8

Using Digital Tools to Support Applied Conversation Analysis Research

Chapter Focus

In this chapter, you will learn how to:

- Describe an (abbreviated) history of digital tools in qualitative research.

- Appreciate the digital changes that have impacted conversation analysis research.

- Recognize the value that audio recording brought to conversation analysis.

- Differentiate the benefits and limitations of audio- and video-recording devices.

- Evaluate the potential of digital tools for supporting transcription and data analysis.

Over the last few decades, there has been an explosion of digital technologies (Paulus, Lester, & Dempster, 2014), which has shaped how researchers conduct applied conversation analysis (CA) research. Indeed, new technologies have allowed researchers to generate important findings based on recording or capturing naturally occurring data, with new forms of data also being made possible. At the most basic level, recording capabilities have allowed researchers to capture the details of people's lives well beyond field notes.

When discussing the role that digital technologies play in applied CA research, it is helpful to contextualize this within the broader field of qualitative research. This is because many of the methodological debates related to capturing data via recording methods, as well as the use of digital tools for analyzing data, stem from the broader paradigmatic concerns within the qualitative community. We thus open this chapter by contextualizing the central debates that have developed in qualitative research about digital tools more generally and consider the relationship between technology and qualitative research.

In this chapter, we focus our discussion on recording interactions via audio- and video-recording devices. As part of this critical discussion, we consider the benefits and limitations of these tools for qualitative research, and specifically applied CA research. We conclude the chapter by presenting a series of digital tools that we suggest are quite useful for generating transcripts as well as engaging in data collection of text-based data (e.g., asynchronous conversations) and completing your data analysis.

Digital Tools and Qualitative Research

Notably, qualitative researchers have long used tools to support their research processes. Whether using pen and paper or video-recording devices, qualitative researchers have relied upon tools to capture data. In the digital age, the relationship between the researcher and digital tools is constantly evolving and, in recent years, has resulted in the generation of new forms of data and ways of generating/collecting such data (Paulus et al., 2014). Yet historically, there have been tensions around the use of digital tools in qualitative research, particularly in relation to using tools to support data analysis (Davidson & di Gregorio, 2011; Paulus, Lester, & Britt, 2013). Despite these tensions, there is a growing body of scholarship that highlights the usefulness and importance of leveraging the affordances of digital tools in qualitative research.

The Emergence of Recording Equipment

To explore the human experience, qualitative researchers have often sought to generate more than field notes. Although field notes are important, the increasing availability of recording equipment has meant that research could be more data driven (Speer & Hutchby, 2003). This is because a recording device captures actions that are independent of the analysis, and those actions, at least in part, are visible for all to see (Suchman, 1987).

In the early days of technology, researchers relied upon analog audio recordings of their data, and over time, such recordings would gradually erode and the quality would reduce when copied (Shrum, Duque, & Brown, 2005). Analog recording devices gave way to a new wave of digital technology that even today continues to expand and diversify.

(!) **If you are capturing naturally occurring interactions and recording them, it can still be helpful to take some field notes and be reflexive. Digital tools, such as Evernote, can also support you in generating field notes (Paulus et al., 2014).**

Digital technologies generally provide ultrasharp images and high-quality digital sound, which certainly facilitates a variety of research processes (Murthy, 2008). The commercialization of technology has resulted in more cost-effective options for researchers (Gibbs, Friese, & Mangabeira, 2002), many of which are small and portable. Furthermore, many modern digital devices have a large storage capacity, which means you can capture hours of data onto the device and transfer to your computer (Paulus et al., 2014).

Audio and Video Recording

When you are planning your data collection, you will need to consider the most appropriate means for recording your data. A key decision will be whether you simply capture the audio of the interaction or whether you capture the visual aspects. Audio recordings have historically been the default method, but as video-recording devices have become cheaper and more accessible, as well as more embedded in everyday life, applied CA researchers increasingly rely on video data. There are some benefits of these digital devices, and we list these in Table 8.1.

