. By the way, one should be wary of being easily fooled by a coefficient and be aware that, for example, 80% agreement is equivalent to 20% non-match, i.e. there are differences for every fifth category assignment.

You can already begin coding even if not all interviews have been collected yet. If one works with several coders, this can be achieved by a division of labor. If, for ex-

ample, 20 interviews are to be coded, these can be distributed between four coders in such a way that five interviews are coded by each of the coders. At least in the initial phase, one should ensure that the coders are sufficiently consistent in coding the interviews and have developed a common understanding of the categories. There are different ways of dealing with passages in MAXQDA where someone is unsure about the coding, but one should be agreed upon:

- A special weight value is assigned for the coding, e.g. the number 50. In the "Overview of Coded Segments", you can then sort by weight at any time to find the difficult text passages again.
- For the coded segment, a comment is written, e.g. "Discuss in the team"; these comments are also found later in the "Overview of Coded Segments".
- An in-document memo is attached to the text passage with a question mark or exclamation mark so that the relevant passages can be easily accessed later via the Memo Manager.

In any case, the team must then be consulted again in order to make a final decision as to whether and how the critical text passages should be coded.

Code interviews in MAXQDA in a team

1. All team members receive a copy of the MAXQDA project.
2. Then either the interviews or the categories are divided up in the team and the team members code them in their projects.
3. The ***Start > Teamwork > Export Teamwork ...*** function is used to export the codes and memos from the various projects and the complementary ***Import Teamwork*** function is used to transfer them to a master project.

Design the process for intercoder agreement test in MAXQDA

1. Activate all documents that are to be coded by a second person and select ***Start > Project From Activated Documents*** to create new project.
2. In this project, the second person adds his or her name after each document group and codes the interviews. You code the same interviews in your project.
3. Use ***Start > Merge Projects*** to import the second person's project into your project and then use the ***Analysis > Intercoder Agreement*** function. (After the check is complete, you can delete the added documents.)

Fig. 3-2 shows how a text page typically looks in MAXQDA after basic coding cycle has been completed.

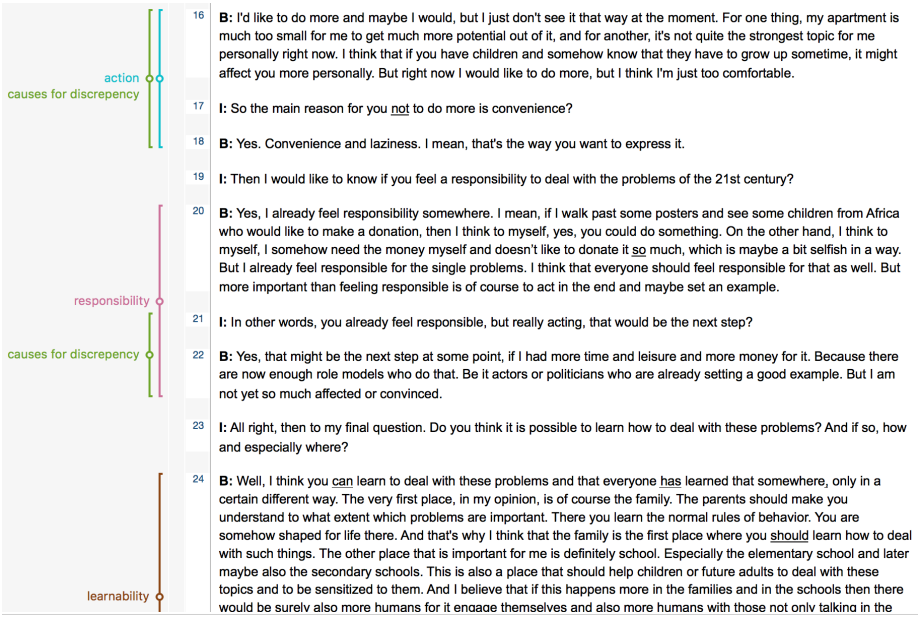


Fig. 3-2: Example of a text section after basic coding

Adapting and extending your category system

In the course of the basic coding process, the category definitions should be optimized as early as possible. Decisions discussed in the team on how to code a text passage increase the accuracy of the assignments and lead to more knowledge about the correct use of the category. Precisely this knowledge is used for the optimization: on the one hand, the definition is expanded or made more precise, and on the other, concrete examples from the text, including the source (interview name and paragraph or line number) are added. As examples, text passages are selected that are typical for the category and illustrate which statements are to be captured with it. Very often the topic of a category is expressed in very different ways in the interviews. In these cases, it has proved to be a good idea to list all these forms individually, as the following example for the category “action” illustrates:

"This category should be used if
a) personal influence on global development,
b) actual personal behavior, and/or
c) behavioral intentions are stated."

This makes it immediately clear which different aspects are covered by a category. For each of these aspects, an example can be quoted from the text and assigned to the respective aspect.

If it is very difficult to distinguish between two categories when coding, the definition should address not only when the category is used but also when it is *not* used. Usually, you will find phrases such as "This category should not be used when aspect x is addressed; category B should be assigned instead." In MAXQDA's code memos, in which the category definitions are recorded, the two definitions can be linked by using so-called "internal links". This way you can jump back and forth between the two definitions at any time.

As the coding process progresses, it is quite possible that the category "other" will gradually fill up. This may particularly be the case if the interviewees have mentioned numerous aspects that are important for the research question, but the researchers did not ask explicit questions about them. These categories should be reviewed regularly for similar statements in order to decide whether a new category should be added. Frequently, similarities between the statements will only become apparent when all statements are listed directly under each other, for example in MAXQDA's Smart Coding Tool. The decision about a new category can also be formalized, e.g. by specifying that all aspects that are included more than twice or more than three times in the category "other" are to be given their own category.

Whenever additional categories are added to the previously developed category system, this should at least be recorded in the MAXQDA project, e.g. in the respective code memos or even in the research report. A note should also be made if previously defined categories *do not* appear in the empirical data. This does not pose a problem, in principle, but is in fact an important finding of the analysis, because it may mean that a category derived from theory has not found a counterpart in the empirical evidence. Of course, this can only happen with categories that were developed from a theory-based perspective or a literature review, because after all it is to be expected that all categories developed from the interview guide were also addressed in the interviews.

In every project, there comes a time when the category system is fixed and further changes can only be made in exceptional cases. Any change to the category system may mean that all the interviews already coded must be reviewed for the changes made. The status of individual categories can be indicated in MAXQDA’s code system by different memo symbols: as soon as the definition for a category is mature, its memo symbol is set to green, for example.

Expand category definitions with text examples from the interviews

1. Open the code memo for the category in question.
2. Select a text example and drag it with the mouse into the memo. MAXQDA automatically adds the source information in brackets.

Hints and tips:

- To link to another category definition or interview statement, select a text in the code memo, then choose ***Insert Internal Link (Start/Destination)*** from the context menu and repeat this process at the destination.
- A double click on a code opens an overview with all text passages belonging to this code. This makes it easy to check which contents and statements have already been assigned to a category. By clicking on the symbol in the toolbar of the overview, you can start the Smart Coding Tool, which lists all segments one below the other and not only displays the assigned codes, but also allows you to modify the code assignments.

Summary

In the third step of the focused interview analysis, the data is coded with the categories developed beforehand. Coding means assigning a category to a statement in the interview. Coding rules are used to determine how to proceed with the coding process, particularly with regard to the scope of coded segments and the handling of repeated information in the interview. The coding process can be divided if you are working in a team. In the case of highly-structured interviews and simple category systems, a sufficient quality of coding can be achieved by an individual; otherwise, a second coding cycle should be carried out by another coder for checking purposes. In the course of the basic coding, the category system is developed further: new categories for aspects not yet considered may be added if necessary, and the category definitions are made more precise and expanded with examples from the interviews.

Checklist

- ☐ Define suitable coding rules for the analysis
- ☐ Code the data by using the category system from step 2; if you work in a team, you can divide the interviews or categories among team members
- ☐ Perform a second round of coding for complex/difficult category systems or interviews; use the non-matches to improve coding instructions and category definitions
- ☐ Add categories to the category system for new aspects
- ☐ Refine the category definitions in the code memos and add examples from the data

Further reading

Bazeley, P. (2013). *Qualitative data analysis: Practical strategies*. SAGE. (pp. 125–156)

Creswell, J. W. (2016). *30 essential skills for the qualitative researcher*. SAGE. (pp. 152–165)

Guest, G., MacQueen, K. M. & Namey, E. E. (2012). *Applied thematic analysis*. SAGE. (pp. 49–78)

Kuckartz, U. (2014). *Qualitative text analysis: A guide to methods, practice & using software*. SAGE. (pp. 54-63)

Kuckartz, U., & Rädiker, S. (2019). *Analyzing qualitative data with MAXQDA. Text, audio, and video*. Springer Nature Switzerland. (pp. 65-81)

4 Develop your category system further and the second coding cycle ("fine coding")

In this chapter:

- ✓ Compiling all interview segments coded with the same category
- ✓ Getting an overview of the text passages assigned to a category
- ✓ Developing your category system further with regard to the research question(s) and planned analysis
- ✓ Developing data-driven subcategories
- ✓ Coding the data with newly developed subcategories

What happens after the "basic coding" cycle?

As a result of the first computer-aided basic coding cycle, you will have already achieved a good structuring of the interviews by categories: thanks to your category assignments, MAXQDA now gives you access to all the text passages assigned to a category at any time without having to re-read the interviews. In a study on climate change, for example, all interview passages could now be compiled in which the respondents talk about the reasons for the discrepancy between their stated views and their behavior in regard to climate protection. For MAXQDA, it does not matter whether there are 10 or 50 interviews or 20 or 100 coded text passages.

The basic coding cycle is only the beginning of the coding process, however. Now it is necessary to go one step further: to look at individual categories, to work with the coded data, and to identify dimensions and define subcategories. How exactly you will proceed will depend on the scope of your data, the resources available, and the objectives of your study. Experience has shown that a dissertation or final report of a three-year research project tends to be quite complex and therefore a more *differentiated* category system – that is, a system of categories that themselves contain one or more levels of subcategories – will be used than in a closely timed contract project or while working on an article to be submitted for publication in a scientific journal.

Throughout this further work, it is important to keep in mind that the main goal is to find answers to the research question(s) and to put these answers in writing. For this purpose, it is necessary to compile the contents of the individual categories and to systematize these contents. Now it may be the case that 50 or even 100 segments were coded with one category, but only 10 with another category. The coded interview passages may also be of different lengths. The shorter the segments are and the fewer segments are assigned to a category, the easier it is to grasp their content directly and the easier it is to give direct answers to the research questions and write them down without having to go deeper into the analysis of this category.

For the systematic work with coded interview sections and the associated further development of the category system, we have divided the fourth step of the focused analysis of interviews into intermediate steps. This subdivision is primarily for instructive reasons because in their practical implementation it is quite possible that the intermediate steps might overlap:

- *Step 4a* – Select the categories and set the order of processing
- *Step 4b* – For the first selected category, compile the coded text sections and get an overview of their content
- *Step 4c* – Decide on the further procedures regarding this category (e.g. create subcategories; merge with another category; frequency of statements is important; already sufficiently understandable by itself and no further processing necessary, etc.)
- *Step 4d* – Record the most important contents of a coded segment as key points in comments
- *Step 4e* – Further differentiate the category, i.e. develop subcategories in a data-driven manner – we call this type of coding *fine coding*.

Steps 4b to 4e are repeated one after the other for the remaining categories. As with the entire analysis process, all important findings on the research questions are recorded in memos.

Step 4a: Set the order in which the categories are processed

In Chapter 2 we pointed out that categories differ in terms of their importance for the research project. Fact categories usually have a lower significance with regard to the research question and not all thematic or analytical categories of a study are equally important. It is therefore neither necessary nor feasible to proceed in the same way with each category following the basic coding cycle. In accordance with the Eisen-

hower Decision Principal of "important and urgent things first",[2] the task in the first intermediate step is to determine the order in which the categories are processed, based on the research question(s) and the examination of the data in the preceding steps of the analysis. It may be helpful to restrict yourself to some important categories first and to include the others later. The question of importance is often clarified with regard to the intended product or intended goal of a study: which categories are absolutely necessary in this context, which ones less so? If the category system depicts a chronological process, such as the teaching phases in a school lesson or important steps in the selection and induction of new employees, it is usually advisable to proceed chronologically and start with the first category in terms of time. If the study is carried out by several people, it is also possible to divide the work by dividing the categories among the team members.

It is not necessary to always further develop and differentiate all categories that were formed during the basic coding cycle in every study, because it is not always predictable which interview questions will provide productive answers to the research questions. Moreover, it is also quite legitimate to consider only selected categories for a journal article, poster, or conference presentation.

The following intermediate steps 4b to 4e always refer to one selected category only, i.e. the steps are performed for each of the selected categories.

Step 4b: Compile the coded segments of a category and get an overview of their content

In order to get an overview of the content of a category, i.e. of all text segments assigned to a category, these are compiled in MAXQDA's "Retrieved Segments" window. If there are many segments, it is sufficient to read a selection of them. By reading you get an impression of how complex the answers of the respondents are, whether they address rather few or rather many aspects of a topic, and how different the responses are.

In the "Retrieved Segments" window, a number of additional information is available in addition to the compiled segments. On the one hand, you can see how many segments have been assigned to a category and whether the statements originate from only a few or many respondents. On the other hand, memo symbols are also displayed to the left of the coded segments if an in-document memo was written

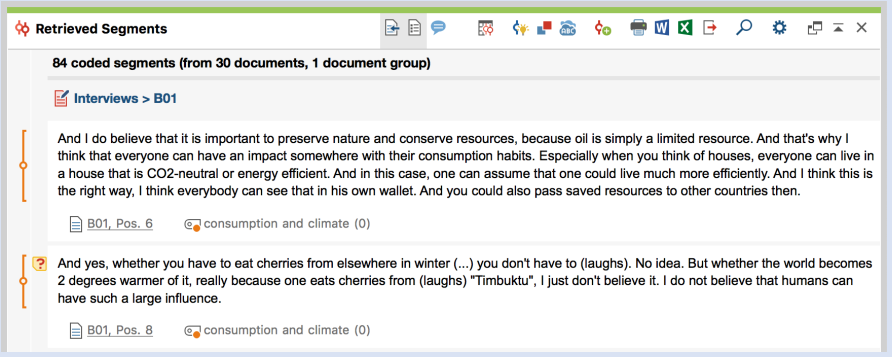
[2] https://en.wikipedia.org/wiki/Time_management#The_Eisenhower_Method

within a coded interview statement. On the right side, comments which were written for a coded statement can be displayed (see Chapter 3). The background information that was recorded in variables for each interviewee can also be displayed in the "Retrieved Segments" window. All this additional information provides a more comprehensive picture of the assigned contents of a category than the text passages alone.

