Exploring the Data

5

Qualitative data analysis is a fascinating and rewarding process that challenges researchers to properly engage with their material and explore it in great detail. The software will not do this for you, but it does provide a number of tools to support you in your explorative work. You can make notes and comments, record questions and ideas, highlight anything that seems important, and search for words or word combinations in texts using lexical search functions. At first, working with digitized texts may seem much like working with a physical reference book. But digital tools are far more powerful, because text passages can be linked to each other, for example, as well as to other documents, websites, images, or geographical locations. In this first phase of your analysis, you will not only get to know your material, but you will also begin to build a large network of connections, comments, ideas, and hypotheses. You can begin to explore images and video recordings, too—a task that is certainly very different from exploring textual data. Video data is multidimensional, appeals to different senses, and can affect the viewer much more potently than texts can.

In This Chapter

- Get to know the memo function
- Writing, editing, and assigning memos
- Organizing and exporting memos
- Highlighting interesting and unusual text passages
- Performing lexical searches in texts and exporting the results
- Creating word clouds and using word stop lists
- Creating links and using this function as cross-linking tool
- Paraphrasing texts

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Exploring Your Data and Making Notes in Memos

From a technical point of view, you can start analyzing the data as soon as you have collected your first material and imported it into the software. However, the way you work will strongly depend on your chosen methodology. It may be that researchers applying the grounded theory method (Charmaz, 2014; Glaser & Strauss, 2009; Strauss & Corbin, 1990) will start their analysis as soon as the first sample of data has been collected and then proceed with further data collection based on these initial results. On the other hand, if you are working with a predetermined qualitative sampling plan, it may be more effective to first collect the data as comprehensively as possible and then start the analysis process in the subsequent phase. Another important factor, which should not be underestimated when it comes to determining how the data analysis phase should be approached, is how the project's researchers are accustomed to working, and this includes their computer competency. While some prefer to work with paper first, highlighting text passages and making annotations in the margins, others prefer to work exclusively with computers from the very beginning. Moreover, there are countless hybrid approaches between these two poles, none of which can be described as right or wrong, better or worse.

MAXQDA offers various tools for this stage of research data exploration without the need for systematic data coding. *Memos* are a very important tool in this regard. These are text notes that can be assigned to various elements in MAXQDA. *Paraphrases* are another helpful tool. These let you briefly summarize texts, in much the same way as you would write the subject headers for messages. You can also *color-code* particularly interesting text passages, just as you would highlight important passages in a reference book.

Memos can be assigned to various elements in MAXQDA, namely:

- Documents
- Document groups and sets
- Codes
- Points in documents as well as audio and video recordings

Additional forms of memo are the "project memo" (see Chap. 3), which can be used to describe the entire project, and "free memos," memos that are not assigned to any specific element in MAXQDA. MAXQDA visually displays memos where they are assigned; they look similar to Post-it® note.

Memos can fulfill a variety of functions in analyses. Particularly for methodologies in the social sciences, working with memos is very common. Indeed, memos play a particularly important role in the grounded theory methodology, as originally developed by Glaser and Strauss (Glaser & Strauss, 2009; Strauss & Corbin, 1990). Grounded theory distinguishes between a range of memo types that each have specific tasks in the research process, such as theory memos and code memos. Memos are fundamentally distinct from primary data: while primary data is normally granted the status of a document, i.e., it is the subject of analysis and should

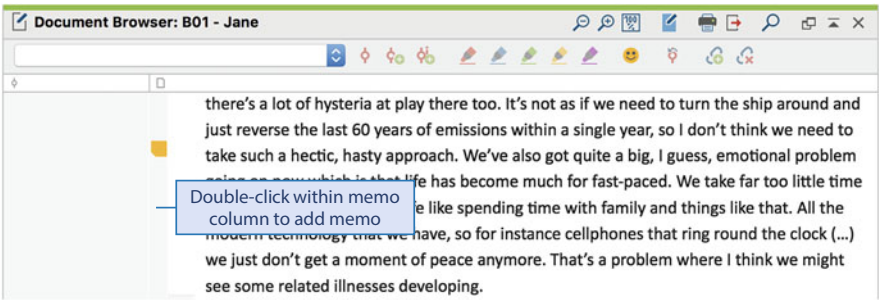


Fig. 5.1 Creating in-document memos

not be significantly changed, memos are products of the researchers themselves and can be edited at any time. Memos can be expanded on, modified, and integrated.