Of course, any technological device requires that researchers think carefully about the ethical implications, including ways to safely and securely store recorded data. As such, whether you select to use an audio- or video-recording device, it is important to consider both the benefits and limitations. We explore some of these next.

Benefits and Limitations of Audio Recordings

When making your decision as to whether to use an audio-recording device or a video-recording device, it is helpful to weigh the benefits against the limitations. Audio recordings have been used extensively in CA research, as they allow a researcher to capture the actual words of an interaction and take note of how words are spoken in the interactions of interest. We outline some of the benefits of audio recordings next.

- Audio recording allows you to capture the full interaction.

TABLE 8.1 ● Benefits of digital recording

Benefit	Description
Permanence	A digital recording is semipermanent, as it exists until it is actively destroyed.
Editing	Digital recordings can be edited easily, disguised, and sounds and images can be manipulated, which means you may even be able to use your recorded data in presentations (Gibbs et al., 2002).
Ease of operation	Digital recording devices are typically user friendly, with encryption available to make it safe to store securely.
Portability	Many contemporary devices are now small and light, and therefore easy to carry about to field sites.

Modern digital audio-recording devices often come with a great deal of storage; therefore, you can capture an entire interaction on a device, and in some cases, several interactions. These recordings can then easily be transferred to a more secure storage site.

- Audio equipment is relatively affordable.

The price of recording equipment may well be an important concern for you, as digital equipment can be quite expensive if you purchase top-of-the-line devices. While you do need something that will capture the interaction with a high-quality recording, many high-quality audio-recording devices are available at a reasonable price. You may, however, need to purchase an additional microphone. Of course, the type of equipment you need will depend on the nature of the interaction you are recording. If you are recording an interaction in a structured environment where people naturally take turns in an ordered manner, such as a courtroom, then you may more easily capture the interaction on a standard recording device. If, however, you are recording an interaction in a busy place with a significant amount of background noise, you may need a higher-quality device with a noise-canceling function in addition to microphones.

- Some scholars have argued that recruiting participants is more straightforward for a study that uses audio recording than video recording (Themessl-Huber et al., 2008).

This point is somewhat controversial, as there are differences of opinion in the field. Historically, there have been some concerns that the presence of a video camera may make some participants uncomfortable as it visually identifies them; therefore, audio can mitigate against this. Audio recordings do result in slightly less identifiability of the participants and thus could be argued to help promote recruitment, but many people are now used to being video recorded in a range of ways, and this may not be the barrier it once was.

- Many audio-recording devices can be attached to a telephone with a cable.

It may be the case that you wish to record telephone interactions, and this can mean that audio recordings are your main option. Of course, there are now video telephone calls available, such as Skype, Zoom, or FaceTime, which allow for visual data to be collected as well. Traditional telephone calls are still predominantly an audio experience. Notably, technology is available to capture both speakers. Depending on the type of phone you are using, you may need to download a recording application, such as Smart Voice. Alternatively, you may need to purchase a microphone device that allows you to record with a digital recorder. Regardless of choice, it is important to test your equipment prior to beginning data collection.

Indeed, there are many naturally occurring data sets that comprise telephone conversations, and these can be useful in applied CA research.

> For example: Consider studies of helpline interactions such as child abuse helplines or counseling helplines, or consider organizational telephone interactions such as insurance companies or complaints lines.

To help you understand what telephone data in an applied CA study might look like, we quote directly an example from Hepburn and Wiggins (2005, p. 631). Here they examined the issue of body weight raised in telephone calls to a child protection helpline in the United Kingdom, the National Society for the Prevention of Cruelty to Children (NSPCC) helpline.

```
CPO:      .Hh I mean ↑how do they appea:r I m'n a- are they
          ↑thin: or:: win      [((inaudible))]
Caller:                        [ Oh NO ]: no [no' at] all.
CPO:                                         [No::?]
Caller:   [no Tim-] (0.2) Bob is [thin but Tim] is
CPO:      [No:? ]                [.H h h ]
Caller:   a little po(h)rk(er. Huh ↑huh=
CPO:      = So they're ↑not failing [to thri:ve then.]
Caller:                             [↑OH NO:. No:. ]
```

There are indeed many applied CA research publications that have relied on audio recordings, and this work has made a valuable contribution. However, this benefit should be offset against the limitations audio-recording devices bring. We therefore consider some of these limitations.

