# 6 Data analysis

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## Take one: Yi Wang

Data analysis is the process of transforming data into findings – from 'input' to 'output' – and is a core phase towards reaching project outcomes. While rigorous and systematic analysis is key to the quality of any research, whether positivistic or interpretive, tackling qualitative data can be one of "the most exciting [but] challenging processes" in the exploration and discovery of ideas (Richards, 2015, p. 85). In the existing literature on doctoral education, much has been written in relation to PhD students' experiences in general; however, little work has examined their experiences during each specific research phase, and, in particular, with analysing qualitative data. Even less has been written in the form of students' narratives, which have the strength of "understanding phenomena from the perspectives of those who experience them" (Barkhuizen et al., 2014, p. 2).

This chapter examines the data analysis stage of the PhD candidature. My contribution begins with a discussion of key issues concerning qualitative data analysis raised in relevant literature. I then provide an overview of my project, before moving on to narrate and discuss my own experience – strategies, struggles, and rewards – of tackling large amounts of multiple-sourced and multi-layered data. The account goes chronologically from initial data processing, coding, and theory construction to writing up the findings. Three aspects are highlighted: dealing with multiple-sourced bilingual data, inductive and/or deductive analysis, and reflection and reflexivity. The section concludes by considering the data analysis phase in terms of academic and personal development.

### *The process of qualitative data analysis*

Researchers have endeavoured to encapsulate qualitative data analysis through various metaphors and descriptions. Creswell and Creswell (2018) illustrate the process as "segmenting and taking apart the data (like peeling back the layers of an onion) as well as putting it back together" (p. 267). Richards (2015) describes the process as interactive, reflexive, iterative, and of long duration, commencing at the beginning of data generation and lasting almost to the final moment of the writing-up of findings. The starting point, as Richards (2015) emphasises,

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is the researcher and the researched "co-making" data – rather than data being collected by anyone. Researcher and researched interact in and co-interpret the context as well as themselves, negotiating and co-constructing meaning; the analysis should take place simultaneously. Interaction continues until after the data have been co-constructed, shifting then to the nexus between the researcher and the data, and further between the researcher and relevant background literature (Richards, 2015, pp. 35–36). Throughout the process, the researcher's continuous reflexivity should be recorded; that is, the researcher is aware of their agency in the research process, acknowledges the way in which they deal with the relationship between them and their data *as* data, and reflects on this relationship as well as analysing it and reporting it to the reader (Richards, 2015).

Coding is central to data analysis, being the analytic processes through which data are fractured, conceptualised, and integrated to form theory (Strauss & Corbin, 1998). Some methodologists specify different types or sub-phases of coding (see Charmaz, 2006; Creswell, 2007; Strauss & Corbin, 1998); however, the essence in all approaches is the disassembling and reassembling of data, aiming at the development of theory (Cohen et al., 2011). These processes should be conducted both inductively and deductively. According to Creswell and Creswell (2018), the inductive process is when researchers view data from the bottom up, gradually transforming them to "more abstract units of information" (p. 257), when patterns, categories, and themes emerge; this is not a linear process but proceeds iteratively until a comprehensive set of themes has been established. Analysing data deductively occurs when researchers look back at their data to see if each category or theme is sufficiently supported or whether additional information is needed (Creswell & Creswell, 2018). While the process begins inductively, deductive thinking runs through the entire analysis.

Along with coding, Richards (2015) highlights the importance of writing, both as a way of analysis and for the critical role it plays in *justifying* analysis. Distinguishing between "telling what's going on" and "writing it up", she emphasises progressive writing for the purpose of logging and crystallising the research process, and she cautions researchers against a wrapping-it-up style with potential (and possibly intentional) "neatening, hiding the difficult bits, [and] smoothing the rough" (Richards, 2015, p. 205). Similarly, Creswell and Creswell (2018) stress that the nature of the account is "not a linear model of cause and effect" but rather "a model of multiple factors interacting in different ways" which "mirrors real life and the ways that events operate in the real world" (p. 258).