In the exploratory stage of work, "in-document memos" are most commonly used. Comments, ideas, questions, and hypotheses are directly assigned to specific points in the data material. In MAXQDA, the "Document Browser," in which texts, PDFs, and images are displayed, features a separate column to the left of the data for in-document memos. If you move your cursor to this column, a double-click will let you add a note here (Fig. 5.1). But by highlighting a text segment and using the context menu, you can assign the memo to a very specific bit of data.

The memo input dialog box (Fig. 5.2) has the same structure for all MAXQDA memo types. At the top you can enter a title for the memo; this should be unique and meaningful enough so that you can easily identify it later in a complete list of your memos.

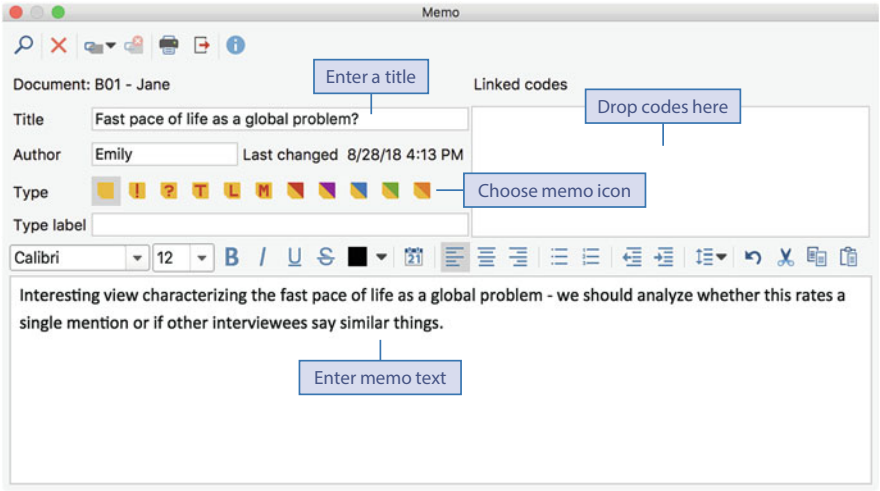


Fig. 5.2 The memo input dialog box

MAXQDA lets you distinguish between 11 different types of memos. To this end, you can assign a specific icon to each memo. The icons featuring the symbols ! (highly relevant), ? (questions regarding the material, preparations for further data collection), T (theory), M (methods), and L (language) do bear an intended meaning. However, they can equally be assigned with user-defined meanings if required.

The actual text of the memo is entered in the lower part of the window—there are also various options for formatting the text. The clipboard can be used to copy text from the memo or to insert text, e.g., quotations from the source text. This also works by dragging and dropping a text passage into this field from the "Document Browser."

Any memo can be displayed simply by pointing at it with the mouse cursor, without any need to click, even in the middle of a coding procedure. Double-click on the displayed memo icon to reopen a memo and modify it as required, for example, to connect a memo to a thematic code later in the analytic process. A table listing of memos is available under ***Reports*** > ***Overview of Memos***; this gives you quick access to individual memos or memo types (for further details see Chap. 9).

Highlighting Text Passages with Assorted Colors

You may not have thought about possible analysis categories yet, or even what your analysis process will look like exactly—you may nevertheless want to highlight passages in a text or make note of observations, hypotheses, and further ideas. Almost everyone can relate to the impulse to pick up a highlighter and mark significant points when reading a reference book. If you want to write something down yourself and there is not enough space in the book margin, you might stick a Post-it® note on the page and write down your thoughts and questions this way. Very similar things can be done in MAXQDA: there are five virtual highlighters in assorted colors (red, blue, green, yellow, and violet) with which texts can be *color-coded*. With these highlighters you could, for example, color-code analytically significant passages in yellow and passages to quote or cite in red.

First, select the relevant passage of text with your mouse, and then click on one of the five color icons located at the top of the "Document Browser." Which of the five colors you use for what purpose is of course entirely up to you. The text passage will then be color-coded with the color of your choice (Fig. 5.3). In contrast to highlighting text passages in books, however, MAXQDA makes it very easy to find these color-coded passages later. With a book, you might be leafing through pages for a long time before you find the underlined passage you were looking for, whereas in MAXQDA you can easily retrieve any color-coded segments in the same way as thematically coded segments. Color-coded text passages can also be combined and processed further for both single and multiple texts. This is described in detail in Chap. 9.