- A common limitation cited of audio-recorded data is that you cannot see the participants and therefore are unable to capture other elements of their interaction, such as nonverbal gestures.

When examining applied settings, there is a great deal of interaction that is not in the form of spoken language. There are many paralinguistic features, such as nonverbal gestures, which may contribute to the meaning of an exchange.

> For example: Consider the case where a child nods in response to a question. For the analyst with an audio recording only, there is the risk that this may be reported as a nonresponse as there was nothing captured on the audio recorder. While the uptake from the recipient may demonstrate this, it may not.

- When an interaction has multiple parties, it can be difficult to differentiate who is speaking without additional visual information.

When using an audio recorder, the device will only capture sound; therefore, if lots of people speak at once or if people sound alike, it may be difficult for you to be sure who is speaking.

Benefits and Limitations of Video Recordings

The use of video recordings in applied CA research studies has certainly grown recently, and more researchers are tuning in to the power of video to capture data. Video recordings capture the actual words spoken in the interaction and provide a visual representation of an interaction. Next, we outline some of the benefits.

- Video recordings can be useful for capturing naturally occurring data, as it means you can capture more of the environment and context (Heath, 2004).

As you are now aware, applied CA research generally relies on naturally occurring data; therefore, the analyst relies heavily on the recording to analyze all available aspects of the interaction. Being able to see where people are looking when they speak and any reference to institutional notes, forms, or documents is often helpful. Broadly, such a recording can help the analyst to better understand the institutional context in which the participants are interacting.

- Video equipment is becoming smaller.

Historically, there have been concerns that video-recording devices can be intrusive for participants, particularly when such devices were quite large. However, in the digital age, video-recording devices are becoming increasingly smaller and are far more discreet. This smaller size means that they are less of a focal point for participants.

- Using video recordings allows you to capture both verbal and nonverbal interactions.

(!) **Just because the device is small does not mean it is hidden. Remember that ethically you must have consent to record.**

CA researchers focus on talk-in-interaction, and while talk may be the primary focus, the whole interaction (not just what is said) is equally important. In interaction, much of what is happening is nonverbal, and gestures, gaze, and other paralinguistic aspects can be important for analysis. If you have a video recording of your interactions of interest, then you will be able to add in multimodal features to your analysis.

In Chapter 6 we provided a visual example from Dickerson and Robins (2015, p. 65). Central to their study was the visual aspect as they examined interactions between a robot and a child diagnosed with autism spectrum disorder. Given the centrality of the visual, the authors included images from the video as well as the spoken words, with matching descriptions of the visual. We reproduce that same example from Chapter 6 here so you can see how video images can be embedded to facilitate analysis.

```
"+ ↓((C gazes at K))
1  B  You-you You'll decide what you want you want him happy
      or sad
2  B  Look at (it)
↓((All gaze at control pad, CP))
3   - - - - - - - - (0.8)
```



```
(1.1)
((Ben pushes button with C's finger))↓ (1.1)↓((A & B look
at K))
4.  B  Ahh the blinking (0.5) this is the blinking (0.3) look
at his eyes"
```

<div align="right">(Dickerson and Robins, 2015. Reproduced with permission.)</div>

Although valuable for applied CA research, the benefits of video recording should be offset against the possible limitations of using video-recording devices. We thus consider some of these limitations next.

- Video-recording devices tend to be more expensive than audio-recording devices.

Generally, a quality video-recording device is more expensive than a good quality audio-recording device. However, it should be noted that over time the cost of these devices has reduced significantly, and, in many cases, it is now possible to purchase such a device for a reasonable price, or you may be able to borrow one.