Compile the coded segments of a category in MAXQDA

1. First, make sure that the "Retrieved Segments" window is visible. You can turn it on in the ***Home*** tab.
2. Activate all documents by clicking on the top folder icon in the "Document System" ("activate" in MAXQDA is equivalent to "select for analysis").
3. Then activate a selected code by clicking on its code symbol.

MAXQDA then displays all text segments of the activated documents in the "Retrieved Segments" window to which the activated code has been assigned.



Hints and tips:

- In the status bar at the bottom left of the window, you can check how many documents and codes are currently activated.
- The first line in the "Retrieved Segments" window provides information on how many documents (i.e. interviews) and document groups the coded text segments originate from.
- Open ***Variables > List of Document Variables*** and place a checkmark next to all characteristics in the "Favorite variable" column that you want to be displayed in the "Retrieved Segments" window as additional information.
- By clicking on the symbol , you can export the coded text sections to a Word or Excel file.

Step 4c: Decide on further work on the category

After getting an overview of the contents and the use of a category, you can decide how to proceed with this category. This decision will be based not only on the results of the previous intermediate step but also on the objectives of the study and the research questions. For example, if the main goal of a study is to identify success factors for online team collaboration, it is obvious that the basic category "success factors" should be differentiated into subcategories in order to be able to draw a more precise picture of the factors. In principle, the following options are available for further work on a category:

Merge with another category – If a category has very few coded segments and its content is similar to another category, it is possible to merge the two categories into one. This usually makes no sense if the categories reflect theoretical considerations. For example, if four stages of conflict processing are analyzed in a study, all four categories formed for this purpose should be retained and not merged, regardless of how often they have been used.

Write key points about the content of each coded segment – In order to get a more precise overview of the content of a category, it is possible to write down the most important content per coded interview segment in condensed form. This has the advantage that in the case of longer and/or many coded segments, the essential and recurring aspects can be identified very quickly. In this respect, the key points per coded segment also represent a good starting point for further differentiation of a category into subcategories.

Develop data-driven subcategories and apply them ("*fine coding*") – The more important a category is for the study and the more extensive and complex the respondents' answers to a topic are, the stronger the case for differentiating a category into further subcategories. Differentiation is also necessary if the respondents' statements on a topic are to be analyzed using evaluative subcategories, e.g. if individual statements expressing personal responsibility for climate change are to be assigned to the categories "low", "medium" and "high".

No further processing – If the coded text sections of a category are already sufficiently comprehensible in themselves and the contents thus captured can be directly transferred to a result text or used as they are for further analysis in step 5, no further processing is necessary. This can be the case for fact categories but also for categories with few and short coded segments.

The following questions can also be used to decide whether to continue working on a category. It is not possible, however, to derive generally valid answers from these

questions; they rather serve primarily to anticipate further analysis at this stage and to take into account what is to happen in the analysis after the coding (which we describe in detail in Chapter 5) is completed:

- Between which topics/categories should connections be analyzed later?
- For which topics/categories are quantitative information – like frequencies of categories or numbers of respondents with a particular category – relevant for analysis?
- For which categories is the perspective of the individual case particularly important? And vice versa: for which categories is the case perspective not important. For all aspects for which case summaries are to be written later, it is helpful to create a separate category. In Chapter 5 we will discuss thematic summaries in detail. In these, researchers can summarize each person's statements on a particular category.

The general motto also applies in this intermediate step: if ideas for analyses arise in the course of working with categories, e.g. about the relationships between categories, these should be recorded directly in the MAXQDA project, preferably in free memos.

Merge two or more categories in MAXQDA

- In the "Code System", drag a code with the mouse onto another code and release the mouse in the colored area "Merge". MAXQDA then merges all coded segments from both codes in the target code and adds "(+)" after its original code name to label it as a merged code.

Hints and tips:

- If both codes have a memo, you will be asked whether they should also be merged or whether the memo of the moved code should be saved as a free memo. No memo will be lost.

Step 4d: Write key points about the content of each coded segment

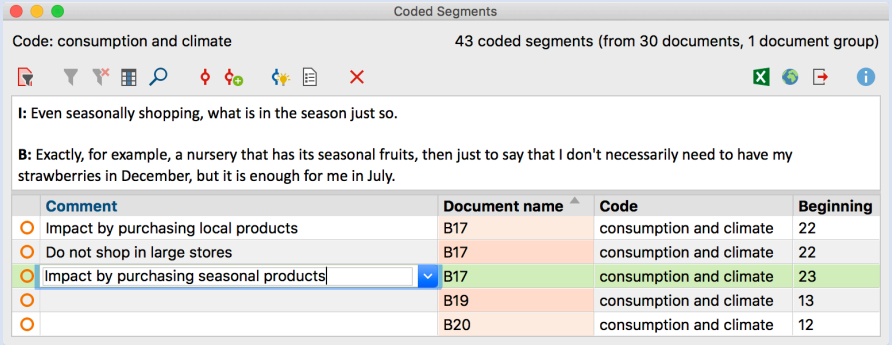
This intermediate step helps you to get an overview of the coded segments of a category: for each coded segment of the selected category, the most important contents are summarized in the corresponding comment. This has two advantages: First, when continuing to work with the segments later, you can quickly grasp the essential content of these segments without having to reread the whole coded segment of the in-

terview text. Second, the condensed content provides a very good start for building data-driven categories, because it is immediately apparent in which segments similar content is addressed that can be captured with a common category. This intermediate step is optional; it is particularly worthwhile if the coded interview statements of a category are relatively long.

A comment on a coded segment in MAXQDA is limited to a length of 255 characters, which corresponds to about 2–3 sentences. The comments can of course be used for more than just making note of key points. They are also very well suited to recording meta-information about a coded segment or code assignment (“contradictory statement”) or to communicating about the coding process in a team (“code X would be more appropriate here”) (Kuckartz & Rädiker, 2019; Rädiker, 2020). The latter, however, is most useful during the coding process and not afterwards.

Record important contents of coded segments in MAXQDA in comments on coded segments

1. Double-click on a category in the “Code System” window. The tabular overview “Coded Segments” appears, in which each coded interview section represents one row. The coded segment is displayed in the upper part of the window.
2. In the first column “Comment”, you can enter and edit the comments on coded segments.



Hints and tips:

- You can also write comments while coding by double-clicking on a coding stripe or the corresponding code name in the “Document Browser” window.

Step 4e: Develop data-driven subcategories and apply them to the data ("fine coding")

In comparison to the intermediate steps explained so far, this one is much more complex. The goal is to further differentiate a category by creating new subcategories and assigning the coded segments or parts of them to these subcategories. We call this step *fine coding* because we now continue to work in a concentrated way on the interview statements that have been assigned to a category. While in the basic coding cycle many aspects have to be taken into account at the same time and you need to jump mentally between different topics, the further work with the categories is carried out throughout step 4 with a strong focus on the selected category – which makes it much easier to grasp the content of a selected topic or aspect. By creating new subcategories on the data, a more complex picture of the selected category is created in this intermediate step. At this point we would like to point out once again that it is not necessary to further differentiate each category developed in the basic coding cycle; particularly, if the content is very specific or only a few text passages have been assigned to a category. In these cases, it may be sufficient to summarize the contents using MAXQDA's comments function as described in step 4d or to skip the category in step 4.

In our experience, the process of fine coding with the differentiation of categories into subcategories and data-driven category formation can only be formalized to a certain degree. In what follows we will therefore first outline a typical procedure based on Kuckartz (2014a) and then give concrete advice on what needs to be taken into account during implementation:

1. The coded text sections are read one after the other.
2. In the margin of the text, the most important aspects contained in the section are recorded as ideas for categories.
3. New categories are created for newly emerging aspects.
4. Aspects for which a suitable category already exists are assigned to it. If necessary, therefore, the name of the category is extended or changed.
5. The emerging category system and the individual categories are continuously considered in their entirety, whereby thematically similar categories are combined, and very broad categories are further differentiated.
6. As soon as no more new aspects present themselves, i.e. saturation is achieved, the category system is fixed, and the remaining segments are then coded with the created categories.

We would like to illustrate the result of this procedure by means of a simple example. In several workshops, we presented the participants with about 20 coded segments of the category “biggest world problems” and asked them to develop suitable data-driven subcategories. Two results are shown in Fig. 4-1. On the left, you can see a variant in which seven thematic subcategories have been developed. On the right eleven initial thematic categories have been divided into three groups with the help of analytical categories.

- Distributive justice
- Climate change
- Environment/resources
- Conflicts
- Overpopulation
- Economic/financial crisis
- Fast-paced life

- Economic problems
  - Wealth gap and poverty
  - Capitalism
  - Power and greed
- Conflicts between people
  - Religious conflicts
  - War and terrorism
  - Envy
  - Interpersonal communication
- Problems between man and nature
  - Climate change and environmental disasters
  - Overpopulation
  - Scarcity of resources
  - Health hazards

Fig. 4-1: Two different ways of creating subcategories for the same coded interview segments

The two different examples show that there is never just one right solution for the development of data-driven subcategories; different alternatives may be equally valid. This does not mean, however, that anything goes when it comes to fine coding or that the process is arbitrary. There are also numerous important points to consider when developing data-driven subcategories, which we will discuss below. In doing so, we will present some concrete examples and address questions that are frequently asked in this context (see also Kuckartz, 2014a):

Always keep the research question(s) and the research purpose in mind

All decisions regarding the categorization of data should be based on the research question(s) and the research purpose. This applies to the type of subcategories to be formed as well as their number, their degree of abstraction, and the selection of the passages to be coded within the compiled interview excerpts. In the study on climate change, the data of which the workshop participants worked on in the example above, the question concerning the biggest world problems was primarily intended as an in-

troductory question and did not constitute the core of the study. Accordingly, the aim of fine coding the interview segments on world problems was not to develop a large number of subcategories or even a theory based on them. Instead of an elaborate differentiation, it was sufficient that the categories reflected the essential statements about world problems and allowed this topic to be presented in a report of findings.

Distinguish different types of (sub)categories

In Chapter 2 we differentiated between different category types: fact categories as well as thematic, evaluative (scaling), analytical, theoretical, natural, formal, and ordering categories. When developing subcategories, it is necessary to consider which type of categories are best suited for differentiation. If a fact category is to be differentiated into subcategories, e.g. if you wanted to break down the category "sporting hobbies" into the types of sports the interviewees engage in, it would be difficult to develop *analytical* categories in this case. Instead, you might create subcategories that reflect facts and have a nominal scale. For example:

- Team sports
- Individual sports

For the fine coding of interview statements of thematic categories, usually thematic, evaluative, analytical, and theoretical, sometimes natural categories can be considered as types of subcategories. More conceptually focused work may render further analytical categories, such as:

- The teacher as a companion
- The teacher as a mediator of knowledge
- The teacher as an educator

When a thematic category is differentiated into subcategories, it is not always possible to decide in advance what kind of subcategories can be formed, because you must also consider what the respective data allow. When differentiating a category "ability to learn dealing with global problems", for example, it may be the case that all respondents consistently state that it is possible to learn how to deal with these things, at least in principle. It may not be meaningful, therefore, if not even impossible, to work with scaling subcategories such as "yes", "partly", "no" in order to determine the degree of learnability.

Theoretical categories are created by using a category name for a phenomenon that is linked to or based on an existing theory. For example, in another workshop using the same data of world problems, one participant suggested "dynaxity" as a category to summarize the aspects of a fast pace of life. This term combines "dynamics"

and “complexity” and was introduced by Kastner (2017) in the context of organizational psychology. In another workshop, a Ph.D. student from the field of education suggested using the key problems introduced by Klafki (Meyer & Rakhkochkine, 2018) as a source for subcategories. Both examples show that data-driven category development can be shaped by the researchers’ prior knowledge.

Define coding rules for the scope of a coded segment and repeated information

In the fine coding cycle, too, it makes sense to work with units of meaning and to develop subcategories for these. The units of meaning in fine coding are usually smaller than the units in basic coding, i.e. division of the interviews into large-area content sections that was previously carried out is now being further refined. For example, a person can address many different world problems in one section, for which new subcategories are then created or existing ones are assigned individually.

Regarding the question of coding the same information concerning one individual multiple times at different places in the data, it is recommended to follow these rules: For subcategories that record facts, it is sufficient to code the same information just once per person. For other categories, repeated statements should be coded several times – especially since MAXQDA offers the option of counting the occurrence of a category within an interview only once. On the one hand, these can contain contradictions; on the other, the fact that a statement is repeated may also be of interest and can be interpreted. A prerequisite is, of course, that each repeated statement has been coded during the step of basic coding.

Write category definitions

When subcategories are created, it is usually necessary for consistent use to write definitions that include a description and, optionally, inclusion and exclusion criteria, notes on distinction from other categories, and quotations from the original data as examples. The more abstract a category is, the more important such a clear description is for its correct usage. For example, it would be necessary to explain which passages of text should be coded with a subcategory “teacher as a companion”.

How many coded segments should be processed before the category system is fixed and the remaining segments are coded?

If a large amount of data is processed, it is necessary for practical reasons to create subcategories based on a selection of coded interview sections. The optimal number depends on the length, complexity, and variance of the text segments. Experience

shows that about 15–25 segments should be sufficient. It is important that the selection of segments covers as much as possible of the entire width of the different interview sections. Of course, there is no guarantee that the last segments will not contain an important aspect for a separate subcategory. This can be counteracted if, at the beginning, it is preferable to create one category more, which can then be merged with another category at a later date if there is little usage. It is usually not very time-consuming to go through the already coded segments again for another aspect. On the other hand, it would be much more time-consuming to have to go through all interviews again in their entirety.