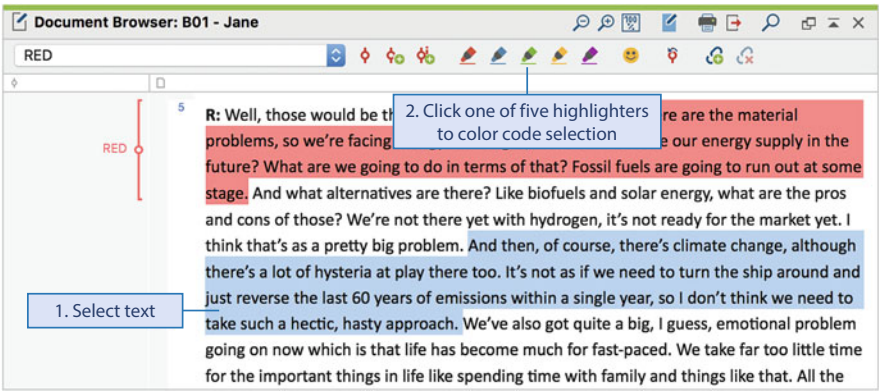


Fig. 5.3 Highlighting a text with the "color coding" function

Searching in Texts with Lexical Search

The exploratory stage of your analysis also involves being able to search for specific words or word combinations in the documents. MAXQDA allows you to search locally in all four main windows, that is, your search will be focused on the window within which you opened the search function. You can search for document names in the "Document System" and for the occurrence of words in the "Document Browser." In the toolbars, which are displayed at the top of each window, there is an icon of a magnifying glass. Click on the magnifying glass and then enter the term you are looking for. The frequency with which the term appears in the window will be displayed; you can move from hit to hit with the up and down keys on your keyboard.

Far more powerful than the local search, however, is MAXQDA's *lexical search* function, which you can access in the ***Analysis*** ribbon tab—or alternatively via the shortcut keys ***Ctrl+⇧+F*** (Windows) and ⌘+⇧+***F*** (Mac). The *lexical search* function not only allows you to search in the open document but also in multiple documents simultaneously. In Fig. 5.4 you can see the lexical search dialog box. In the example pictured, the search terms "climate" and "energy" are being searched for in all documents.

Any number of search terms can be entered. By default, searches are conducted using the OR logic, i.e., if *one* of the terms in the list of search terms is found, this counts as a hit. Alternatively, the AND combination can be used to search for simultaneous occurrences of words in the document or within a set number of paragraphs. Search terms can contain the placeholder characters * and ?:

- If you enter the character ? for a single character, e.g., m?st, MAXQDA will find "mast," "most," and "must."
- The character * denotes any given string of characters, e.g., MAXQDA will find "cold" and "chilled" for c*d.
- A specific beginning of a word can be found with <(. . .). The character string <(inter) therefore finds "interest" and "internal," but not "winter."

- You can likewise search for a specific end of a word using (. . .)>. The character string (im)> finds "him" and "interim," but not "time."

If the option ***Include words from lemma list*** is checked, the search words entered are also searched for their respective word forms. The search term "begin" then also finds "begins," "beginning," "began," "begun," etc.

The list of results will then display all the hits with the located search term shown in capital letters within a short segment showing its immediate context (Fig. 5.5). When you click on a hit, the corresponding document is opened in the "Document Browser" at that precise location so that you can explore its full context.