- Using video recordings raises additional ethical issues.

We do not provide much detail here, as there is a section on this in the ethics chapter (Chapter 4) where you can reflect on these issues. However, it is important to note that by using video-based data, you will be capturing a greater volume of information about your participants. Not only will you capture their voices but also their faces, their physical characteristics, their gestures, their facial expressions, their fashion sense, their environment, etc.

> *What this means:* Ethically, this means that your participants are much more iden-
> tifiable. If the interaction is delicate, embarrassing, or sensitive in any way, this can
> create further ethical concerns. This also has implications for data protection, data
> security, and risks of disclosure.

If you have vulnerable populations in your data, this is especially important to think about in terms of their capacity to understand the implications of your work (as discussed in Chapter 4).

- The scope of the camera needs to be considered, as it may not capture all parties.

A single static video camera will be limited in terms of what it can capture. Further, the larger the room/environment and the more parties present, the less likely a static video camera will be able to capture everything you need. To overcome this limitation (at least in part), you may be able to use a camera with a wide-angle lens, use multiple cameras, or even gain access to a camera that includes a 360° spherical curved lens. Gomoll, Hmelo-Silver, Šabanović, and Francisco (2016), for instance, used a PixPro 360 camera to capture interactions in an after-school robotics club (A. Gomoll, personal communication, August 2017), with this device allowing them to view the recorded interactions in a 360° globular view or in a flattened view. Regardless, it is very important to consider what a given camera affords you, as well as how and where you position your camera.

While we have not been exhaustive in our list of benefits and limitations of audio- and video-recording devices for an applied CA project, we have given you some important things to think about. We now encourage you to turn your attention to the activity in Box 8.1, which invites you to locate what you have read so far in relation to your own research project.

Regardless of whether you choose to use an audio- or video-recording device, there are some things to be cautious of when you are setting up to record your data. It is important that you take steps to counter any difficulties or problems in the recording of data. We present some of these cautions in Table 8.2.

Selecting a Recording Device: Things to Consider

Once you have decided whether to use an audio- or video-recording device, you should turn your attention to the equipment itself. We have already alluded to some

BOX 8.1

ACTIVITY ON CHOOSING AUDIO OR VIDEO

Activity

It is helpful to contextualize considerations related to audio- and video-recording devices in relation to your own research study. In your research diary, write down a list of pros and cons of both audio- and video-based devices, specifically in relation to what you plan to do and what you need to achieve from your research. Also, take note of any ethical considerations; you might want to read Chapter 4 again at this point.

TABLE 8.2 ● Cautions of digital recording

Caution	Description
Testing	Do not forget to familiarize yourself with the equipment you plan to use. Practice with it and know what buttons serve what function. Make sure it works, and make sure you know what you are doing with it.
Quality	It is very important that you think about the quality of your recording. You will need to think about where you place your device and your microphone (if you have an external one), and think about where the participants will be in the room (Heath, Hindmarsh, & Luff, 2010).
Background noise	Remember that background noise can be quite intrusive and may interfere with the quality of the transcript, and subsequently the quality of the analysis. Thus, you should plan for how you will manage background noise. For instance, will you use a recording device with a noise-canceling mechanism and/or will you use multiple recording devices, etc.
Data security	Make sure you keep your recording device safe and, as soon as possible, transfer your recorded data to an encrypted device such as a password-protected hard drive or USB stick. When you are certain it has copied over fully, you need to delete your recording from the recording device, as this is likely something you will be carrying around with you, and you need to keep your data safe.
Battery life	If your device relies on batteries rather than a main cable, make sure you have a spare battery or a battery charger with you.

of the issues of quality that you need to think about, and in this section, we expand on this preparation. As noted, transcription will be a more straightforward task if your recorded data are of high quality; thus, an essential feature of any device is simply ascertaining whether it produces a quality recording. Notably, the quality of the

microphone in your device will be a central contributor to the quality of your recording. While many devices tend to have a built-in microphone, you may want to invest in an external microphone to improve the quality.