Ensure the quality of the analysis through teamwork and checking the intercoder agreement

Developing subcategories requires some level of creativity and can benefit from the experience and previous knowledge of the researchers. The above examples of fine coding responses to questions about world problems and the resulting different subcategories illustrate the benefits of teamwork in this context. Since there is no such thing as the right solution, our experience shows that the inclusion and discussion of different perspectives and ideas in category developing leads to more appropriate subcategories and thus also increases the quality of the fine coding cycle.

The following procedure can be used to work together as a team to develop and apply categories and to check that their subcategories are applied consistently:

1. Based on a selection of segments, the team members independently develop ideas for suitable subcategories and then jointly agree on a (preliminary) set of subcategories, including suitable definitions (at least as key points).
2. Together as a team, the segments and some other segments that have not yet been taken into account are then coded with the developed subcategories in order to check the common understanding.
3. Next, the team members apply the categories to a selection of additional segments, check that they match, and adjust the category system and definitions if necessary. Then the remaining data can be coded by one team member or by several.

Although chance-corrected coefficients such as Krippendorff's Alpha could be used to check intercoder agreement, we generally prefer a discursive, communicative procedure that focuses primarily on dealing with disagreements and improving coding quality (Kuckartz & Rädiker, 2019, pp. 267–282)

How do you assess the quality of the subcategories that have been created?

To assess the quality of subcategories, the same criteria we presented in Chapter 2 can be used; the categories should be exhaustive, selective, and well formulated. Together they should form a configuration ("gestalt") and they should be understandable and comprehensible. Particular emphasis should also be given to the requirement that subcategories represent characteristics or aspects of their parent category.

How many subcategories should be created?

Usually, you will not work with more than about ten subcategories on one level, because with more categories it is hard to keep track of them. However, more than ten subcategories may be possible during the development of the subcategories – if a category is first created for each aspect of the data before these are grouped into more abstract subcategories.

Do I need an "other" category?

It is helpful to add an "other" category at the end of the list of subcategories, particularly if only a subset of the coded segments is taken into account for category formation and it is therefore not possible to predict which aspects will still appear in the data. The subcategory "other" can also serve as a collection of individual statements for which it would not be reasonable to open a separate category.

How do I deal with statements on causes and effects?

Cause-and-effect relations are often found in the statements of respondents, for example to statements about the biggest world problems: "overpopulation and the poverty in the world *associated with it*" or "overpopulation and the *resulting* destruction and pollution of the environment". In such cases, it makes sense to code the entire statement, i.e. including the cause-effect relationship, with the appropriate categories for world problems, and at the same time to create a category "cause – effect" and also apply it to the whole segment. With this category, as described in Chapter 2, an additional perspective on the data is added to the analysis.

To what extent is it legitimate to interpret interview statements when coding?

This question, which is frequently asked in workshops, usually refers to the fact that a text passage can be understood in different ways and therefore allows a wide scope of interpretations. In order to achieve the most plausible interpretation of a statement that is consistent throughout the interview, there are various options available:

- Play the audio recording of the interview, because *how* something is said can help to interpret the statement.
- Of course, it is important to also use the other statements of a person for interpretation. Mayring (2014) proposed that one should define a so-called context unit which determines the scope of the data used to code a segment. In interviews, this is usually the whole interview, but notes taken during and after the interview can also be taken into account.
- Further people, particularly the second coders, can be asked for their interpretation.

It will not always be possible to clearly assign a text passage to a category and it will therefore sometimes be necessary to make a conscious decision for or against a category. The decision should then be recorded in an in-document memo next to the text passage. If there is a lot of uncertainty, a text passage can also be provided with an in-document memo in a first step, so that it can be reviewed again at a later time with more knowledge about the case and about similar passages.

How do I find suitable categories?

We would like to close this chapter with some helpful hints on what tools and approaches are available for creating appropriate subcategories:

- For newcomers, it makes sense to first summarize the contents of each segment in an intermediate step. For this purpose, the procedure presented in step 4d with the MAXQDA comments for coded comments can be used. Alternatively, paraphrasing as presented in Chapter 1 for data exploration can be used.
- At the beginning of the category development process, it can help to first create categories close to the data for every single aspect, e.g. by using the interviewee's wording and keeping the level of abstraction low. These categories can then be merged into more abstract and comprehensive categories.
- Particularly in the context of the Grounded Theory approach, the relevance of questions is emphasized which are intended to draw attention to analytically interesting aspects and stimulate conceptual thinking, e.g. *What aspects of a process are mentioned and how does this happen (and which ones are left out)?* or *Which actors are involved, how do they define the situation and what does it mean for them?* (Corbin & Strauss, 2015, pp. 90–93).
- When merging two similar categories, it is not always possible to find a suitable term that optimally describes the combined categories. As an alternative, we recommend using "and", "&", or a slash "/" in the category name, for example "environment & nature".

- Anyone looking for inspiration for categories will definitely find it in Saldaña's "Coding Manual for Qualitative Researchers" (2015). Saldaña presents numerous types of coding and addresses numerous topics and applications, e.g. the coding of emotions.

The second proposal (first develop categories close to the data which are then systematized and aggregated) has great similarities with proposals from Grounded Theory approaches, where it is described as *open and axial coding*, for instance in Strauss and Corbin (1990). The basic procedure will be illustrated here with a short example. In a study on climate change, the following "open codes", as they are called in Grounded Theory, were initially created staying close to the original texts:

- Drive an energy-efficient car
- Separate waste
- Buy energy-saving lamps
- Solar system on the roof
- Industry should set an example
- I'm sure there's more you could do
- No time
- No money for organic food
- You can't make a difference as an individual
- Buy energy-efficient equipment
- Only technology can really change things
- Political correctness
- Conserve energy
- Not the environmentally conscious type
- Too convenient
- Moral development is more important than environment

This collection of "open codes" was then grouped and systematized into four more abstract categories:

1. Current personal behavior
2. Willingness to change one's personal behavior
3. Philosophy of behavior
4. Areas of environmentally relevant behavior

In this step of aggregation and abstraction, it is also possible to refer to already existing theoretical differentiations. This procedure, however, no longer corresponds to the approach of Grounded Theory, in which the primary goal is to develop new theories of (medium) range.

In Chapter 5 we will present another example to show how subcategories were created with the help of open codes and subsequent aggregation and systematization. There you will find a concept map (Fig. 5-14), in which the category development is graphically recorded.

Use the Smart Coding Tool in MAXQDA for developing subcategories for a category

1. In the "Code System", double-click on a code that you want to differentiate into subcategories. If its already existing subcodes are also to be taken into account, collapse them before double-clicking. An overview opens with all associated text passages.
2. In the overview toolbar, click on the icon to start the Smart Coding Tool, which lists all segments one below the other.
3. Create new subcodes by clicking on the corresponding symbols. Drag a whole row with a text passage onto the code to code it. Double-click on a text passage to mark and code only parts of the passage.

Hints and tips:

- In the Smart Coding Tool, a column with comments on the coded segments can be displayed on the right. Here, the previously written key points can be used for category development. If no comments have been written yet, you can directly formulate ideas for categories in this column.
- Category definitions are recorded in code memos, this can also be done directly in the Smart Coding Tool by right-clicking on a code.

Use the Creative Coding function to develop subcategories after creating open codes

1. First of all, create numerous open codes close to the data, e.g. with the ***Open Coding*** function in the "Document Browser".
2. Then open the ***Codes > Creative Coding*** workspace and select the codes you want to systematize.
3. Once you have started organizing your codes, you can then move the codes around in the workspace to arrange them in groups or drag them onto each other to merge them. You can draw an arrow from one code to a second code to define it as a subcode of the first one.
4. After clicking on ***Quit Creative Coding*** the created structure is transferred to the "Code System" window.

Summary

In the fourth step of the focused analysis of interviews, you will systematically direct your attention to the individual basic categories and the respective assigned text segments. The perspective will shift from the individual case to the selected topics and aspects covered by a category. Basic category by basic category, you will then decide how to continue working with the coded segments. Essentially, four different options are available for this: (1) Merging with another category, e.g. if few segments were assigned. (2) The recording of the contents per segment as key points in their comments. (3) Fine coding by creating subcategories and applying them to appropriate text segments. (4) The decision not to process the category in more detail in this step; for example if only a few segments have been assigned or the contents of the statements are very similar.

Checklist

- ☐ Select the most relevant categories and start with these
- ☐ Compile the assigned segments per category
- ☐ Decide how to proceed with the category, taking into account the content and research question(s)
- ☐ When creating subcategories, pay attention to the criteria for the assessment of category systems from Chapter 2
- ☐ When creating subcategories, define appropriate coding rules and record the category definitions in code memos
- ☐ When creating subcategories, apply them to the data

Further reading

Bazeley, P. (2013). *Qualitative data analysis: Practical strategies*. SAGE. (pp. 157–187)

Guest, G., MacQueen, K. M. & Namey, E. E. (2012). *Applied thematic analysis*. SAGE. (pp. 49–78)

Kuckartz, U. (2014). *Qualitative text analysis: A guide to methods, practice & using software*. SAGE. (pp. 69-88)

Kuckartz, U., & Rädiker, S. (2019). *Analyzing qualitative data with MAXQDA. Text, audio, and video*. Springer Nature Switzerland. (pp. 93-122)

Saldaña, J. (2015). *The coding manual for qualitative researchers* (3rd ed.). SAGE. (pp. 207–245)

Schreier, M. (2012). *Qualitative content analysis in practice*. SAGE. (pp. 107–145)

Strauss, A. L., & Corbin, J. M. (1990). *Basics of qualitative research: Grounded theory procedures and techniques*. SAGE. (pp. 96–157)

5 Analysis options after coding

In this chapter:

- ✓ Planning the further analysis
- ✓ Formulating general analytical questions
- ✓ Category-oriented analysis and writing down the findings
- ✓ Writing thematic summaries per interview
- ✓ Comparing statements of cases and groups
- ✓ Including quantitative aspects in the analysis
- ✓ Case-oriented analyses and creating case overviews
- ✓ Illustrating relationships graphically, e.g. in concept maps

The state of analysis after completing coding

One of the questions most frequently asked in workshops on the analysis of qualitative interviews is: "What happens after coding, what are the options for further analysis?" The answer is "There are plenty of options and by no means just the frequency analysis of the categories". Let us first consider the situation after the second coding cycle: through the intensive examination of the data, through the development of analytical categories and subcategories, and the corresponding coding of the data, you achieve a double structuring:

- ❖ First, with the category system, you will have created a powerful analytical tool at the level of concepts and terms. This is not just a preliminary stage of the analysis but is itself already a substantial result in the analytical process.
- ❖ Second, the data will have been assigned to the research questions in a very differentiated way according to the multi-stage coding process. The category system is now laid over the data like an analytical grid. Metaphorically speaking, this is no longer just a sea of disordered, unstructured information, but rather a well-structured data set categorized via a systematic process of classification. Looking for detailed answers to the research questions is now possible, therefore, for both

those questions that were already formulated at the beginning of the project and in the first steps of the analysis, as well as those that emerged during the course of the analysis process.

The result of this double structuring can be represented as a content-based matrix, as in Fig. 5-1: The rows of this matrix are formed by the cases, i.e. the interviewees, the columns by the categories and subcategories. The matrix has many cells as a consequence, namely interviewees times categories. These cells contain all of the interview segments for the respective interviewee that are coded with a specific category or subcategory. Now, questions can be asked such as "What did the interviewee X say about his or her actual personal behavior with regard to climate protection?" (category "action") without having to search for the corresponding text passages in an enormous number of transcribed interview pages to answer them.

	Topic A (Category A)	**Topic B (Category B)**	**Topic C (Category C)**	
Person 1	Text passages from person 1 to topic A	Text passages from person 1 to topic B	Text passages from person 1 to topic C	⇨ case-oriented analysis (person 1)
Person 2	Text passages from person 2 on topic A	Text passages from person 2 on topic B	Text passages from person 2 on topic C	⇨ case-oriented analysis (person 2)
Person 3	Text passages from person 3 on topic A	Text passages from person 3 on topic B	Text passages from person 3 on topic C	⇨ case-oriented analysis (person 3)
	topic-oriented (category-oriented) analysis of ⇩ topic A	⇩ topic B	⇩ topic C	

Fig. 5-1: Matrix of structured contents after coding

It should be emphasized that analysis can now be carried out in two directions:

Taking a vertical view of a column in the matrix enables you to conduct a *category or topic-oriented* analysis: the text segments available for a specific topic from all interviewees are compiled. On this basis, you can then write a summary text on this particular topic.

Taking a horizontal view of a row of the matrix, on the other hand, means focusing on a specific case, an interviewee. The text passages associated with this interviewee, coded with the categories of interest, make it possible for you to present this particu-

lar case in its various facets in a holistic way. Such a description of a case with reference to the analysis categories can then serve as a basis for case-oriented presentations, e.g. for case comparisons and detailed case interpretations.

Planning the further analysis

The post-coding analysis process should be carefully planned. The spectrum of analytical options is enormous and can easily tempt you into trying everything. There is a danger of getting lost in the multitude of options. First of all, a realistic assessment of the possibilities is absolutely necessary, i.e. to consider how much time and human resources are available for this step. One should keep in mind that additional time will also be required for writing up the final report and for documenting the analysis process and archiving the data.

In view of the fact that timeframes and resources will vary from project to project, it makes little sense to set out general rules on what types of analyses are to be carried out in practice. It is immediately obvious that a three-month project could not be analyzed in nearly as much depth as a doctoral project lasting several years. The planned end products are in themselves completely different. In the first case, a short research report would be produced, in which the actual analysis results might take up hardly more than ten pages. In the second case, a dissertation of perhaps 300 pages might be produced, in which the presentation of the findings might comprise 100 pages and play a central role.

When planning further analysis, the relationship between case-oriented and topic-oriented perspectives should first be considered. While the topic-oriented view focuses on selected topics and analyzes the coded text passages, the case-oriented view focuses on interviewees and thus offers a holistic perspective, i.e. a holistic view in which a person being interviewed is more than the sum of the text passages coded with categories. How these two perspectives are dealt with in the analysis and in the preparation of the report, whether one perspective dominates or both perspectives are balanced, depends on the specific project and the research questions. General rules cannot be formulated for this, but researchers should be aware of both perspectives and reflect and justify their use or non-use.