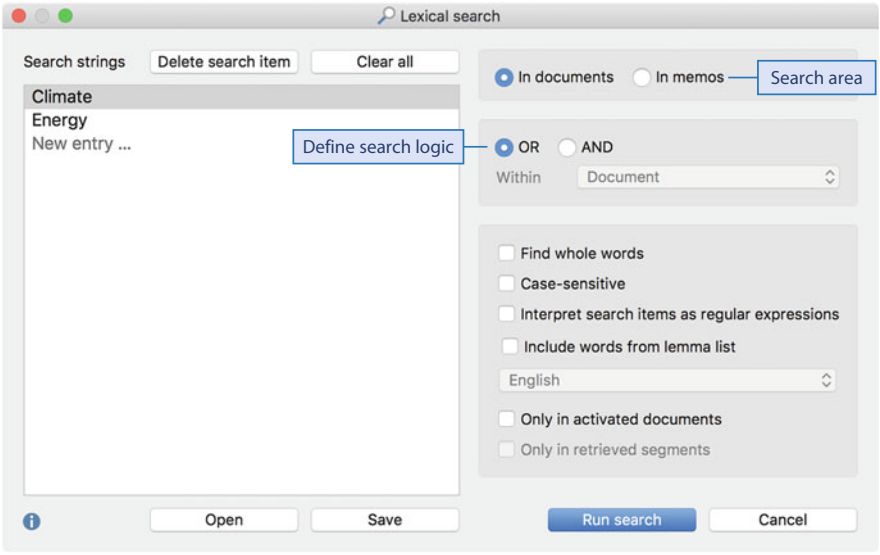


Fig. 5.4 "Lexical search" dialog box with several options

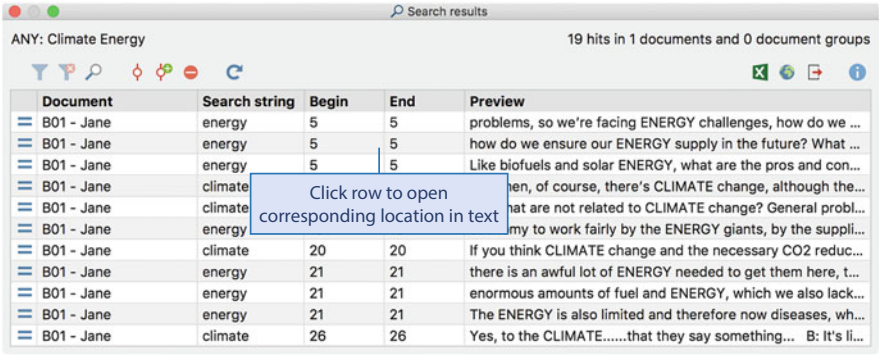


Fig. 5.5 Lexical search results window

Another useful feature for exploring your data is the option that allows you to select a word or text passage in the "Document Browser" and search for further occurrences of this text in the same or other documents. To do this, select the text and choose the option ***Search for Highlighted Text*** in the context menu.

Word Clouds: Visualizing the Most Frequently Used Words

Word clouds have become a very common means of visualizing the words contained in a given source. A typical representation is an alphabetical list of the most common words, whereby particularly frequent words are displayed with a larger font size. Different colors are often used, too. In fact, there are many different ways of displaying word clouds, in general. Why create a word cloud? Word clouds can provide a quick overview of the most common terms in a text. When they are displayed visually, such overviews are far more accessible than a table with a list of words and their frequency. Initial assumptions and hypotheses can be inferred from word clouds, especially if—as in the case of Twitter data, for example—a great deal of data is being analyzed. You can create a word cloud for a single document or for document groups or document sets by right-clicking on an entry in the "Document System" window and choosing ***Word Cloud***. Alternatively, one can request a word cloud for different documents via ***Visual Tools*** > ***Word Cloud***.

Figure 5.6 depicts a word cloud of a three-page interview from an online newspaper with the 50 most common words. Words such as "the," "a," "and," and "in" are the most common words that are not suited to identifying text content. Words such as "landscape," "nature," and "hikers" are more significant. One could reasonably assume that this interview is about walking in the country.