In addition to the quality of the recording, you also need to think about how much data you can fit onto the device. Applied CA research studies often include large volumes of data, particularly as you record things as they happen. Thus, you should anticipate your recorded data requiring significant digital space. Many devices have large storage capabilities and a means to transfer the data easily to encrypted devices and computers (Paulus et al., 2014). Perhaps most important, when thinking about data storage it is critical that you protect the data. The data should not be left on the recording device for too long and need to be transferred to a portal where they can be protected by a password. One possibility is to store your files virtually through an Internet storage center such as iCloud or Dropbox. However, depending upon your ethics board requirements and the nature of your data, this might not be allowable.

One possibility is the use of a mobile/cell phone, such as a smartphone. Mobile technologies have resulted in researchers no longer being required to gather their data in fixed environments (Hagen, Robertson, Kan, & Sadler, 2005). Smartphones, for example, have been instrumental in allowing for a fluidity in the data collection process. These kinds of devices usually have a recording capacity of both video and audio, and for some projects this may be sufficient for your research purposes (Paulus et al., 2014). Using a phone, however, generally has implications related to storage capacity, as some phones have SD cards and others have internal storage. Also, remember that phones are at greater risk of theft and thus your data will be at risk too, so it is advisable to transfer the recording to a more secure device as quickly as possible and delete from the phone.

Digital Tools for Supporting Transcription

With the rise of new recording technologies has come new possibilities for generating transcripts. From the advent of foot pedals to the emergence of voice recognition software, there is now a plethora of digital tools that you can use when creating a Jefferson transcript. Of value to applied CA scholars is the possibility of working with a ***synchronized transcript***.

A **synchronized transcript** is a transcript that is directly linked or synchronized to the audio or video recording.

By working with a synchronized transcript, you are able to move from one section of your recorded data to another by simply clicking on the desired segment of your transcript. In this way, you are staying close to your data.

Paulus et al. (2014) highlighted four transcription software packages that can be used to support you in generating your transcript, including Express Scribe, Audio Notetaker, InqScribe, and F4/F5. In Table 8.3 we provide an overview of some of the primary features of these transcription software packages.

There are other packages that may be particularly useful and more accessible to you, such as ELAN or even computer-assisted qualitative data analysis software packages that support transcription (e.g., NVivo). Regardless of the package you adopt, we

TABLE 8.3 ● Transcription software packages and their features	
Package	**Description**
Express Scribe (http://www.nch.com.au/scribe/index.html)	• Free trial version • Mac/PC platform • Supports audio and video data • Fee-based version supports foot pedal use • Hot keys available to control playback • Integrates with word processing programs • Works with voice recognition software
Audio Notetaker (https://www.sonocent.com/en-us/audio-notetaker)	• Free trial version • Mac/PC platform • Supports audio data only • Supports foot pedal use • Audio recording can be represented visually with colored bar segments for navigation, editing, and organizing • Works with voice recognition software
F4/F5 (https://www.audiotranskription.de/english/f4.htm)	• Free trial version • Mac/PC platform • Supports audio and video data • Supports foot pedal use • Minimally functional with voice recognition software • Can create a synchronized transcript • Hot keys available to control playback and insert timestamps • Integrates with word processing programs and with some computer-assisted qualitative data analysis software
InqScribe (https://www.inqscribe.com)	• Free trial version • Mac/PC platform • Supports audio and video data • Supports foot pedal use • Works with voice recognition software • Can create a synchronized transcript • Supports creating shortcuts and snippets, which is particularly useful when generating Jefferson transcripts • Can insert subtitles on video data

Source: adapted from Paulus et al., 2014, p. 108.

strongly encourage you to work with synchronized transcripts as you engage more deeply in the analysis process.

Notably, while voice recognition technologies (e.g., Dragon Naturally Speaking, Google Voice, etc.) are becoming increasingly more accurate, they still do pose challenges for applied CA researchers. Many of these technologies still only recognize one voice, and thus it is difficult, if not impossible, to generate verbatim transcripts of multiparty interactions. Indeed, such technologies do not generate detailed Jefferson transcripts, while also raising questions related to the methodological implications of such technologies for the transcription process (particularly when and if they become more fully developed).