If the case-oriented perspective is also to be taken into account, the question usually arises as to which interviewees are selected for the presentation and for what reasons. With regard to the analysis of topics (i.e. categories), the question of focus will also arise, that is, which topics should be brought into focus and which connections

should be drawn to other topics. Helpful hints for a decision on a case or topic selection can be provided by the assumptions and presumptions formulated in step 1 of the analysis, which provide a good starting point for further analysis.

If, as is the case with the problem-centered interview (Witzel, 2000, paras. 5–9; Witzel & Reiter, 2012, pp. 89–94) and – depending on the project – other background information has been collected, it will also be interesting to compare different groups of interviewees with each other. Both tabular and graphic representations are suitable for such comparisons.

Regardless of whether a short research report or a comprehensive paper is being prepared, the *visualization of* results can be very useful. The proverb "a picture is worth a thousand words" also applies to the analysis of qualitative interviews. MAXQDA offers numerous options for visualizations – available in the ***Visual Tools*** menu – which can support your work in many ways. These tools:

- provide a quick overview of the data by displaying small and large amounts of data as clear visualizations,
- help to identify patterns in the data,
- can be used both in the development and in the validation of theories and hypotheses,
- provide interactive access from the visualizations to the underlying data with a mouse click, and
- can export and prepare data and results for reports, posters, and other purposes.

When planning the analysis, it is highly recommended that you ask yourself general analysis questions that support analytical thinking about the data and also help to select suitable forms of analysis. Such questions are, for example:

- What is said on certain topics? What is the spectrum of opinions? What are the extremes?
- How often and how extensively are certain topics coded?
- What is the relationship between (sub)categories or topics? What aspects are often mentioned together? Which category patterns can be identified?
- What are the differences and similarities between cases and/or between groups? How heterogeneous or homogeneous are the answers to a topic? What are the possible explanations?
- Which case stands out, which is special, and in what respect? How can this be explained?
- In what order do the respondents address topics? Which sequences can be worked out?

- Which words, metaphors, phrases are used to describe certain facts? Which words and phrases do the respondents use when it comes to personal action?

In the following sections of this chapter, numerous forms of analysis are described, namely

- Analyzing the contents of selected categories in-depth
- Including frequencies and the scope of coded segments
- Analyzing relationships between categories/topics
- Comparing cases and/or groups
- Describing special cases and extreme cases
- Creating tabular case overviews with case summaries
- Including linguistic aspects
- Creating concept maps and model graphics

In the following sections, we would like to outline the variety of possibilities available to you and stimulate your creativity. We make no claim to completeness.

The in-depth analysis of the content of selected categories presented first should be carried out in any case, because this kind of analysis plays an important role regardless of the amount of time and human resources available for the study. The subsequent forms of analysis are simply options. Depending on the project and the time available, you must decide whether these forms of analysis should be pursued or not. The order of the various analysis options in the following sections does not provide a sequential order for step 5. It is not intended to imply that visualizations and mapping should be the end of this analysis step. Visualizations can not only help to present results but can also be used as a diagnostic tool and can be used at any time during the analysis process.

In-depth analysis of selected categories and preparing your report

Usually, step 5 begins with the analysis of selected categories, focusing on those categories that have proven to be particularly relevant to the research questions during the previous analysis process. These categories, usually between two and five, have already been dealt with in step 4: often subcategories will have been formed and a fine coding of the data will have been carried out. In addition, in accordance with the principle of writing down insights continuously, the first results of the analysis have already been formulated and recorded in memos – at least in the form of key points.

It should be noted at this point that step 4, in which the category system is developed further and a second coding cycle is carried out, and the current step 5, in which the analysis of the coded data is performed, need not be as strictly separated as our structure may suggest. Thus, it is quite conceivable that step 4 will already go beyond coding. Indeed, it might even be the case that in this step the results will have been formulated that represent very good preparatory work for the research report dealt with in Chapter 6.

In step 5, the most important topics and the categories associated with them are now brought back into focus, followed by an analysis of the remaining categories to which they are related. The various options for analysis of relations are described below, particularly in the section "Analyzing relationships between categories/topics".

The in-depth analysis of a topic begins by compiling all the segments coded with the corresponding category or subcategories (if any have been created) from all interviews. For example, all segments coded with "learnability" including the information from which interview they originate are selected and displayed in a list – a process generally referred to as "text retrieval" and in MAXQDA as Coding Query. The variable values of the respective people can also be displayed as background information with these segments. In order to be able to interpret statements better, it can be very helpful to know that a passage was spoken by, for example, a sixty-year-old man living alone who is retired and worked as a social worker. We have described how coded segments can be compiled in MAXQDA in the box in step 4b in Chapter 4. Those who prefer to work with a printed version of the list can click on the print option in the "Retrieved Segments" window.

After you have compiled all the coded segments of a topic or category(ies), it is now necessary to work with these segments, to systematize and analyze their contents. Before doing so, it is useful to consider what role and scope the given topic will take on in the research report. This will provide you with an orienting framework for the writing process.

Writing should be approached with an analytical, summarizing perspective. This means looking at the content, working out positions and dimensions, taking an overall view of a category and its subcategories, identifying individual opinions, and working out possible explanations for the statements. The resulting text should be formulated concisely and comprehensibly; illustrative quotations can already be selected and inserted into the text. Quotations from the interviews can be inserted into the text via the clipboard. You work through the coded segments case by case and simultaneously record the most important findings and insights either in a free MAXQDA memo

or in a Word file in DOCX format. The texts that are written in this step can be used as building blocks for the research report. Now you will be very familiar with the data and have a good overview of the content spectrum covered by the category. If the number and scope of segments are very large, it may be useful to create case-related thematic summaries beforehand (see the chapter of the same name).

The result of this step is a systematic presentation of the contents of a topic relevant to the research question, the different aspects, dimensions, and positions. The ideas for analysis, comments, and notes already written down in previous steps on this topic are summarized in this integrative text. You now have a preliminary draft for the corresponding section of the final report, which – extended by the results of the analysis options described in the following sections – may already be quite close to the finished product.

If you have very little time and resources, this in-depth analysis of category content should be your core method; in such cases you will not normally have enough time for the more complex forms of analysis described below. However, this procedure guarantees that all the data available on a topic is actually taken into account. Despite the lack of time, quotations woven into the text make it possible to get close to the views, arguments, justifications, and motives of the research participants.

If you created subcategories for a category in the previous analysis step, it may be useful to include their frequencies in this analysis. This may mean giving more space to the more frequently named subcategories, while individual names are only mentioned briefly. You can supplement the text on these more frequent subcategories with appropriate quotations and trace interviewees' respective perspectives and arguments.

Determining the frequency and scope of categories

Category frequencies and statistics of subcategories

In MAXQDA you can display how many segments and how many interviews with selected categories or subcategories have been coded in a table or a chart. Whether it really makes sense to not only perform a qualitative analysis but also to analyze the frequencies of categories depends on the category in question. For example, in the case of the topic "biggest world problems", it would be interesting to see which problems the research participants mention most frequently. For this purpose, the MAXQDA function Subcode Statistics can be used to create a corresponding frequency table that contains both the absolute frequencies, i.e. "How many people

mentioned this world problem?", and the relative frequencies, i.e. the corresponding percentage. In the case of small samples (particularly n < 30), percentages should of course be treated with caution or even be omitted. The results can be rendered both as a table and as a chart (pie chart, vertical and horizontal bar chart). Fig. 5-2 shows a bar chart for the subcategories of the category "biggest world problems". Above each bar, the number of research participants who mentioned the problem is displayed.

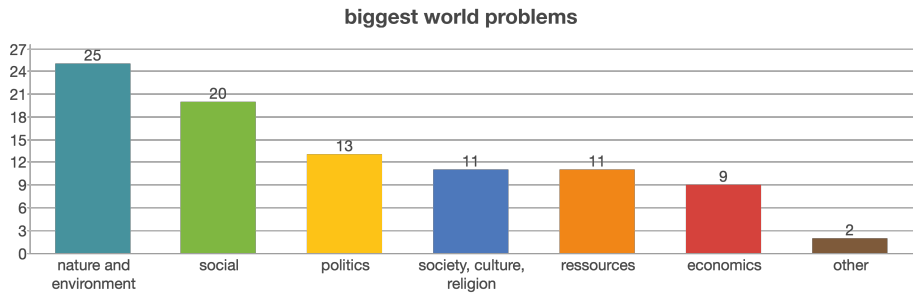


Fig. 5-2: Subcode Statistics for the category "biggest world problems"; n=30 interviews

It is important to note the difference between the analysis unit *coded segments* and the analysis unit *cases* (in MAXQDA "Documents") when calculating the frequencies of subcategories. It is not uncommon for an interviewee to talk about the same topic at several different points in the interview, and that these points were coded with the same corresponding category or subcategory. If *coded segments* are now chosen as the unit of analysis, the results may be strongly skewed by individual interviewees where a large number of segments were coded with a particular category. In this instance, it is generally preferable to choose *documents* as the unit of analysis. For a case-oriented analysis, on the other hand, it can be interesting to look at the frequencies per category for each case.

Generate a chart in MAXQDA for code frequencies of subcategories

1. From the ***Codes*** menu tab, select ***Subcode Statistics***.
2. Select the category or several categories in the left window and choose ***Documents (count all subcodes)*** as the analysis unit.
3. In the output table with the frequencies of the subcodes you can switch to the chart view.

4. You will now get a chart as shown in Fig. 5-2, which you can modify according to your wishes, for example by changing from absolute to relative frequencies, selecting a color scheme, etc.

Hints and tips:

- Alternatively, you can right-click on the desired category in the "Code System" and select the function ***Subcode Statistics*** from the context menu.
- You can also analyze the code frequencies of top-level categories with ***Analysis > Code Frequencies***.

Code Matrix Browser: Code assignment per interview

How are the topics distributed over the interviews? How diverse are the interviews in terms of topics? These questions regarding the assignment of categories and the code frequencies per document can be answered with the help of the *Code Matrix Browser* (available in the ***Visual Tools*** menu). This is a visualization tool that displays the code assignments in the form of a matrix: the interviews (documents) are displayed in the columns and the categories in the rows. The size of the symbols of the nodes reflects the frequency, i.e. the larger the symbol, the more often the respective category has been assigned in the respective interview. The columns can be used to compare both individual interviews and groups formed according to specific criteria.

Fig. 5-3 shows for eight research participants (interviews B01 to B08) their code assignments in the subcategories of the category "biggest world problems". What can be seen in the figure? Person B02 mentioned a great many problems, while person B05 mentioned only one topic, namely "economy". Person B08 mentioned three problems, namely "nature and environment", "politics" and "social issues". The summary row at the bottom of the window shows how many problems were mentioned by the person displayed in that column.

Double-clicking on a node lists the corresponding coded segments so that the original text can be accessed at any time when interpreting the table.

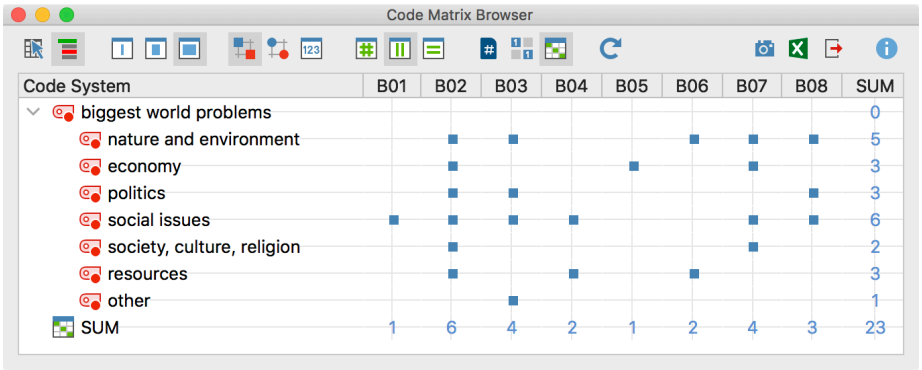


Fig. 5-3: Overview of the codes per interview in the Code Matrix Browser

Writing thematic summaries per case

The larger the sample and the more comprehensive the segments coded for a topic are, the more difficult and time-consuming each analysis step can become. The volume of data to cover may then confront researchers with challenges that can be difficult to overcome. This is especially true for multidimensional and complex forms of analysis between categories. Such analyses are much easier to carry out if you use the key ideas expressed in the interview statements instead of the original, verbatim statements. A useful intermediate step can therefore be to write case-related thematic summaries. Such summaries differ significantly from paraphrases. Paraphrases are attached directly to the text; you work through the text sequentially and identify, highlight, and reformulate notable statements capturing the essence, usually in your own words. Paraphrasing does not require prior coding of the text with categories. In contrast, thematic summaries are based on the coding process carried out in the previous basic coding and fine coding steps. The statements on a specific topic are then summarized for each interview. This way, duplications in the interviewees' statements can be eliminated and less important statements can be deleted. The amount of data can be considerably reduced in this way. It is also significant that this condensing of the data is done with the research questions in mind and in the words of the researchers. This means that there is a movement from the level of everyday language to social scientific language. If the decision is made to write thematic case summaries, this does not mean that summaries must now be written for all the categories. It is perfectly legitimate to select a few, i.e. to focus on those topics that have proved to be important in the course of the analysis process and to write summaries only for these.

The case-related summaries insert a middle level of analysis between the extensive coded segments and the short description of a category. Case comparisons can be handled much better at this level and instructive tabular overviews of cases may also be produced (see below).

Case-related thematic summaries can be created in MAXQDA using the *Summary Grid* function. Fig. 5-4 shows the working area of this function, which is divided into three windows: In the left window, a matrix of codes in the form "Interviews x categories" is displayed, here for three interviews (B01, B02, and B03). Currently selected are the statements of the interviewed person B02 on the category "societal efficacy". This can be seen by the position indicator that frames the corresponding node in the matrix. The corresponding coded segments (in this case two segments) are listed in the middle window. In the right-hand window, the summary written by the researchers is displayed. As the analysis progresses, this summary can now be used instead of the original data, i.e. the two coded segments. The contrasting of cases and case summaries is thereby not only much clearer, but also more concise in terms of content, because they focus on what is essential with regard to the research question.