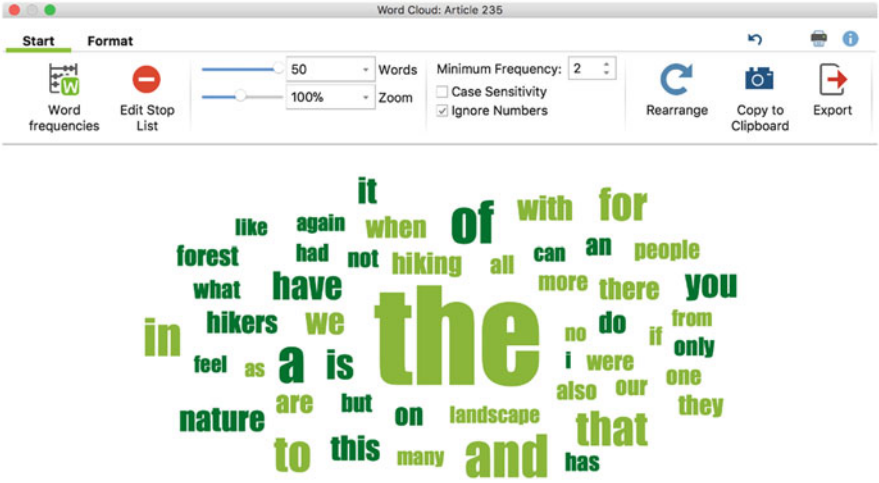
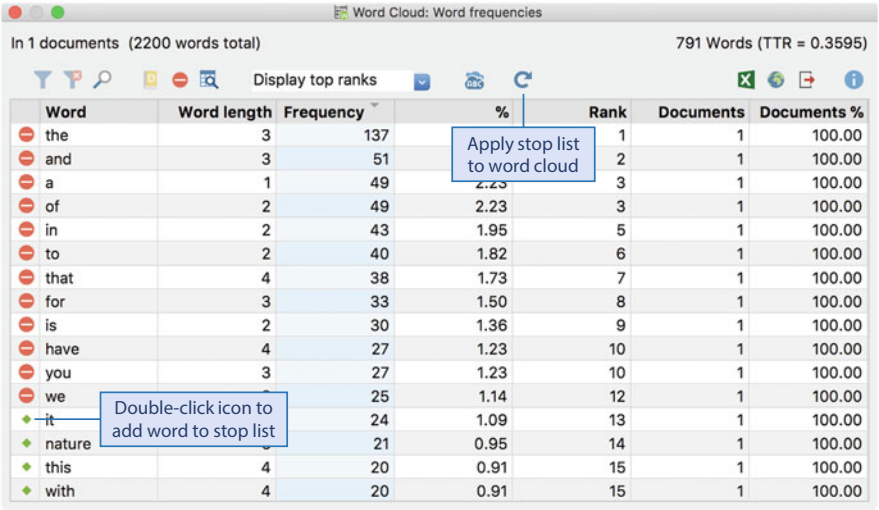


Fig. 5.6 Word cloud with the most common terms in a text



Word	Word length	Frequency	%	Rank	Documents	Documents %
the	3	137		1	1	100.00
and	3	51		2	1	100.00
a	1	49		3	1	100.00
of	2	49	2.23	3	1	100.00
in	2	43	1.95	5	1	100.00
to	2	40	1.82	6	1	100.00
that	4	38	1.73	7	1	100.00
for	3	33	1.50	8	1	100.00
is	2	30	1.36	9	1	100.00
have	4	27	1.23	10	1	100.00
you	3	27	1.23	10	1	100.00
we		25	1.14	12	1	100.00
it		24	1.09	13	1	100.00
nature		21	0.95	14	1	100.00
this	4	20	0.91	15	1	100.00
with	4	20	0.91	15	1	100.00

Fig. 5.7 List of word frequencies with selection of excluded words

If you switch to the list of word frequencies, you can transfer all unwanted words to a stop list (Fig. 5.7). To do this, double-click the column in front of the word in question. All words marked in this way will no longer be taken into account in the word cloud.

A list of the most common words which has been cleaned up in this way results in a much clearer picture (Fig. 5.8). It is now apparent that this text is about hiking and related topics such as views, landscapes, travel, hiking trails, water, and the wilderness.