Given the importance of transcription within applied CA research, adopting a transcription software package is an important part of your research process. Thus, we encourage you to complete the activity in Box 8.2, as it provides you with an opportunity to begin exploring which transcription software package(s) might be best for your research needs.

BOX 8.2
ACTIVITY ON TRANSCRIPTION SOFTWARE PACKAGES

Activity

As you plan to use transcription software, it is helpful to begin exploring the various packages that are available. Go to one or more of the transcription software packages' websites and download the free trial version. Explore the package and practice transcribing with the main features. As you do so, consider how these features might shape your transcription process.

Digital Tools for Supporting Analysis

Since the 1980s, more and more scholars have been using computer-assisted qualitative data analysis software (CAQDAS) to support their qualitative analyses. Yet the relationship between CAQDAS and qualitative analysis has not been a straightforward one (Davidson & di Gregorio, 2011; Paulus et al., 2014). Widely varying views on CAQDAS have been offered, with some scholars suggesting that CAQDAS packages result in nothing more than quantification of qualitative data or that such packages are primarily useful when using grounded theory (Davidson & di Gregorio, 2011).

Within the CA literature base, there has been little discussion about the use of CAQDAS. A few exceptions include concerns being voiced about the functionality of code and retrieve features within such packages (Gibbs et al., 2002). In the last decade, other scholars have noted the limitations of transcribing data within many of the CAQDAS packages (e.g., ten Have, 2007). However, it is important to mention that Konopasek (2008) and others have noted that CAQDAS packages go well beyond code and retrieve functions. Notably, there are packages that some have even argued are

particularly useful for researchers working with interactional data, such as Transana (Mavrikis & Geraniou, 2011; Woods & Dempster, 2012), Leximancer, and Discursis (Angus, Rintel, & Wiles, 2013).

More recently, Paulus and Lester (2016) offered a detailed illustration of how ATLAS .ti, a CAQDAS package, can be used in a CA study for "transcribing and synchronizing transcripts with media files, engaging in unmotivated looking through creating quotations, and conducting a close, line by line analysis through writing memos" (p. 405). While acknowledging that technology is not neutral, Paulus and Lester also noted that their experience with using CAQDAS has been like what Kimmel (2012) argued:

> While the tool itself decides nothing for you, it systematizes the procedure via checks and good workflow management, provides utilities for making decisions, facilitates multi-level categorization, and provides leverage on large corpora. Software makes hermeneutic skills reflexive and encourages the systematic presentation of what sometimes appears as research "alchemy." (p. 30)

Paulus et al. (2014) have also argued that CAQDAS packages can be used to support the entire qualitative research process, from the early stages of organizing data to conducting a literature review to transcribing data to engaging in a close analysis to generating findings sections/reports. In addition, some of these packages support you in extracting social media data, such as Facebook data or YouTube data. We align with this position and have found in our own work that CAQDAS packages are particularly useful for providing us with a means by which to carry out all or even part of our research processes.

Paulus et al. (2014) suggested that ATLAS.ti, MAXQDA, and NVivo are three particularly popular CAQDAS packages. Indeed, there are other packages available with a range of features provided, some of which we highlight in Table 8.4.

The degree to which you might have access to a CAQDAS package will vary and likely be dependent upon the institution in which you work/study and the funds available. However, we strongly encourage you to begin exploring what might be possible, engaging in CAQDAS training when possible, and taking note of which packages might work best for your needs. As such, we suggest you complete the activity in Box 8.3.

BOX 8.3
ACTIVITY ON EVALUATING CAQDAS PACKAGES

Activity

A growing number of CAQDAS packages are available to choose from. It is thus helpful to spend time examining various packages and identifying which package may be best for you. Go to one or more of the CAQDAS packages' websites and download the free trial version. Explore the package and practice organizing, transcribing, and analyzing your data. As you do so, consider how the package's various features might shape your research process. Further, explore which package(s) may be accessible at your institution.