### *My project*

My PhD project examined teachers' cognition and practice regarding the promotion of learner autonomy, especially through the shift of control between school management, teachers, and students. The context of the study was EFL instruction in a Chinese private secondary school, where a school-wide curricular innovation project, aiming for students' holistic development through more autonomous and collaborative learning, was being implemented. Unknown to

me at the time, this school project coincidentally commenced at the same time as my fieldwork for data collection. This considerably altered the research setting, in that the research focus on learner autonomy became an explicit practice in the school, and it affected my pre-designed data collection procedures. As a result, significant adjustments were made – two major ones being the cancellation of a proposed survey and teacher workshops and the incorporation of school management into the investigation (see Wang, 2016, for more details). Consequently, two complementary sets of data were collected for this study: the management set, containing interviews with the principal and the academic director; and the more comprehensive teachers' set, involving lesson observations, post-lesson discussions, and end-of-semester interviews. In addition, I kept a reflective research journal through which the whole process of data collection was tracked.

### *Massive messy data*

Richards (2015) defines qualitative data as messy, fluid, rich, complex, in-depth, naturalistic, and holistic. The data I collected (or, to use Richards' term, "co-made" with my participants) met these epithets. They were *naturalistic* in that the school's innovative project was a phenomenon which occurred in the natural context over which I had no control. They were *holistic* because the altered plan encompassed representatives from each layer of the hierarchical school system (from the principal to senior management then to teachers and students), and thus presented a whole-school picture, as well as a whole-department case because all the teachers in the English department participated. The data plumbed *in depth* to many classroom observations with detailed depictions of teacher–students' turn-taking conversations (see examples in Wang & Ryan, 2020). As well, the data were *fluid*, with major changes caused by the school's overarching project, as well as extra opportunities I came across by chance and exploited for complementary data. With all these features, it can be easily imagined what *rich* and *complex* (and *messy*) data were consequently presented for analysis. Moreover, while the subject of all the lessons observed was English, most of the classroom metalanguage was in Chinese, as were all the post-lesson discussions and interviews. Thus, with a total of eleven participants involved, the bilingual nature of the data added a huge further layer of complexity to the subsequent analysis (see also Lee, 2017).

### *Initial pains and gains*

This massive, multiple-sourced body of bilingual data posed considerable challenges for analysis and putting the findings together. The first challenge was that the altered plan did not allow me sufficient time for a simultaneous analysis, at least not in the manner I had planned based on advice from methodological books (e.g. Cohen et al., 2011) and discussions with my supervisors. Nonetheless, I rather nervously re-evaluated the situation and made amendments to the original plan for on-site data processing. First, following each observed lesson, I went

over the video recording quite quickly, at the earliest possible time with a fresh memory, and often fast-forwarding sections. The lesson was then segmented into rough chunks, and featured episodes were identified for the subsequent post-lesson discussions. Second, I expanded the handwritten notes I made during the discussion and interview to serve as summaries for respondents' validation. Admittedly, peer checking in that manner was rather formulaic, done to satisfy data collection procedure needs rather than providing much actual value. Most of the participants, either lacking research knowledge or being short of time, did not show much concern about checking the data. Being a cultural insider with a similar educational background, I shared their thoughts and was confident about my judgement. Third, when time allowed, I expanded my field notes and integrated some reflections into my research journal. Email correspondence with my supervisors also recorded some of my on-site thoughts. These three actions to some extent allowed me to familiarise myself with the data while still on site.

Richards (2015) highlights that early opportunities for data processing are precious when the researcher is "most able to be surprised by the research situation"; therefore, any thoughts and responses, "however tentative", should be recorded immediately, and "the sooner the better" (p. 87). In reality, however, as Richards (2015) adds, "[o]ften researchers realize too late how important early reflection would have been" (p. 87), and that was unfortunately true for me – partially at least. While I did note down in my journal some thoughts about my experience, I did not record a number of hunches I had about the actual data because, being a novice, I neither saw their value nor had sufficient time to do so.