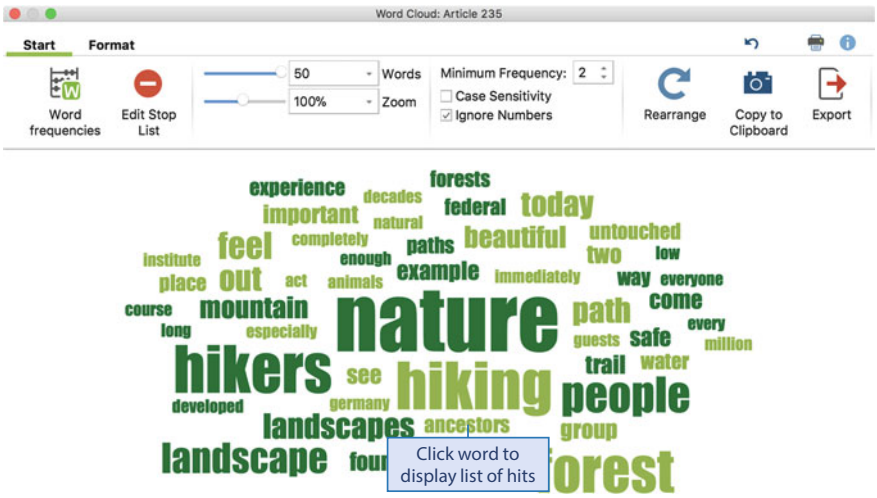


Fig. 5.8 Word cloud after applying the stop list

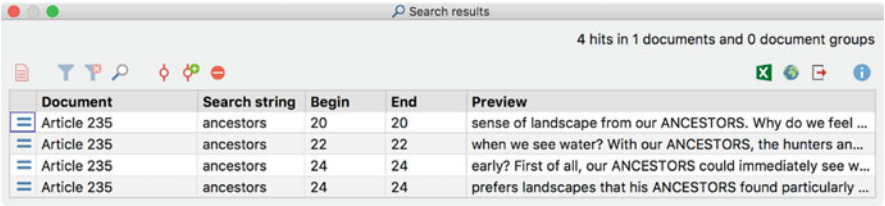


Fig. 5.9 List of locations where the clicked word was found

The word "ancestors" also seems to refer to historical topics. All MAXQDA word clouds are interactive: clicking on a word, here on "ancestors", lists all occurrences of the word as a "keyword in context." These clearly show that all four passages found in the interview text do, in fact, address such topics (Fig. 5.9). To read the context of a reference in question, simply click on that row.

Exploring Video Files

The first steps of video analyses involve familiarizing yourself with the video data, which in this case means watching the videos in a focused manner, occasionally jumping back and watching scenes of interest several times. Exploring video data is more difficult and, above all, more time-consuming than exploring text data. Fast and informative tools like the word cloud or word frequency analyses are unfortunately not available for videos. That is, of course, unless the video recording is transcribed (see Chap. 4). In this case, all previously discussed methods of text exploration can also be carried out on the video transcripts. In most cases, however, transcriptions are dispensed with for video data (unlike audio data), for example, in the analysis of classroom research, where video data plays an essential role. This is not only because the transcription is time-consuming and costly but because video recordings contain so much information, which even the most detailed transcription system cannot hope to capture. Think of the scene from the film "Casablanca," in which the lead actor says the famous line "Here's looking at you, kid." How reductive would an analysis of this scene be, if it focused only on the transcript?

Exploring video and text data is naturally quite different, but two of the tools MAXQDA offers to help with this exploration are the same:

- Memos: You can make notes of ideas and comments in the form of memos. This pauses the video and assigns a memo to the current playback position. Memos are inserted at the top of the audio track. As always, you can choose between different memo types, the icons of which will be displayed. If you hover your cursor over a memo, the title and the beginning of the memo will be shown in the tooltip.
- Color codes: Interesting sequences can be highlighted in color. To do this, however, the corresponding markers for the start and end of the clip must first be set in the video –for further details see Chap. 7.

Linking Data

A technique beyond systematic coding, which can be useful in the exploratory stage of your analysis, is that of setting internal and external links. MAXQDA distinguishes between four types of links:

1. *Document links*—a link between two locations in a text, image, or video. For example, two statements made by a respondent could therefore be linked to each other in order to compare them. Or two people may have made statements about the same facts and you want to be able to easily jump from one statement to the other.
2. *External links*—a link between a location in a text or image you are analyzing and a file outside your current MAXQDA project. For example, to an image, document, sound, or video recording stored on your hard disk.
3. *Web links*—a link between a location in a text or image you are analyzing and an internet page. Clicking on that part of the text or image opens the corresponding web page in your default internet browser.
4. *Geolinks*—a link between a location in a text or image and a geographic location in the world using GPS coordinates. This geolocation is then displayed in Google Earth or other available geodata viewer.

Links can be set (and if necessary deleted) in the "Document Browser" (for texts, PDFs, images) or "Multimedia Browser" (for audio and video data); the four different types of links are represented by different symbols in the Overview of Links which is available in the ribbon tab ***Reports*** or in context menus in the "Document System."