TABLE 8.4 ● Considerations for selecting a CAQDAS package

	ATLAS.ti	QSR NVivo	MAXQDA	Dedoose	Quirkos	Transana
Platform	Windows; Mac since 2014	Windows; Mac since 2014	Universal Windows/Mac since 2014	Cloud-based	Windows, Mac, & Linux all have the same interface	Cross-platform since 2007 and open source since 2005
Mobile app	Mobile for Android / Mobile for iPad	No	MAXApp for Android and iOS	Yes	No	No
Support text data	Yes	Yes	Yes	Yes	Yes	Yes, in version 3.0 / Yes, in version 2.6 with Coding Shapes
Supports video/image data	Yes	Yes	Yes	Yes	No	Yes, designed for video analysis
Supports transcribing	Yes	Yes	Yes	Yes	No	Yes, designed to support transcription, though transcription is not required
Supports incorporating survey data	Yes	Yes	Yes	Yes	Yes	No
Supports extracting social media data	Yes	Yes (Facebook, Twitter, YouTube, LinkedIn)	Yes (Tweets)	No	No	No
Citation management system integration	Yes	Yes	Yes	Yes	Yes	No
Collaboration	Asynchronous	NVivo for teams or asynchronously	Asynchronously	Real-time web-based via the cloud	Asynchronously	Multiuser version since 2002 or synchronously

Source: adapted from Paulus, 2016, n.p.

An Interview With Professor Trena Paulus

In this chapter, we have introduced you to the ways in which digital tools can support your applied CA research. We have situated our discussion in relation to the broader debates about using digital tools in qualitative research. Relatively little of this research is written specifically in relation to applied CA research, yet much of it is relevant and applicable. One of the leading scholars in this area is Professor Trena Paulus, who has written extensively around digital tools in qualitative research and for CA research. Thus, we interviewed Professor Paulus, inviting her to offer her perspective on using digital tools to support applied CA research. Her responses are presented in Box 8.4.

BOX 8.4

INTERVIEW WITH PROFESSOR TRENA PAULUS

Trena Paulus is a professor of qualitative research in the Department of Lifelong Education, Administration, and Policy in the College of Education at the University of Georgia, United States. Professor Paulus is a leading scholar in technologies and qualitative research methodologies. She has also written about the ways in which digital tools can support CA research as well as research using a discourse analytic approach. In particular to the use of CAQDAS for CA research, Professor Paulus coauthored the following publication:

- Paulus, T., & Lester, J. (2016). ATLAS.ti for conversation and discourse analysis. *International Journal of Social Research Methodology, 19*(4), 405–428.

Given her expertise related to digital tools and qualitative research generally, and CA more particularly, we invited Professor Paulus to respond to three questions about digital tools and CA research.

What digital tool(s) do you typically use when carrying out a CA study?

"Both digital tools and digital contexts have impacted the CA work that I do. When working with face-to-face contexts and participants, I use a variety of digital *tools* to record, transcribe, store, and analyze the conversations that I will treat as data. However, I also need to consider digital *contexts*—online spaces in which important conversations are taking place—because disciplines are often overlooking this kind of talk. I use a voice recorder on my smartphone to record face-to-face conversations, and I have used ATLAS.ti and NVivo's social media import tools to collect online talk. I have used both InqScribe and Transana to transcribe recorded conversations. Both allow you to synchronize the recording with the transcript so that you can quickly listen to how something was said by clicking on that portion of the transcript. Transana has the bonus of having Jefferson transcription symbols available within the software.

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ATLAS.ti is the qualitative data analysis software I use to both manage and analyze the data—using the memo, coding, and visualization tools to perform a close analysis. My collaborators and I can easily share the data as well as our analysis with each other by exchanging ATLAS.ti files. We store the files using password-protected cloud storage—usually Dropbox—so that it is instantly backed-up and accessible via my computing devices."