### *Data management, transcribing, and translation*

I was content and confident when wrapping up all the data to return to New Zealand. In spite of the large quantities and great complexity of the data, the initial stage of data management seemed no real challenge for me; rather, I enjoyed the process and gained a sense of fulfilment from both the data and the way they were secured, labelled, and displayed. That was, to a large extent, attributable to my personal traits of enjoying organising things and paying close attention to detail. Such personal characteristics, while appearing helpful at the data management stage, turned out later to be a major obstacle during the subsequent analysis.

Charmaz's (2006) grounded theory provided the general guidelines for coding, and I adopted computer-assisted analysis. I chose the NVivo software to start, owing to its reputation for facilitating many aspects of the iterative data handling associated with grounded theory and providing a transparent account of the analysing process (Bringer et al., 2004, 2006). First of all, it served as a container, an organiser, and a display platform for the rich data of various types, including word-processing documents, audio files, and PDFs. Second, it facilitated transcription of the recorded data with the convenience of making all the transcripts locatable and retrievable in terms of the link between them and the raw data. Third, it functioned as the workplace for all coding, categorising, and memo-ing, with the ease of constant comparison accessible all the time. Finally,

it helped me to display the initial findings in the form of reports, figures, and graphs, which eased the writing up of the findings.

However, while computer software can facilitate a great deal of mechanical and clerical work, it does not do the analytical thinking for the researcher, not even, in my case, the transcribing and translating work, which were time-consuming. I did full transcription and translation of two interviews (with one of the teachers and the principal) to familiarise myself with the translation process and to enhance the accuracy of my translation; I then checked and discussed the transcripts and translations with one of my supervisors who was a proficient Chinese user as well as a native English speaker. To my knowledge at the time, no transcribing tool was available for Chinese language; thus, it was all manual labour, which took far more time than expected. The translation consumed even more time, partially because of the self-imposed high standards I endeavoured to meet. With subsequent interview data, I changed to major segmenting and labelling in the original followed by selective translation. Notably, I coded the data mostly in the original (Chinese) text based on two considerations: first, any change to the original data would, to a greater or lesser degree, reduce the original data's authenticity; second, my first language catches my eye much more easily and quickly, thus assisting the whole data analysis process.

### *Inductive and deductive analysis*

As discussed earlier, disassembling the raw data and reassembling them into theory are a non-linear, iterative, and lengthy process. For the textual coding, I started with an interview with one teacher followed by all the other teacher interviews, aiming to develop a tentative framework of beliefs about learner autonomy at the school. However, the interviews contained far richer content than just the topic of learner autonomy, and the data continued to confuse and overwhelm me for a long time.

The first difficulty was fracturing and labelling the data – the starting point of the inductive phase. Following and somewhat misled by the name of grounded theory, I started from 'the ground' and applied a 'sweeping' style: that is, underlining every meaningful unit of data (including words, phrases, sentences, or cluster of sentences) and trying to giving it a name (referred to in Richards & Morse, 2013 as a topic). However, one can imagine how messy and tedious this was. In reality, I did not reach the end of any document, and I tended to break down and give up halfway. What frustrated me more was that, time and time again, when I broke down, I could not bear the messy labels I had already created, so I removed them all to clear my way, and I started over.

Looking back now, apart from feeling sorry for myself, I clearly know that was a sign of the unfavourable impact of an obsessive-compulsive disorder, the symptoms of which include perfectionism, low tolerance of ambiguity, being very reluctant (or, feeling unsafe) to leave things out, and being highly structured. To illustrate, I seemed to always require a clear research map and, strongly and frequently, I needed to check the map. Where was I? Where was I going? Did the

map show a way out? If yes (or seemingly yes), I continued; otherwise, I treated it as a bad map and tried a new one. I was trapped for a while in a cycle of construction, destruction, and reconstruction of the data, and of myself. Such personal characteristics are hindering, or even damaging, for qualitative data analysis.

I began to wonder if making use of the research questions could provide an alternative approach to inductive analysis. In this case, each research question could be used to organise the data broadly and then they could be de- or sub-coded (i.e. disassembled and sub-labelled) to form further categories, as informed by literature. From this perspective, the two approaches to analysis could form a continuum.