Linking Two Locations in a Document

In the exploratory stage of your analysis, document links—the first type, with which two locations in your documents can be connected—play a particularly important role. Document links are internal links; they only connect points or sections within a MAXQDA project. These links have the same function, and can be used in the same way, as hyperlinks on websites. They connect two points: an anchor point and a target point. As soon as you click on the anchor point of an existing link, the corresponding target point will be opened, or, alternatively, by pointing at an anchor link, you will see the target link data displayed in a tooltip panel. In MAXQDA, these links are two-way, i.e., they not only lead somewhere but also back again. Clicking on the target point jumps back to the anchor point (Fig. 5.10). Box 5.1 explains in detail how to create document links. Document links can be used to link points or sections in and across all types of data in MAXQDA, i.e., texts, images, and PDFs, as well as audio and video files.

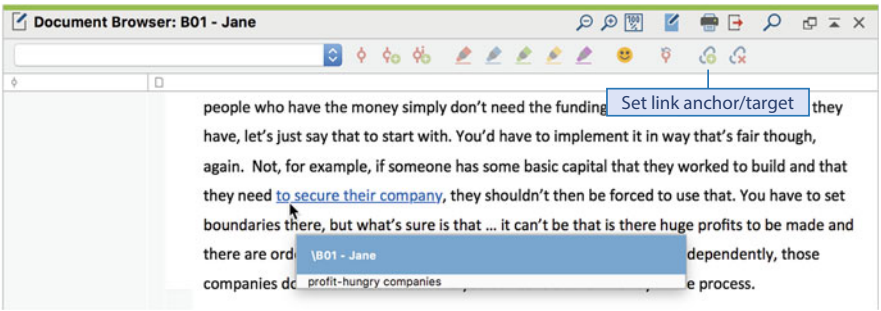


Fig. 5.10 Document link with a tooltip preview of the link target

Box 5.1: Creating Document Links

- Select an anchor point in the "Document Browser" with your mouse, and then select the ***Insert Document Link*** option from the context menu (shortcuts: ***Ctrl+L*** on Windows and ⌘ **+** ***L*** on Mac), or click on the ***Set link anchor/target*** icon in the coding toolbar in the "Document Browser." The location you selected will now be displayed differently. In text documents the text will appear underlined in blue, and in images and PDF documents, you will see a blue frame.
- Then select the target point for your document link. First scroll to your desired location in the same document, or, if you want to create a link to a separate document, open that document and scroll to the relevant location there. Select your target point with the mouse, just as you did with the anchor point.
- Click on the ***Set link anchor/target*** icon again to complete the link; these locations will now be linked to each other.
- If you decide not to set the link after the first step, you can remove the anchor point of the link by clicking on the ***Remove start of link*** icon.

To create a document link in a video, open the video in the "Multimedia Browser," select a section of the video, and then select ***Insert Document Link*** in the context menu.

When linking text passages from two documents, it can also be very helpful to open the second document in an additional "Document Browser," so that both documents can be placed next to each other.

The Overview of Links, which is available for individual documents, document groups, and entire projects via the context menu in the "Document System," makes it easier to find links again later. In this overview, document links appear twice, with their anchor and target points, while external links, web links, and geolinks appear only once in the list. The list is interactive: double-click a link to open the corresponding target.

Paraphrasing Texts

MAXQDA enables you to write paraphrases for text passages. This technique is particularly useful at the beginning of the data analysis, because this stage is all about getting to know your material and understanding what has been written or said. The term "paraphrase" is derived from the Greek for para- (expressing modification) + "tell." Accordingly, to paraphrase means expressing the meaning of something (written or spoken) using different words. However, in this case, paraphrasing is used in a rather more specific sense than simply rewriting something. The text should be *accurately* paraphrased in that the semantic meaning of the original text should be reflected in your paraphrased version. In other words, your paraphrasing should not change, augment, or subtract from the meaning of the original.