What are some key ethical considerations for using digital tools when carrying out an applied CA study?

"Digital contexts are often publicly visible (e.g., Twitter or online communities). Even though many institutional review boards therefore do not consider analysis of online talk to be human subjects research, members of these communities do not necessarily consider what they are writing in these spaces to be public. So deciding to treat this online talk as data needs to come after careful consideration. Protecting the identity of both the face-to-face and online speakers is critical—online conversations are easily Googleable, for example. Ensuring that your data storage devices are secure should also be a priority when handling sensitive data."

For those new to digital tools, what are some suggestions for where and how to start?

"I would recommend starting with our book, *Digital Tools for Qualitative Research* (Paulus, Lester, & Dempster, 2014), and to pick just one or two tools at first. Learning new technology can be overwhelming, so starting small and experiencing early success will keep you motivated. Software companies usually have helpful video tutorials, blog posts, and social media accounts that are valuable learning resources. Also, find out what your institution supports and what your colleagues are using. If you find that your colleagues all use NVivo to analyze social media data, there's no real point in learning ATLAS.ti all by yourself—and vice versa."

Chapter Summary

In this chapter, we introduced you to considerations related to the digital tools that might support you in collecting, transcribing, and analyzing data. We began by briefly contextualizing our discussion in relation to the larger discussion related to digital tools and qualitative research. Recognizing that many of you are likely to use audio- or video-recording devices, we overviewed some of the key benefits and limitations of such devices. We then provided an overview of some of the digital tools that can support you in transcribing and analyzing your data. We summarize the key points in the next box.

Learning Points From Chapter 8

- The semipermanent nature of recorded data requires that you think carefully about how to securely store your data.

- Digital tools that support creating a synchronized transcript allow you to stay close to your data, particularly as you engage in deeper levels of analysis.

- You can use CAQDAS packages across the entirety of the research process.

Recommended Readings

As noted, there is a growing body of literature focused on the use of digital tools in qualitative research. Much of this writing can be directly applied to considerations related to applied CA research. Thus, what we suggest next is simply a useful starting point, as we encourage you to move well beyond what we have summarized in this chapter.

- Heath, C., Hindmarsh, J., & Luff, P. (2010). *Video in qualitative research: Analysing social interaction in everyday life*. London, England: Sage.

This book contains a great wealth of information about recording equipment, with a specific focus on the use of video. The authors do refer to CA in the book and draw upon their own experiences of recording interactions. The book is filled with practical advice for researchers and provides examples of the kinds of issues that might arise when using video-recording devices. Heath and colleagues draw attention to both ethical and practical issues that may arise when recording

data and offer case examples to illustrate their points.

- Paulus, T., Lester, J. N., & Dempster, P. (2014). *Digital tools for qualitative research*. London, England: Sage.

This book offers a fairly comprehensive overview of how digital tools might be used across the entirety of the qualitative research process. From conducting literature reviews to representing findings, the authors discuss a variety of digital tools and illustrate their points in relation to real-world examples written by qualitative researchers from a variety of disciplines. While this book is not specifically written for applied CA researchers, the discussions are relevant to the everyday work of researchers engaged in qualitative research of all kinds.

- Paulus, T., & Lester, J. (2016). ATLAS.ti for conversation and discourse analysis. *International Journal of Social Research Methodology, 19*(4), 405–428.

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In this paper, Paulus and Lester offer a series of concrete examples of how to use ATLAS.ti for carrying out a CA study or a study using a discourse analytic approach. Specifically, they illustrate how ATLAS.ti can be used to document analytic decisions and make visible a reflexive and transparent research process. Paulus and Lester include screenshots throughout that provide examples of features within ATLAS.ti, including transcribing and synchronizing transcripts, using quotations, and conducting line-by-line analysis, among others. While the authors focus exclusively on ATLAS.ti, much of what they offer can be applied when thinking about the ways in which other CAQDAS packages might be levered within an applied CA research study.