How extensive and how detailed should a summary be? There is no general rule. On the one hand, it depends on the scope of the data to be summarized. Of course, the question whether many aspects are addressed in the data or whether there are many duplications. Finally, it is also important in which way the thematic summaries should be used in the following analyses. If they are used in tabular case summaries, they should be formulated rather briefly and concisely.

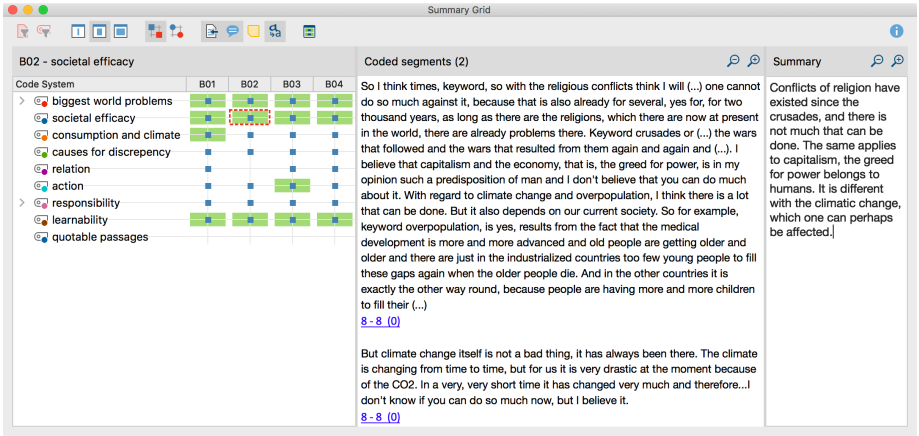


Fig. 5-4: Writing case-related thematic summaries in the Summary Grid

Write case-related thematic summaries for coded segments in MAXQDA

1. Open the ***Analysis > Summary Grid*** window.
2. Click a Document x Code node in the left window. In the middle window, all coded segments belonging to this node are displayed, for which you can write a summary in the far-right pane.

Hints and tips:

- If you collapse a code that has subcodes, the middle window displays not only the segments of the top code but also the segments to which one of the subcodes is assigned.

Analyzing relationships between categories/topics

For any interview analysis, it is important to analyze the relationship between categories – or, more precisely, between the topics covered by categories. First, you need to clarify what kind of relationship you are talking about. The first type of relationship can be described as a *content-related relationship:* What a person says about topic A and what he or she says about topic B is the focus of this analysis, e.g. their ability to have an impact on world problems and their actual personal behavior. The analysis of this kind of relationship requires that the data has been coded accordingly and is now being gone through on a case-by-case basis. This means that for each person, their respective statements are compared to each other in order to find patterns.

The second type of relationship could be described as a *co-occurrence relationship* because here it is a matter of the simultaneous occurrence or chronological sequence of categories, i.e. moving on a more abstract level that is also available for further formalized and statistical analysis. An example of such a relationship is the question of the correlations of subcategories, for example, to ask which world problems are named together. Two MAXQDA analysis functions for analyzing co-occurrences of categories will be of particular interest in the context of focused interview analysis, the Code Relations Browser and the Code Map.

Code Relations Browser: Analyzing co-occurrences of categories

What are the relationships between categories or between subcategories? For example, are there any text passages in the interview where categories overlap? These and other questions can be answered using the *Code Relations Browser*. This tool visualizes which codes occur together and where three types of relationships are distin-

guished: (1) intersection of two codes in a segment, (2) proximity of two codes at a predefined distance, (3) occurrence of two codes somewhere in the interview. The columns and rows of the Code Relations Browser are formed by categories. The larger a square on a node, the more related the two associated categories are.

Fig. 5-5 displays the co-occurrences of the subcategories of "biggest world problems" in one segment. The size of the corresponding square symbol indicates that "nature and environment" and "social issues" occur the most frequently together, just as "nature and environment" – in general – has many co-occurrences with other subcategories. The opposite is true for the subcategory "economy" where there are only a very small number of co-occurrences.

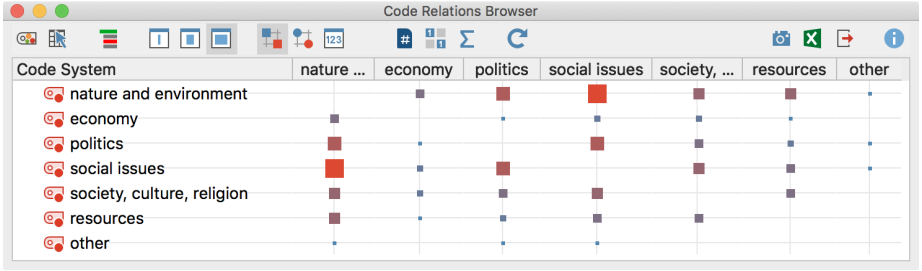


Fig. 5-5: Display of co-occurrences of categories/subcategories in the Code Relations Browser

Code Map: Displaying similarities between categories on a map

The *Code Map* displays the similarities of categories in a two-dimensional visualization. It is based on the tabular representation in the Code Relations Browser. The more co-occurrences two codes have, that is, the more similarly they are used in the data, the closer they are placed together on the Code Map. The positions on the map are calculated using the classical multidimensional scaling, a method of multivariate statistics (Ding, 2018). In addition, hierarchical cluster analysis with an unweighted average linkage (Everitt et al., 2011) is performed to identify code groups.

Fig. 5-6 displays the similarities (defined here as co-occurrence on the same segment) of the subcategories of "biggest world problems". The font size reflects the frequency of the respective subcategories. "Nature and environment" was coded the most frequently, followed by "social issues". The map shows that the subcategories "society, culture, religion", "nature and environment", "resources", "social issues" and "politics" are close to each other. Far away from this are the categories "economy" and "other". The results of the cluster analysis are similar and three clusters are formed here: the first is centered around "nature and environment" and includes the

neighboring categories, the second cluster comprises only the category “economy”, and the third cluster only the category “other”.

The symbols (circles) and font sizes used in the Code Map can optionally represent the code frequencies. The colors of the codes can correspond to the colors in the “Document System” or (as in Fig. 5-6) to the calculated cluster assignments on the map.

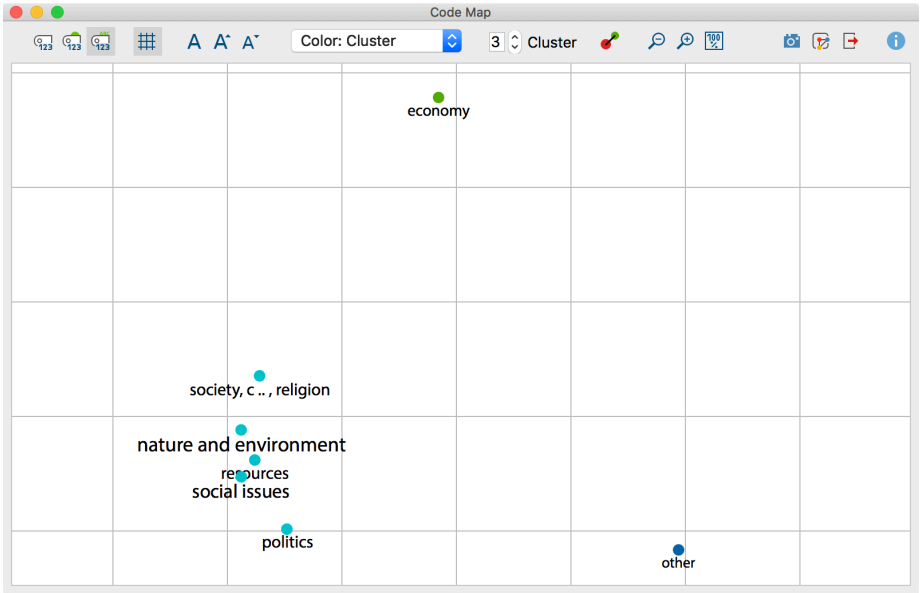


Fig. 5-6: A Code Map displays the proximity and distance of categories

Analyze the co-occurrences of codes in MAXQDA

... with the Code Relations Browser

1. First, activate your desired codes for the rows.
2. Start the ***Visual Tools > Code Relations Browser*** function. In the dialog window, choose which codes you want to display in the rows and columns and what type of co-occurrence you want to analyze.

... with the Code Map

1. Start the function ***Visual Tools > Code Map***.
2. Select the codes to be analyzed and the type of co-occurrence in the dialog.

Hints and tips:

- You can also access the Code Map directly from the Code Relations Browser by clicking the respective icon in the toolbar.
- The Code Map can be transferred to MAXQDA's mapping tool MAXMaps where it can be further edited, for example, by adding comments and headings.
- Care should be taken when interpreting the Code Map, because by reduction to the two-dimensional surface, codes may appear closer than their actual distances.
- With ***Analysis > Code Configurations*** you can analyze the co-occurrence of more than two codes.

Performing case comparisons and group comparisons

The method of constant comparison is, in a manner of speaking, the "mother of qualitative analysis". We usually find considerable differences between the statements of the interviewees and look for reasons for this difference. For example, some people feel it is very important to do something about climate protection themselves, some would like to do more but are prevented from doing so by a wide variety of factors, and some see no reason whatsoever to adopt climate-protecting behavior. What causes these differences? Answers can be found through comparison: for example, what role do gender, age, social status, marital status, and other factors play? Sociodemographic characteristics are often used for comparison. Such group comparisons can be carried out as quantitative or qualitative comparisons. Quantitatively, the category frequencies of different groups can be analyzed in MAXQDA using cross tables. Qualitative comparisons are performed by comparing the statements of people from different groups.

MAXQDA offers you the option ***Analysis > Compare Cases & Groups*** for both qualitative and quantitative comparisons. Select the groups of interviews to be contrasted and the categories for comparison from the "Document System". Document groups or document sets can be selected as groups. Document sets are temporary groups that can be especially formed for analyses, for example for group comparisons like this.

Create document sets in MAXQDA based on sociodemographic or other variables

1. Start the function ***Mixed Methods > Activate Documents by Variables***.

2. In the dialog box that opens, you can then define a selection criterion, for example “Age > 50” AND “Place of residence = city”.
3. Click on the ***New Set*** button to create a set of documents in the “Document System” with all documents that match the criteria you entered.

The results of a *qualitative* group comparison are displayed as an *Interactive Quote Matrix* as shown in Fig. 5-7. In the left column, the selected categories are listed, between which you can switch back and forth. The two columns next to it contrast the statements of the women with those of the men. Clicking on the source reference listed below each segment jumps to this text passage in the original interview. The Interactive Quote Matrix can also be used to compare individual interviews. In this case, individual interviews are to be selected from the “Document System” instead of document groups or document sets.

For qualitative comparisons of cases and groups, it is helpful if the intermediate step of writing thematic summaries has been carried out. Then these summaries can be used for the comparisons instead of coded segments, which are generally much larger in scope. This can be done using the analysis option *Summary Explorer* (called from the ***Analysis*** menu). The Summary Explorer works exactly like the Interactive Quote Matrix, except that summaries are compared instead of coded segments.

Codes	Women (17 Documents, 25 Coded Segments)	Men (13 Documents, 25 Coded Segments)
societal influence relation learnability	So, as you can see now at the stage of climate change, it has to be clearly stated that these problems can be influenced. By whom, also very clear, by the people, because simply today it is a fact that the climate change is man-made and even then it would have to be stopped by the people or at least the current situation would have to be changed in such a way that it could be stopped or does not lead to the effects as it would lead at the moment, if one continues like that. Interviews\B08: 4 - 4 (0) You could deal with these problems differently and you have to deal with these problems differently if you want something to change somehow. The problems have to be brought into public life, not only as prophecies of disaster of the melting of the ice poles, but also, I don't know, with constructive suggestions on how this could be changed. Interviews\B08: 6 - 6 (0)	So I think if you knew how to change that, directly. Then you would do it directly. But the problems have existed for centuries. That's why I don't think that it will be so easy to solve them. Interviews\B01: 4 - 4 (0) First of all, I don't believe directly in climate change. I don't believe that humans can have that much influence. Well, that is debatable. In the 80s, for example, people thought and believed in the Ice Age, but that didn't happen either. That's why I don't believe in climate change. But I do believe we have to conserve our resources for other reasons, because (...) the environmental pollution in the Ruhr area, for example, is still clearly visible today with the black walls of the houses. Interviews\B01: 6 - 6 (0)

Fig. 5-7: Qualitative group comparison using the Interactive Quote Matrix

The result of a *quantitative* case comparison or group comparison consists of the frequency analysis of the coded segments of the respective categories per group or per individual interview. The output table is structured like the Interactive Segment Ma-

trix, but the columns do not contain texts but numbers, namely the frequencies of the categories. As a rule, however, the focused interview analysis does not stop at the comparison of category frequencies but is followed by qualitative comparisons.

In the course of the analysis, categories can also be transformed into variables. In this case one speaks of *quantification*, i.e. originally qualitative data, namely the coding of text segments with certain categories, are transformed. From the frequencies of a category, a variable value is generated which indicates how often a category was assigned in an interview and which can now be used in statistical analyses or for a selection of cases. The variables formed by the transformation have interval scale levels so that procedures such as correlation analysis or analysis of variance can be conducted.

Such extended quantitative group comparisons can be carried out with the statistical methods offered by the MAXQDA "Stats" module, e.g. the analysis of correlations between qualitative data and sociodemographic variables. There are two basic options for this:

First, the relationships of sociodemographic variables with the frequencies of selected categories can be analyzed, for example as a crosstab, including the calculation of association measures. This can be used, for example, to answer the question of how strong the correlation is between statements about personal behavior for climate protection (category) and age (variable). To avoid the crosstab having too many cells, the frequencies may need to be grouped beforehand.

Second, if mutually exclusive subcategories have been formed for a category, a crosstab for this category and a sociodemographic variable can be calculated. In this case, it is not the frequencies of particular categories that are used but rather the assignments to one of the subcategories. The crosstab then has as many rows as the category has subcategories and as many columns as the sociodemographic variable has attributes.

Such analyses of quantitative, i.e. statistical, relationships can of course be carried out not only for sociodemographic variables but also for any kind of background variable.