Paraphrasing can be used in many different ways to analyze research data. But there are three main tasks that take precedence: first, paraphrasing can be a useful technique for creating categories for your material (Kuckartz, 2014; Mayring, 2014). Second, paraphrasing forces you to be accurate, which can be a valuable aid in interpreting data. In this sense, paraphrasing can be a means of properly understanding your material. This is reflected in the fact that the technique is also used in the development of surveys. In the pre-test phase, it is important to ensure that the questions asked in a survey are "accurately comprehensible" to respondents. They are therefore asked to reproduce the question in their own words, so that a review of the "correct" understanding can take place. Third, paraphrasing can be useful if the core statements of a text need to be summarized relatively quickly and without coding. For example, if a journalist wants to summarize the most important statements of a press release or a political scientist wants to summarize the central statements of a party platform. Qualitative content analyses also frequently involve paraphrasing the available material as an initial stage of analysis.

To paraphrase a text or PDF document in MAXQDA, first activate Paraphrase Mode in the ***Analysis*** ribbon tab by clicking on the ***Paraphrases*** icon (Fig. 5.11). Now the "Document Browser" will respond differently to normal: as soon as you select a section of the document with your mouse and release the mouse button, a window will appear in which you can paraphrase the selected passage.

Paraphrases can contain a maximum of 255 characters including spaces, which is the equivalent of about three to four lines in this book. The text you have written is then displayed to the right of the original text in the paraphrase column (Fig. 5.12).

Fig. 5.11 Active Paraphrase Mode in the "Analysis" tab

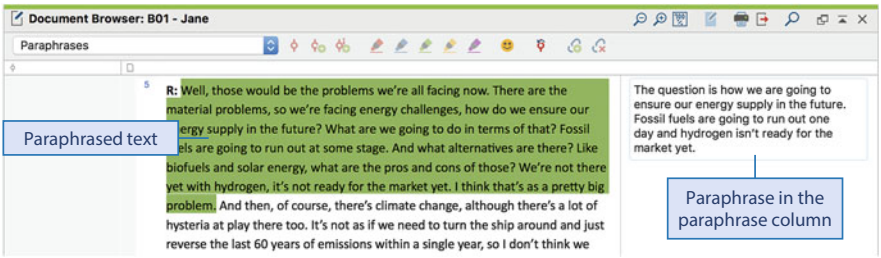


Fig. 5.12 Paraphrases as shown in the paraphrase column

The original passage which you have paraphrased is highlighted in green by default, so you can immediately see which text sections you have already covered. In the "Code System" window, you will also see a new "Paraphrases" code, with which the paraphrased text passage is coded. This means that you can use all the usual functions that apply to codes and coded segments for this "paraphrase code" too. For example, you can compile all paraphrased text sections of a document in the "Retrieved Segments" window (see Chap. 9 "Working with Coded Segments and Memos").

Any number of paraphrases can be generated for a text. However, new paraphrases cannot overlap with existing paraphrases. If you try to create a new paraphrase within a green marked text section, no window will appear for entering another paraphrase. Paraphrase texts can be edited and deleted: double-clicking on a paraphrase opens it for editing; clicking on the red cross in the paraphrase box deletes it.

You can deactivate the Paraphrase Mode in the same way you activate it, namely, by clicking on the ***Paraphrases*** icon in the ***Analysis*** tab. The paraphrase column next to the text will also be closed. This column can also be displayed again later without activating the Paraphrase Mode. Simply select the corresponding option in the "Document Browser" context menu; you can also adjust the width of the paraphrase column here.

Paraphrasing is not just an excellent entry point into the data material of new fields of research; it is also a useful training tool for teams in terms of handling material with care and making sure you have a consensus in your understanding of key statements.

References

Charmaz, K. (2014). *Constructing grounded theory* (2nd ed.). Thousand Oaks, CA: SAGE.

Glaser, B. G., & Strauss, A. L. (2009). *The discovery of grounded theory: Strategies for qualitative research* (4th ed.). New Brunswick: Aldine.

Kuckartz, U. (2014). *Qualitative text analysis: A guide to methods, practice and using software*. Thousand Oaks, CA: Sage.

Mayring, P. (2014). *Qualitative content analysis: Theoretical foundation, basic procedures and software solution*. Klagenfurt. Retrieved from http://nbnresolving.de/urn:nbn:de:0168-ssoar-395173

Strauss, A. L., & Corbin, J. M. (1990). *Basics of qualitative research: Grounded theory procedures and techniques*. Newbury Park, CA: Sage Publications.