For this approach to be effectively employed, a sound literature review is critical. On this point, I learnt another big lesson. When reviewing relevant literature, I found that very few previous studies reported observational data on teachers' practices of developing learner autonomy in traditional classroom settings, especially in comparison with their beliefs. Having realised that, I had complex feelings: first, slight concern about the lack of strong literature support; second, excitement for a novice – I had found a research gap (!); and third, a secret relief for an excused escape (even just temporarily) from the seemingly-never-ending literature reading. I never shared this thought with anyone as I knew it was naïve; the price I later paid was struggling for months in the ocean of 22 observed lessons, unable to make good sense of them. The struggle continued into the writing phase, when I tried many ways to present the findings in a logical but non-repetitive manner. Although I finally resolved this struggle (see Wang, 2016), a firmer theoretical foundation prior to the analysis would likely have made the analysis process – to a greater or lesser extent – easier.

### *Reflection*

Richards (2015) urges researchers, novice or skilled, to "assert [their] agency" (p. 52). On a mechanical level, this can involve using the first person and avoiding passive voice; however, more deeply, it may also involve admitting what was done and telling the whole story. While I was more or less aware of this at the time of finalising the thesis for submission, I was not brave enough to report all the tricky issues I experienced during the PhD candidature, perhaps because I did not have the time or skills to do so in a manner with which I felt comfortable. Overall, the data analysis for me was a long-suffering experience, but it was eventually highly rewarding. The most important lesson, during the whole process, was the realisation that it was actually me who was being examined, analysed, and discovered.

## Take two: Jonathon Ryan

Yi's narrative captures the experience of valiantly trying to make sense of the enormous amount of data generated in a qualitative doctoral study. I picture an adventurer edging their way through an overgrown thicket and warily avoiding

apparitions and other hazards. In Yi's case, the complications consisted of dual-language data from a large number of lesson observations, interviews, post-lesson discussions, focus groups, and school documents. The fact that she navigated her way through was surely helped by her methodical approach to coding, labelling data, and mapping her progress. This project was undoubtedly much more complex and difficult to manage than my own more tightly constrained, mixed methods study.

### *Useful metaphors*

Among the challenges, Yi identifies in analysing such data is the sense of uncertainty in knowing what to do and where to begin. This must be a near-universal experience. There are of course numerous guides to qualitative analysis and typically within each is a wide range of possible approaches (Miles et al., 2014, present 26 'tactics') and often a great deal of abstract description. As such, the range of possibilities can be daunting, and it is not always obvious where to start; so, one of the interesting aspects of Yi's narrative is her account of what she came to understand about the process. What stands out for me in particular are the metaphors she adopted from the literature, many of which appeal to a *construction* theme of disassembling and reassembling, segmenting and re-combining, fracturing and labelling, as well as cycles of construction, destruction, and reconstruction. What immediately strikes me about this is that, although I am familiar with some of the sources she cites, I have little or no recollection of ever seeing these metaphors. Evidently, when reading the original texts, the images never quite resonated with me, never enabling me to clearly picture *this* as being the process of qualitative analysis. Even now, I struggle with these metaphors. However, one that does resonate with me is that of 'seeing' and from there 'building a picture' (Richards, 2003). Taking it a step further, I can conceive of this picture as part map, part architectural plan, and part painting – as much cubist as realist – which together illuminate what normally goes unseen or unnoticed in a fleeting glance. What I think a PhD candidate can take from this is the following: if the written guides seem obtuse or vague, keep looking until you find a metaphor that suits. Among the alternatives, Dye et al. (2000) appeal to the kaleidoscope, Willig (2014) to detective work, Fanselow (1992) to changing lenses, and Lichtman (2006) seemingly to mining in "the hard work of sifting, sorting, coding, organizing and extracting" (p. 166).