Analyzing special cases and extreme cases

In contrast to quantitative research, which focuses on means and standard deviations, in qualitative research special cases that are different from the regularities ob-

served attract increased attention. These cases may reveal new, previously unknown phenomena and factors, which is a particular strength of qualitative methods.

How can special cases and extreme cases be identified? Various criteria can be significant here:

- Formal characteristics: an interview has been particularly long or particularly short.
- Linguistic features: interviewed persons use unusual words and phrases compared to other interviewed persons.
- Content characteristics: interviewees take extreme positions, such as the strict denial of global climate change.
- Frequency and scope of content in the interview: interviews have a particularly large number of coded segments for a category or the scope of text passages (measured in words) is particularly large, e.g. because the research participants always return to a particular aspect.
- Extreme variable and scale values: values of sociodemographic variables, background variables, or scales formed from them differ significantly, for example, interviewees with very high income or interviewees living in a small village.

In addition, there may be special cases that are already determined by the sampling. In an interview study on "Work during the coronavirus pandemic", in which the nursing staff of an intensive care unit is interviewed, this could be the head nurse, for example.

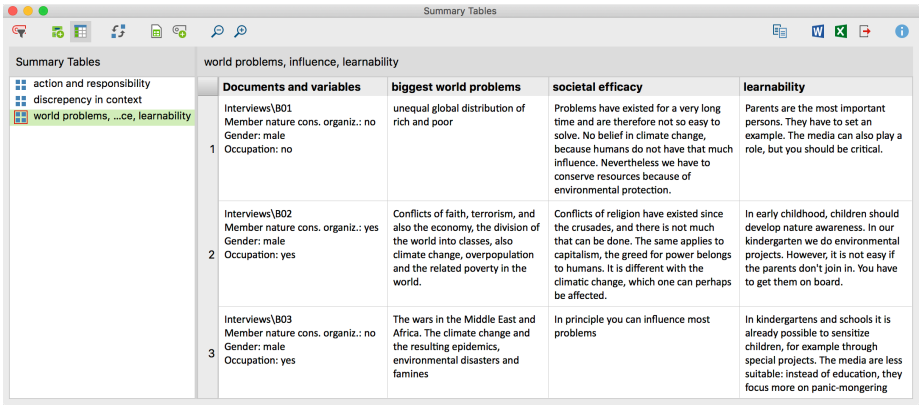
Once special cases have been identified, the method of case comparison described in the previous section can be applied. When analyzing extreme cases, it can be interesting to compare opposite extreme cases with each other. For example, two interviewees can be contrasted with each extreme personal behavior in terms of climate protection: on the one hand, a person with comprehensive climate-conscious behavior in all areas of life (e.g. vegan diet, only traveling by bicycle, no air travel, only organic food, etc.); on the other, a person who attaches no personal importance to climate protection and behaves accordingly (e.g. high horsepower SUV, frequent flyer, discount food shopper, high meat consumption, etc.).

Creating tabular overviews of cases

Based on the thematic summaries described above, which are written by the researchers using the Summary Grid function, interviews can be compared with each other and overviews of cases can also be created. Fig. 5-8 shows such an overview of

cases, which was created with the MAXQDA function *Summary Tables*. In the left column, you can see a list of the summary tables created so far. In the right window, three interviews, namely B01, B02, and B03, are lined up. For each of these, the interview title and selected background data are displayed, as well as the summaries on the topics "biggest world problems", "societal efficacy", and "learnability". The background data selected for this table are "membership of an environmental protection NGO", "gender", and "employment".

In this overview of cases, some remarkable relationships and findings can be identified. The interviewed person B01 sees (only) social problems as the major global problem, is skeptical about climate change, and considers these problems to be hard to influence. Regarding the "learnability" or ability to learn how to deal with these complex problems, the person refers rather vaguely to parents and their role model function. The situation is different for both B02 and B03. These interviewees also see climate change as one of the major global problems, consider it to be a problem that can be dealt with, and make practical suggestions on how to deal with it, namely that one should start in kindergarten and that children there can be taught to care about the environment. Person B02 is involved in an environmental protection NGO and reports on environmental protection projects in kindergarten.



	Documents and variables	biggest world problems	societal efficacy	learnability
1	Interviews\B01 Member nature cons. organiz.: no Gender: male Occupation: no	unequal global distribution of rich and poor	Problems have existed for a very long time and are therefore not so easy to solve. No belief in climate change, because humans do not have that much influence. Nevertheless we have to conserve resources because of environmental protection.	Parents are the most important persons. They have to set an example. The media can also play a role, but you should be critical.
2	Interviews\B02 Member nature cons. organiz.: yes Gender: male Occupation: yes	Conflicts of faith, terrorism, and also the economy, the division of the world into classes, also climate change, overpopulation and the related poverty in the world.	Conflicts of religion have existed since the crusades, and there is not much that can be done. The same applies to capitalism, the greed for power belongs to humans. It is different with the climatic change, which one can perhaps be affected.	In early childhood, children should develop nature awareness. In our kindergarten we do environmental projects. However, it is not easy if the parents don't join in. You have to get them on board.
3	Interviews\B03 Member nature cons. organiz.: no Gender: male Occupation: yes	The wars in the Middle East and Africa. The climate change and the resulting epidemics, environmental disasters and famines	In principle you can influence most problems	In kindergartens and schools it is already possible to sensitize children, for example through special projects. The media are less suitable: instead of education, they focus more on panic-mongering

Fig. 5-8: Summary table – overview of cases with thematic summaries and variables

Create a summary table in MAXQDA as an overview of cases

1. Start the function ***Analysis > Summary Tables***. A window will appear with all the summary tables that already exist in the project.
2. Click the ***New Summary Table*** icon. In the dialog window that appears, select the codes and variables to be displayed in the table. You can also limit the selection of documents to those currently activated.

Hints and tips:

- If you change the content of a summary in a Summary Table, the content is also changed in the Summary Grid – and vice versa.

Including linguistic aspects: Words, metaphors, and phrasings

Even if linguistic aspects are not directly addressed in the research question, it may be of interest to take a closer look at the words, metaphors, and phrasings used by the research participants.

Word cloud: Exploring and displaying the most common words

A *word cloud* (available in the ***Visual Tools*** menu) is a straightforward way to visualize the most common words contained in one or more interviews. The font size of a word displayed in a word cloud is determined by its frequency (Fig. 5-9). The toolbar offers a variety of display options. Using the ***Word Frequencies*** option, words of no interest, such as the articles "the" and "a" can be added to the Stop List of words to be excluded.

Word clouds are suitable both for the *exploration* of data described in step 1 and for the *presentation* of important analysis results. The ***MAXDictio > Word Combinations*** function lists frequently occurring combinations of two to five words and allows you to identify phrasings that are used several times. The results can also be presented as a word cloud.

Fig. 5-9: Word cloud of the most frequently used words (using a stop list) from the "OECD work in support of climate action" report 2019

Further options for visualizing data and findings

Visualization as a tool for analysis as well as a mode of presentation has become standard in many scientific disciplines. Even in the social sciences, which are traditionally primarily text-based, visualizations have grown in popularity. While at the beginning of the 2000s it was common practice to present relationships visually in network analysis, visualizations are now also widespread in qualitative research. In poster sessions at large national and international conferences, there is hardly a poster on qualitative research projects that can be found without visual displays. A glance at the poster gallery of the Berlin Methods Meeting (BMT)[3] or the MAXQDA International Conference (MQIC)[4] reveals the great variety of visualizations that are available these days. In what follows we describe many visualizations that can be implemented with the help of MAXQDA; all of them are available in the menu tab ***Visual Tools***.

Codeline: Categories of an interview as a sequence

In which order are the different topics discussed in the interview? This question is all the more interesting the less structured the interview guide is and the more freely it can be handled in the course of the interview. With the case-based or, more precisely,

[3] http://www.berliner-methodentreffen.de/archiv/poster/poster_2019/
[4] https://conference.maxqda.com/mqic-2020-posters

the single-case-based *Codeline* (available in the ***Visual Tools*** menu), the sequence of an interview can be represented as a diagram of its sequence of coded segments.

Fig. 5-10 shows such a Codeline for a selected interview of the climate awareness study. The Y-axis is formed by the categories and the X-axis by the paragraphs, i.e. the text sections. The diagram starts on the left with the first paragraph of the interview. Ten paragraphs and the distribution of the categories are displayed. In the second paragraph of the interview, the category "biggest world problems" has been coded, in the fourth paragraph "societal efficacy", and in the sixth paragraph "societal efficacy" and "consumption and climate". Paragraphs 3, 5, 7, and 9 are not coded. These are the interviewer's questions that have not been coded. The X-axis can be scaled differently. If the option ***Unit: paragraph*** is activated (as in Fig. 5-10), all paragraphs are displayed with the same width, regardless of the length of the respective text. The entire paragraph width will be filled with the color of the code once a code has been assigned in that paragraph. It does not matter whether only a little or a lot of text has been coded.

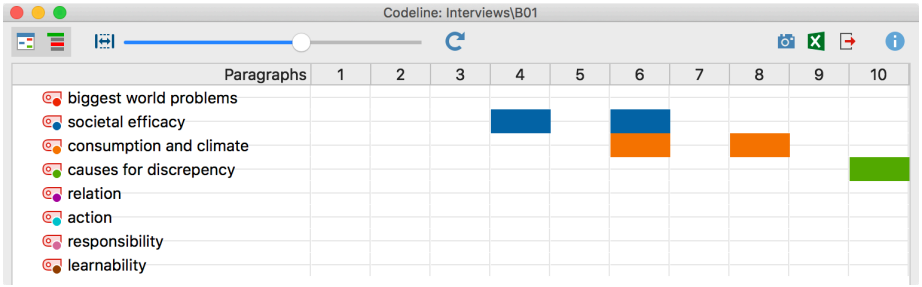


Fig. 5-10: Sequence of the categories in the course of the interview B01 (Codeline)

The Codeline function gives an overview of the coded segments in the course of the interview and is a kind of interview protocol in the compressed form of categories. Which topics are discussed first, which are discussed later, which take up more space, which are only touched upon, all this can be seen by looking at the Codeline. This visualization can also be used analytically to follow up on selected categories in the course of an interview, i.e. to find out when and in what context a particular topic was discussed. The ability to show only selected categories makes it possible to make focused comparisons of categories. Exploratively, the Codeline display can be used to discover the co-occurrence of categories.

Document Portrait: The sequence of codes as a rectangular image

The *Document Portrait* (available in the ***Visual Tools*** menu) presents a selected interview as a portrait of its coded segments. This is also a visualization form oriented to individual cases. It is based on the idea of assigning characteristic colors to categories. The Document Portrait depicts the codes in sequential order, using the length of a segment as a weighting factor for the diagram. A Document Portrait always consists of a certain number of tiles (900, 1,200, 1,600, or 2,400), which can be displayed as colored squares or circles. The coded segments are transposed onto these tiles, with the diagram in the top left-hand corner starting with the color of the category of the first coded segment of the interview and then structured line by line.

If different colors have been assigned to the different topics of the interview guide, the Document Portrait shows at which point or points in the interview the respective topic in the guide was discussed and the extent of this topic in the guide was taken up in relation to the entire interview. By transposing all the coded segments of an interview onto a fixed number of tiles, a kind of standardization takes place, which makes it possible to compare interviews with regard to their progression as well as the main points of content. Fig. 5-11 illustrates how the coded segments of an interview are transposed into a Document Portrait.

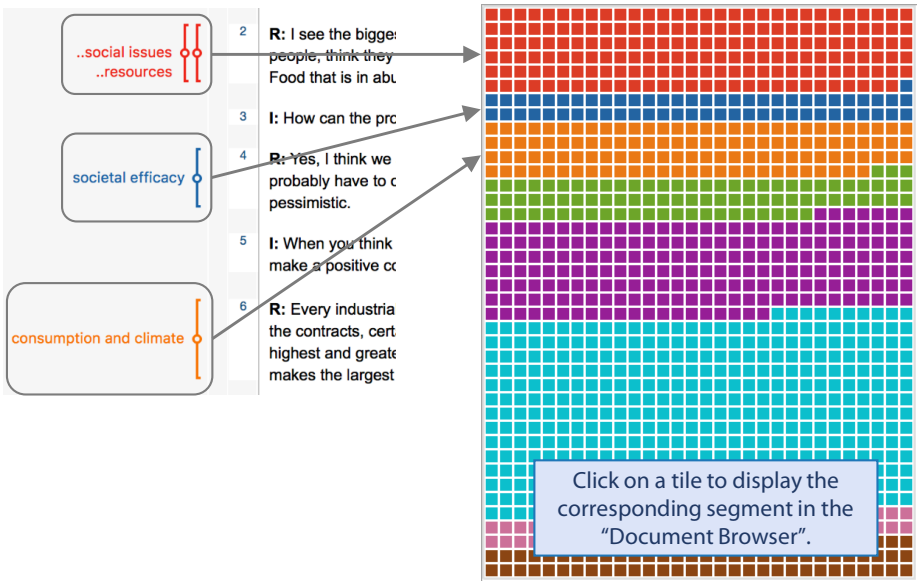


Fig. 5-11: Codes in a document (left) are transposed into the Document Portrait (right)

Examples for the use of Document Portraits can be found in the online poster galleries of the Berlin Methods Meeting or the MAXQDA International Conference, as well as in d'Andrea, Hodgen, and Heaton (2016) who conducted a project on communication between consultants.

Document Map: Identifying similarities between cases on a map

The *Document Map* function (available in the ***Visual Tools*** menu) can be used to display the similarities of interviews in a diagram. The more similar two interviews are with regard to the assignment of selected categories and variable values, the closer the symbols are placed to each other on the map. The display and functionality are similar to the Code Map, except that documents are analyzed instead of codes.

Fig. 5-12 shows a document map for the 30 interviews of the climate awareness study. It indicates that the interviews B20 and B26 are very similar and B25 and B37 are very dissimilar in terms of the categories assigned. Where the map says "2 documents" or "3 documents", several documents (interviews) share the same location. The code names are displayed when the mouse is moved over the symbol or text. If a cluster analysis is requested in the Document Map, the number of desired clusters can be selected. The document symbols on the map are then displayed in the color according to their cluster affiliation.