### *Making sense of the data*

Another very familiar experience raised in Yi's account is the enormous struggle that novice researchers face in making sense of data. This is a matter of not simply searching for coherent meaning but also ensuring our claims are trustworthy, credible, and insightful (Hammersley, 2011). The trouble is that the human brain tends to seek patterns. We seem compelled to look for connections, and we may infer cause and effect relationships even from random, unrelated data points. As

Kahneman (2011) describes it, this innate predilection creates a strong tendency to run "ahead of the facts in constructing a rich image on the basis of scraps of evidence" (p. 114). Within quantitative research, the consequences are found in what has become known as the 'reproducibility crisis', in which a surprising number of influential studies have failed to find support in subsequent replications. Although there are a range of contributing factors (see Bergstrom & West, 2020), a moment of reckoning has been reached, inspiring a number of recent initiatives. These include ever more robust statistical methods (e.g. Plonsky et al., 2015), the promotion of registered reports (e.g. Marsden et al., 2018), and measures to encourage and assign more value to replication studies – a crucial self-correction mechanism within the scholarly record (Porte & McManus, 2019).

Qualitative research has had a longer and more difficult path to acceptance in applied linguistics, with various approaches routinely criticised – at least up until the 1980s – as being overly subjective and susceptible to quality control issues (Lazaraton, 1995). Qualitative designs have, however, increasingly gained acceptance within academia, and matters such as methodological elasticity and interpretivist and constructivist orientations are now considered strengths (Trainor & Graue, 2013). However, acceptance varies depending on the approach. For instance, while studies following a conversation analytic (CA) approach are having substantial impact within the field (e.g. Firth & Wagner, 2007; Waring, 2013; Wong, 2000),[1] practitioner research tends not to receive fair credit, as evidenced in its "almost nonexistent publication" of such studies in some otherwise qualitative-friendly journals (Mahboob et al., 2016, p. 58). This can feel particularly galling given how the fetishisation of quantification ushers through to publication some exceptionally dull and unambitious work. Nevertheless, qualitative studies are undoubtedly more readily accepted than they once were.

My greater concern, however, is that with broader acceptance of qualitative methods, the stringent standards of even just a few years ago seem to be loosening a little too far, with increasing publication of seemingly flimsy work. One does not need to look far for papers whose arguments are held together by a mere string of quotations, with little if any interrogation of how they were produced and what they really illustrate. As noted by Scheurich (2013), a long-time editor of the *International Journal of Qualitative Studies in Education*, "most published qualitative research is done from a perspective that can be labeled naïve realism", whereby "researchers naively assume that what they find is simply real. In other words, most qualitative researchers have no serious understanding of epistemologies and their attendant complexities" (p. x). My concern is that qualitative research – as recently witnessed in quantitative research – is building towards its own crisis in confidence, which could lead to a major re-evaluation of what counts as a credible finding, perhaps followed by a period of over-zealous policing.[2]

How, then, does one – as a doctoral candidate – become confident of having completed a convincingly robust and insightful analysis? In certain cases, there may be an outstanding exemplar to partially follow, such as the studies by Barkhuizen (2016) and Kanno and Kangas (2014), both of which won TESOL

awards for distinguished research. It is also possible to look for guidance through closely attending to established principles, such as Hammersley's (2011) suggestion of "epistemic virtues that are essential to research", which include "commitment to truth and truthfulness", "intellectual sobriety", and "intellectual courage" (p. 103). Ultimately though, and both Yi and I felt that very often it is just you, the researcher, trying to see your data as clearly as you can and always needing to remain alert to the possibility of stretching the interpretation too far, or of accepting a mirage as a relevant point. As a doctoral candidate, I certainly felt the weight of not quite knowing what would count as adequate evidence of a claim.

### *Reflection*

Thinking back, what I probably lacked at the time was a community of critical friends beyond my supervisors who would actively interrogate each other's analyses. A helpful model would be the 'data sessions' conducted in the CA field, where researchers routinely present to others their work-in-progress (ten Have, 2007). Researchers present raw data, and those in attendance take turns to comment, one item at a time, on what they notice or find important about it, and these ideas are held up for critique by the group. In this way, additional details are revealed, objections and alternative hypotheses noted, and the novice researcher observes how others approach and analyse data.