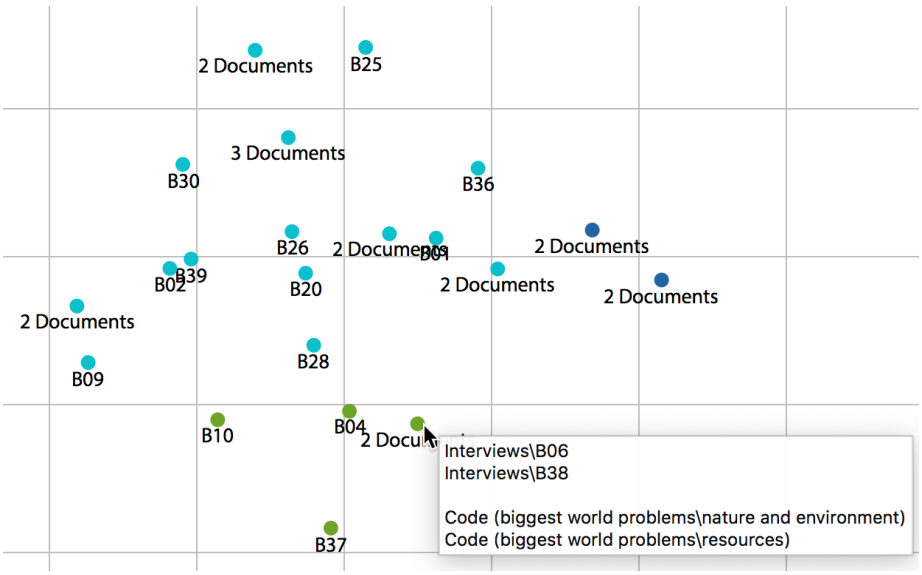


Fig. 5-12: Analyzing similarities between interviews using a Document Map

The positioning of the interview symbols in the diagram works the same way as with the Code Map, using the classic multidimensional scaling. For this purpose, a similarity matrix or distance matrix is first calculated for the interviews. The grouping of the interviews is done via a hierarchical cluster analysis with an unweighted average linkage.

You can use the results of the cluster analysis in the Document Map also to generate groups (types) for further analysis. These groups can then be used to perform the group comparisons described above.

Document Comparison Chart: Contrasting sequences of coded segments

The *Document Comparison Chart* (available in the ***Visual Tools*** menu) displays the coded segments of multiple interviews in a single visualization. The interviews are organized line by line, with their coded segments being represented from left to right in the sequence of the text segments by the colors of the respective code. This allows you to compare the structural sequence of multiple interviews (Fig. 5-13).

As with the Document Portrait, the Document Comparison Chart assumes that a meaningful assignment of colors to categories has been made, otherwise it is only possible to see where coding has taken place, but not which categories are involved.

Usually, qualitative interviews have a different length and a different number of text paragraphs. In order to be able to compare the interviews with regard to their sequence of topics, the document length can be standardized by using an option in the toolbar. If the option is switched on, the X-axis is not represented by the paragraphs, but the document is divided into 100 equally sized sections and the codes in each section are visualized.

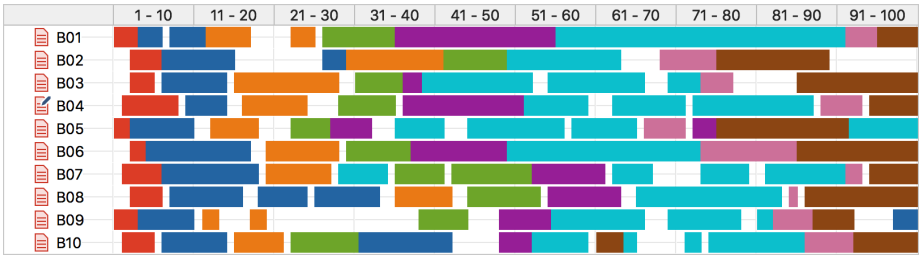


Fig. 5-13: Document Comparison Chart for 10 interviews standardized to length 100

Working with MAXMaps: Concept maps and model templates

Both the scientific community and the general public are used to visualizations of relationships. It is difficult to imagine that a lecture on global climate change or on the effects of the corona pandemic would work without visual elements. Similar expectations regarding the visualization of evidence exist with regard to the presentation of the results of qualitative research. The problem of text overload can be addressed by inserting meaningful visualizations into the research report, conference posters, or presentations. However, this is by no means only about fulfilling expectations of the audience, but also about qualitative relationships, group comparisons, and causal networks, which can often be better presented and understood in a visualized manner.

Concept maps, i.e. diagrams in which the relationships between concepts are visualized, are particularly suited to qualitative research. Some researchers present the research question and the concepts they work with as concept maps at the very beginning of a project (Fig 2-2 in Chapter 2). This can be very helpful – also for presentations. MAXMaps (available in the ***Visual Tools*** menu) is a special mapping tool available in MAXQDA that allows you to create concept maps and infographics. MAXMaps is primarily intended to display the various elements of MAXQDA (codes, documents, coded segments, memos, paraphrases, summaries) visually on a workspace ("map") and to relate them to each other. This opens up a very wide range of possibilities.

As an example, Fig. 5-14 displays a concept map that was created within the framework of the climate awareness project. In the interview, the research participants were asked what they see as the reasons for the discrepancy between attitudes and behavior with regard to climate protection, i.e. people talk one way but act differently. The map was created as part of the data-driven formation of subcategories for the category "causes for discrepancy" (in step 4 of the focused analysis of interviews). The text passages coded with this category in the course of the basic coding process were gone through, and the causes of the discrepancy mentioned were coded – roughly in the same way as an open coding process in Grounded Theory (Corbin & Strauss, 2015). Subsequently, the open codes were ordered, redundant codes were removed and similar codes were combined into more abstract codes. Finally, seven subcategories were created in this way, which can be used to describe the causes of the discrepancy between attitudes and behavior from the perspective of the research participants.

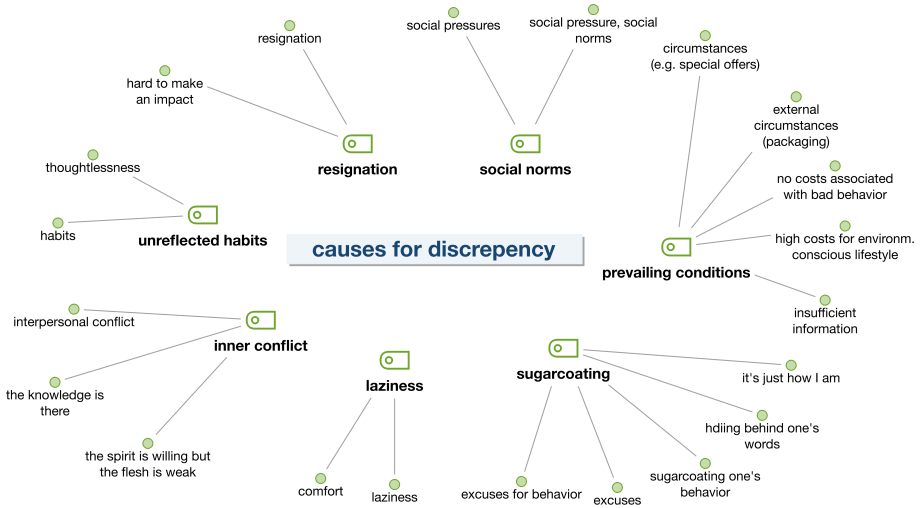


Fig. 5-14: Concept map for the subcategories of "causes for discrepancy"

In addition to such concept maps, in which one step at a time is taken on an initially empty workspace and elements of MAXQDA are successively inserted into the diagram, MAXMaps can also make use of ready-to-use models (templates). The models can be used to display, for example:

- the categories assigned to an interview, with or without coded segments ("Single-case model for coded segments"),
- the categories assigned to an interview with thematic summaries ("Single-case model for summaries"),
- the interviews in which a selected category was coded ("Single-code model for coded segments"),
- the co-occurrences of codes in a network ("Code co-occurrence model"),
- the comparison of two interviews with regard to their coded segments ("Two-cases model")
- and many other relations (Kuckartz & Rädiker, 2019, p. 243)

In total, more than a dozen model templates are available to allow researchers to visualize the relationships of categories and subcategories and the relationships of individual or multiple interviews in a few steps. The result of working with such model templates is illustrated in Fig. 5-15. There, an automatically generated Two-cases Model is displayed. The two interviews B08 and B09 are compared to each other with regard to their coded segments. In the middle, between the two interviews, the cate-

gories that were coded in both interviews are displayed; on the left side the category that only occurs in B08, and on the right side the two categories that only occur in B09.

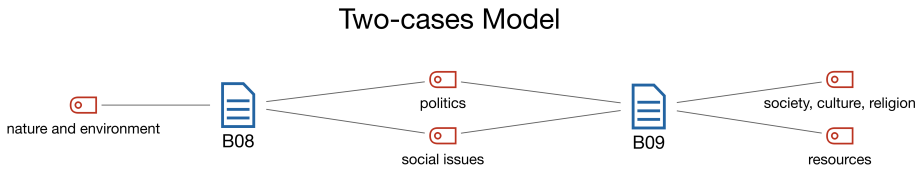


Fig. 5-15: Comparison of the categories of two interviews by using the Two-cases Model

In all model templates, the presentation can be limited to a selection of interviews, categories, and subcategories; in Fig. 5-15, for example, only the subcategories of "biggest world problems" were selected. The model allows the special aspects of interviews to be seen at a glance, a feature that is particularly important when many categories are included in the map. The predefined model templates can thus not only be used for presentations but also have an exploratory function that allows you to discover relationships and connections.

Concept maps are excellent for research reports and conference posters. For lectures and presentations, it is also important that MAXMaps can work with different layers that can be shown or hidden one after the other in a presentation.

Summary

After coding, a wide range of possibilities for further qualitative analyses open up. These allow both case-based and topic-based analyses. Quantitative aspects can also be included and statistical methods can be used. In-depth analyses of categories and topics take on a particularly important role, both in projects with a short duration and in projects where more time and personnel resources are available. Further strategies of analysis include focusing on specific cases, comparisons of cases and overviews of cases, and language-oriented analyses. Working with thematic summaries per case can open up further analytical options. Different types of visualizations offer additional diagnostic capabilities and new ways of presentation. The research insights can thus be presented in a clear and comprehensible way.

Checklist

- ☐ Create an analysis plan including a time schedule taking into account the available resources
- ☐ Analyze the key categories in more detail
- ☐ Highlight important quotes from the interviewees for the research report
- ☐ Reflect on integrating a case-oriented perspective (how? in what way?) and, if suitable, include it in your analysis
- ☐ Compare selected interviews with each other (optional)
- ☐ Compare groups which have been created on the basis of sociodemographic and background variables (optional)
- ☐ Include linguistic aspects (metaphors, certain words, and phrases, etc.) in the analysis (optional)
- ☐ Use visualizations, which are suitable for the presentation of the findings
- ☐ Create concept maps (optional)

Further reading

Bazeley, P. (2013). *Qualitative data analysis: Practical strategies.* SAGE. (pp. 254–324)

Kuckartz, U. (2014). *Qualitative text analysis: A guide to methods, practice & using software.* SAGE. (pp. 69-88)

Miles, M. B., Huberman, A. M., & Saldaña, J. (2014). *Qualitative data analysis: A methods sourcebook* (3rd ed.). SAGE. (pp. 105–253)

6 Write the research report and document the analysis process

In this chapter:

- ✓ Writing continuously throughout the project
- ✓ Structuring the report
- ✓ Presenting and interpreting the findings of the analysis
- ✓ Including quotes
- ✓ Considering the case perspective
- ✓ Reflecting on the question of generalizing the results
- ✓ Preparing and archiving data for subsequent use

Writing as a continuous activity of researchers

Writing is one of the core skills of researchers but is usually rather neglected in university programs. Presumably, the assumption goes that everyone with a high school diploma can write. Unfortunately, this is not the case. The preparation of a report based on qualitative research often proves more difficult than a report based on quantitative research, in which the presentation of tables and statistical results is to a certain extent the backbone of a text, and the verbalization of these statistical analyses can be done in a routine way. When university courses are evaluated, for example, it is quite common for the data collected on a course to be automatically converted into a report. For the respective lecturers, this report then shows how their own course has been assessed and how it compares to other courses in the same and other departments. It is much more difficult to write a report on the analysis of qualitative interviews. We can make one important recommendation in advance: *write continuously during the entire analysis phase, i.e. from the very beginning.*

Writing from the start of and throughout the analysis process is not just good practice; it can provide the building blocks for the final report and may very well be directly

integrated into it. It is best to do this continuous writing by means of memos within MAXQDA, because only then a direct reference to the original data can be maintained:

- *In-document memos* correspond to notes that are written next to the text in a printed interview transcript or that are attached to text passages like Post-it notes.
- *Document memos* refer to a specific interview. They can be used to store metadata such as the date of the interview, location, interviewer, length of the interview. Case-related findings, such as case summaries, can also be stored here.
- *Code memos* are used to record aspects, properties, and dimensions of categories.
- *Free memos* can be used to make notes of summaries, hypotheses, and theories that are not directly related to a category or to a specific interview.

Writing style and design standards for publications

Over time, each researcher will develop their own style and writing habits. There are a lot of texts about academic and scientific writing and it is highly worthwhile reading such books (e.g. Durdella, 2019; Kail, 2018). When writing an academic text in English, we recommend following the rules and instructions of the "Publication Manual of the American Psychological Association" (American Psychological Association, 2020).

Thanks to computers, word processing programs, and especially the availability of large screens, writing habits have changed fundamentally. But even today the process of writing does not have to take place exclusively on screen. When writing a chapter, it can be very helpful to have the printed results from step 5 in front of you. The same is true for the literature you want to refer to or quote. Quickly grabbing the book on your desk and flipping to a page marked with a Post-it can even be a pleasant change for your hands, which can start to stiffen after hours working purely with a mouse and keyboard.

Regardless of whether someone is working in a university, in market research, or in business, she or he will strive to continuously improve their writing skills throughout the course of his or her professional career. Attending courses and writing workshops, as offered at many universities, can also be very useful in this respect. Academic writing is certainly related to literary writing. Hence, reading literary texts can also help improve one's writing style. Academic writing, especially research reports in the field of qualitative research, can have many of the features of well-written literature. It is important to make the report exciting, to develop a storyline, and to draw the recipient into the story. This is true for ethnographic and auto-ethnographic studies far more than for interview studies but nevertheless an arc of suspense should also

be created in interview studies. One should try as much as possible to avoid merely writing about one category after the other in a boring style, occasionally adding quotations or statistics.

As far as writing scientific texts is concerned, the APA style (APA stands for American Psychological Association) has become a global standard in the social and behavioral sciences. The detailed rules are laid down in the *Publication Manual of the American Psychological Association*, now in its seventh edition (American Psychological Association, 2020). With regard to the planned publication of one's own texts in international journals and books, it makes sense to follow these guidelines from the outset. Nearly all aspects of scientific writing from the manuscript structure, punctuation, citation styles, the design of one's bibliography, to the layout of tables and figures are discussed in this manual. Some very useful advice on writing style is also given, for example, on how to avoid anthropomorphisms (American Psychological Association, 2020, p. 117).

Structuring and writing the research report

The first questions that should be asked when writing a research report are "Who am I writing for?" and "How can I present what I have found to my audience in the most accessible way?" When writing a scientific manuscript, however, you are certainly not as free as when writing a literary text; there are certain standards to be followed. These include that a manuscript should have a specific structure according to the following pattern:

Introduction. This section describes the specific problem being addressed in the study. The relationship to the state of research and to previous studies is explained and the research approach is presented. In the case of a final thesis, especially a doctoral thesis, this part will usually be longer than in an article for a scientific journal or in a research report. Between the introduction and the methods section, a theory section is also usually inserted, in which the scientific foundation of the study is outlined.

Method. The methods section describes the research design, characteristics of the research participants, sampling strategy, data collection, and the process of data analysis. Stamann, Janssen, and Schreier (2016, paras. 23–24) have explained how, for example, the analysis steps in a qualitative content analysis can be described in a standardized way. The extent to which this has to be done naturally depends on the type and scope of the report. The methods section in a dissertation should be much more comprehensive than in a journal article of 5,000 words.

Results. The comprehensive section of the report, the results section presents the main findings. When analyzing interviews, this means presenting the results on about three to five main topics and their interrelationships. These topics should not simply be dealt with in any order, one after the other, but should be arranged to form a plausible storyline that the readers will find interesting. The relationship between the key issues should be worked out. Quotes, diagrams, summary tables, and concept maps clarify the argumentation and increase the comprehensibility of the content.

Discussion. After the presentation of the results, they are interpreted, and conclusions are drawn. This is also where research gaps are identified, and further research is stimulated.

These general structural requirements should always be respected unless there are serious reasons for not doing so – for example, when writing an essay rather than a research report. When presenting qualitative research results, there are several specific questions to be answered, which are discussed below:

Which quotations do I select? How exemplary are they of the subject matter?

Using quotes from research participants is highly recommended. In this way, the text gains vividness and authenticity; the arguments presented become more plausible. It is preferable to use short quotations, which are cleverly interwoven into the development of your argument. However, you should also avoid overdoing it with quotations. A maximum of a quarter of the text in the results section should consist of quotations. In contract research, it may be the case that clients are only interested in a short and "crisp" report of the results and that quotations will play little or no role at all. You should also be aware of selective plausibility, i.e. a kind of anecdotalism in which findings and quotation, findings and quotation are lined up one after the other. Such a seemingly contradiction-free text structure inevitably arouses doubts in the reader about the credibility of the findings. Hence, if possible, several perspectives should always be mentioned or quoted and – if available in the data – differences, contradictions, and inconsistencies should be presented.

Copy a quotation from MAXQDA into a results report

- Select a text section in the "Document Browser" and copy it to the clipboard via the context menu or shortcut. If you insert the quotation into your report, a source reference with document group, document name, and paragraph/line numbers will automatically appear at the end of the quotation.

❖ The fastest way to transfer a coded segment (e.g. from the category "quotable passages") into a research report is to drag the vertical coding stripe from the "Document Browser" or from the "Retrieved Segments" window directly into the text document with the mouse.

Is it enough to simply report the category frequencies?

The development of categories, working with a category system, and coding the data are essential for the analysis of qualitative interviews. Given the work that goes into these steps of analysis, simply counting the category frequencies would be a rather simplistic form of category-based analysis. Even though it is relatively easy to report frequencies and produce tables and bar charts, such quantitative representations should at best play a secondary role. Instead, it is important to focus on the qualitative representation. This means explaining the concepts, describing the relationships between categories, developing theories, hypotheses, and complex models, in short, concentrating on describing the *how*.

How should quantifications and frequencies be dealt with?

In principle, numbers can also play a role in qualitative research. The English social scientist Seale recommended to "count the countable" (Seale, 1999, p. 121). It makes quite a difference whether 2 or 25 out of 40 research participants in the interview say that they pay attention to sustainability when buying clothes. The recipients of a study have a right to know about such differences. A distinction should also be made between the level of the individual research participants and the level of the sample. At the individual level, *often* does not necessarily mean *important:* if you often talk about your own eco-friendly behavior in an interview, it does not necessarily mean that it is important for you. It should therefore be carefully considered what significance numbers have (Kuckartz, 2014a). The further you move away from the questions of the interview guide when analyzing an interview, the less meaningful numbers are. Quantities may be important as additional information, but their relevance must be justified anew in each concrete case.

To what extent can results be generalized and transferred to other contexts?

This question touches on a frequently cited weakness of qualitative research, namely the difficulty of generalizing the results. As a rule, the case numbers in qualitative research are small and the sampling does not meet the criteria of a random sample. For

this reason, qualitative research, unlike quantitative research which works with large numbers of cases, cannot claim to generalize through statistical representativeness.

However, a sample of n=1,000 is not necessary to plausibly demonstrate that (and how) phenomena are related, for example that family members suffering from Alzheimer's can be effectively supported by their families or how targeted language support helps developmentally delayed children catch up. In these cases, however, the generalization is made in the form of an empirically grounded theory or the discovery of patterns rather than the calculation of statistical significance. Anyone who conducts an interview study with only ten teachers cannot claim the descriptive results to be valid for the whole country, but it is certainly possible to develop a causal model (Mayring, 2007) which can later be tested on a larger sample.

Transferring the results of the analysis to other contexts is also possible in principle but requires justification: by comparing the contexts, it must be plausibly justifiable why the results can be transferred.

How is the case perspective brought into the report?

There are several ways to do this. On the one hand, it may be useful to present the cases of certain selected interviewees in the report. For this purpose, particularly meaningful cases should be selected; a selection according to the criterion of maximum diversity may also be appropriate. The question then arises as to where such a case description can be inserted into the structure of the report? In most cases, it is difficult to insert exemplary case descriptions into the sequence of topics in the results section. Thus, it is often a better solution to start the results section with a case-oriented part. This gives the reader a holistic view of the phenomenon being studied and sensitizes them to the subsequent topic-oriented presentation of the results.

Another option is to create a typology. This can be useful, for example, if the research question contains elements for the identification of target groups or intervention groups. In this case, the presentation of the typology can be made very lively and comprehensible by describing interviewees who represent certain types.

Interpretation versus description: Encouraging interpretation

In general, all results of empirical research require interpretation. Even in quantitative research, no matter how clear the coefficients and probabilities of a statistical results table are, they do not speak for themselves. The coefficients of a factor analysis or multiple regression, for example, must be interpreted and processed into a comprehensible text. This need for interpretation applies all the more to qualitative re-

search. Simply repeating what the research participants have said is not enough. What is needed is interpretation, summarizing, comparing, contrasting, identifying patterns and rules. "You can only look people in the face ... and unfortunately not behind it", this everyday wisdom is not overcome even by interpretative qualitative research. There are limits to the freedom of interpretation in scientific data analysis. What is always necessary is an argumentative validation of interpretation (Mayring, 2016, p. 145) which refers to the data. The data are the yardstick: "This is *because* the following evidence can be found in the data and results."

Archiving the data and documenting the analysis process

Especially in the case of a master's thesis, dissertation, or larger research project, questions concerning archiving and documentation will arise. The German Research Foundation (2015), for example, requires that data collected within the framework of funded projects be made available for subsequent use. Similarly, the OECD (2007) emphasizes the long-term accessibility of research data from public funding. Data archives like the UK Data Service[5] provide appropriate modalities and instructions for depositing data.

Using the *Archive Data* function, the data of the MAXQDA project can be saved for subsequent use. The data is saved in a clear folder structure – both the original data and the related metadata. Here, the document group breakdown within the MAXQDA project is adopted as the folder structure. If desired, a compressed zip file can also be created. All data is saved in common standard formats such as DOCX (Word), PDF, XLSX (Excel), and MP4 (video) so that subsequent use is possible without the purchase of special software. In addition to the documents, the following data can optionally be archived:

- the document variables, that is, the background data and sociodemographic data,
- the audio and video files associated with the interviews,
- the memos from the "Document System", which usually contain information and documentation on the project and the data collected, and
- the code system including the code memos.

[5] https://www.ukdataservice.ac.uk/deposit-data.aspx

Use the archive function in MAXQDA

- On the ***Home*** tab, click the ***Archive Data*** function. Select ***Compress into single file (ZIP)*** as the option to combine all exported data into a single file.

Hints and tips:

- With the ***Home > Save Anonymized Project As*** function, you can create a copy of the MAXQDA project in which all text passages coded with selected codes are replaced by XXX. Of course, this assumes that all passages to be anonymized have been marked with special codes.

In the case of a master's thesis or dissertation, the question also arises of how the entire research process and the analyses carried out should be documented. There are different requirements depending on the university or institute, and we recommend familiarizing yourself with the practices at your institution in advance. Furthermore, it should be clarified if the reviewers expect special requirements to be met.

In any case, the chosen methods should be described in a comprehensible way in the methods section of the thesis. This includes the description of those categories that play a key role in the analysis. The appendix of a master's thesis or dissertation should include:

- important written documents of the study, such as cover letters or letters of invitation,
- the interview guide and the accompanying questionnaire, if one has been used in the research project,
- information on the duration of the individual interviews,
- the rules by which the interviews were transcribed,
- the documentation of the category system, including frequencies of the categories and examples of category definitions, and, if requested by the supervisors, at least one transcript as an example of the data collected and the type of transcription.

MAXQDA also offers you the option of sharing the latest version of the project file and viewing it with the free MAXQDA reader. This allows reviewers and recipients of research to review the data, categories, and coded segments of the MAXQDA project and (hopefully) appreciate the work done, even if they do not have a MAXQDA license themselves. Of course, care should be taken to ensure that all data, regardless of the form in which it is shared, is made anonymous beforehand.

Summary

Writing is one of the core skils of all qualitative researchers and as such should always be developed further and improved. Throughout the entire analysis process, ideas, assumptions about interrelations, noteworthy and interim results should be recorded in memos. The final qualitative research report should have a structure that complies with the standards given in established publication guidelines. Quotations from research participants can illustrate the results of the research and make them more plausible. The course of the entire research process, the category system, and the definitions of the categories should be documented. After completing the report, the data should be archived for subsequent use.

Checklist

- ☐ Reflect on the intended audience of the report
- ☐ Write memos during the entire analysis process
- ☐ Structure the report (or theses) according to existing standards
- ☐ Develop a storyline for the presentation of the results
- ☐ Pay attention to how comprehensible your language is
- ☐ Consider the requirements and standards for publication (e.g. APA)
- ☐ Insert quotations from research participants in the report
- ☐ Check the anonymity of quoted interview sections
- ☐ Document the analysis process (transcription rules, category system, etc.) in detail and systematically
- ☐ Prepare and archive data for subsequent use if necessary

Further reading

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Glossary of important MAXQDA terms

Code memos are attached to a *code* in the *code system* like a Post-it note. They can be used to record the category definitions that determine when the *code* is used. One memo can be created per *code*.

Codes serve as the main analysis tool. In MAXQDA, categories are called codes.

Code system means the system of categories in the "Code System" window. Since it has a hierarchical tree structure, it is sometimes referred to as the code tree.

Coding means assigning a code to a selected interview excerpt.

Coded segments are the segments of the interview to which a code has been assigned.

(Coded segment) comments always refer to a specific *coded segment*. They are very short compared to *memos* and can contain meta-information about the code assignment, e.g. "uncertain assignment". Comments can also be used well for category development.

(Coded segment) weights always refer to a specific *coded segment* and allow its weighting on a scale from 0 to 100.

Documents represent the units to be analyzed. Each interview transcript is a document in the "Document System" window.

Document groups are folders in the "Document System" window to break down the interviews, e.g. into different groups ("Students" and "Teachers" or "Organization A" and "Organization B") or different times of data collection ("Before the intervention" and "After the intervention").

Document sets are folders in the "Document System" window for storing subgroups of the interviewees. A document can only be in one *document group* but can be in any number of document sets.

Document variables contain standardized background information on the interviewees, e.g. their age or profession.

Links are used to connecting a section of the interview with another part of the interview. Links can also be created in and between memos and to an external file.

Logbook – Just as a ship's route and important events are noted in a captain's logbook, MAXQDA's logbook can be used to record important decisions and the progress of the research project. There is only one logbook per project.

Memos are texts of those who analyze the data. Memos can be attached to *documents*, *codes,* and parts of the data. They contain, for example, assumptions and hypotheses about connections and differences, notes regarding the analysis process, and (preliminary) findings. "Free memos" are not assigned to any element in MAXQDA.

Overviews are tabular lists and there are overviews for *coded segments*, *variables*, *summaries,* etc. They are always structured in the same way, can be easily sorted and allow easy access to the listed segments, memos, etc., which makes it easier to maintain an overview.

Paraphrases are short summaries of interview segments that reword the essential meaning. Paraphrases are particularly suitable for becoming familiar with the data.

Projects are files in which all imported data, i.e. the interview transcripts and, if applicable, background information on the respondents, are stored. Projects also contain the information generated during the analysis, such as *memos*, *codes,* and *(thematic) summaries*.

(Thematic) summaries are suitable for summarizing the coded statements of an interviewee on a topic. Summaries are written from the perspective of the researchers in the Summary Grid and can be compiled in Summary Tables for case comparisons.