Yi's account highlights the intimidating complexity of ambitious doctoral studies, where there may be such an enormity to the data that there seems no obvious 'way in' to arranging, exploring, and tying it together. Even when the project is completed, there will be a sense of *non*-completion, of tantalising clues left unfollowed and baffling details left ungrasped. Ultimately, though, just as I had to stop my literature search before I felt sated (see Chapter 6), so too does the qualitative researcher have to ultimately put down a marker and say 'that's enough for now; it's time to write this up'.

## Take three: Xuesong (Andy) Gao

Reflecting on Yi's experiences of analysing and interpreting qualitative data, I cannot help recalling similar challenges I experienced with interpreting my doctoral research data and preparing qualitative studies for publication. Many of my reflections echo the key points raised by Jonathon earlier, although they are presented differently. Despite the similarities in our perspectives, I will add my own commentary on the nature of qualitative data, analytical rigour, and the need to manage subjectivity in interpretive qualitative research.

### *The quality of qualitative research*

I share Jonathon's concerns regarding the quality of qualitative research appearing in major publication outlets now that journals and edited volumes have

become increasingly receptive to qualitative research. This receptivity for qualitative research enables qualitative research of poor quality to be published, which undermines the recognition of qualitative research as a rigorous means of knowledge production for the field. Among the many concerns previously expressed, I feel that novice qualitative researchers need to critically engage with "naïve realism" (Michell, 2003, p. 17) – the assumption that reality can be captured directly and objectively. I wish to highlight the fact that qualitative data, and probably most of the data in social sciences research, reflect specific constructions of reality and cannot be equated with it. The information we regard as data is always constructed through the process of data collection. In other words, the collection of data often involves the construction of data (Erickson, 2004).

Let us adopt, as an example, the context of narrative interviews, in which data are constructed or generated (e.g. Benson, 2018). First, we must recognise that interviews are sites in which researchers and participants co-construct narratives; these narratives emerge from a dialogical process mediated by a variety of contextual conditions and social processes, including the topic, the linguistic medium, the physical environment, and the power relations between researchers and participants (e.g. De Fina & Georgakopoulou, 2008). Second, the tools and processes used to record and document the relevant interview exchanges also profoundly mediate the construction of narrative data. It matters whether an interview is audio- or video-recorded or documented through note-taking. It also matters how the original records (i.e. recordings or notes) are processed. Such processing (e.g. transcription) is typically reductive, preserving only parts of the original records and then presents them as the data for analysis (e.g. Roberts, 1997). Researchers' subjective perspectives are already at work when we decide which components of the original records should be retained as data for analysis. Third, as noted by Yi in her description of 'massive messy data', we qualitative researchers typically focus our data analysis on specific issues related to our research questions and hypotheses. This involves making judgements about what is relevant to the study and what is not, a process which potentially risks neglecting what is not mentioned by the participants in the narrative data by treating these omitted topics as unimportant.

Consequently, it is crucial for qualitative researchers to address this problem of "naïve realism" when analysing and interpreting qualitative data. With this critical awareness of data construction, qualitative researchers should be mindful of research as a social practice. This means, for example, that when analysing language learners' narrative data, we need to pay more attention to their textual and contextual realities (i.e. how language learners construct their experiences when being interviewed) to understand their experiences (Benson, 2018; Pavlenko, 2007).

### *Rigour and transparency*

Yi's painstaking analysis of qualitative data is commendable, and efforts like hers are needed to ensure the rigour of research, as qualitative researchers are

expected to show how qualitative research operates to generate trustworthy results for readers "every single time", "[whereas] in quantitative research the source of validity is known" (Holliday, 2002, p. 8). Readers often challenge the rigour of qualitative findings because the interpretation of qualitative data can be highly subjective, involving bias introduced by researchers' conceptualisation of the issues being studied (LeCompte, 2000). As a thesis examiner and manuscript reviewer, I am always concerned about the quality of the work I am evaluating when sufficient details of the analytical process are not shared. I appreciate that the process can be messy, but we qualitative researchers need to make the process of data analysis transparent and open to critique to ensure the rigour of qualitative research and produce trustworthy findings. For this reason, it is absolutely critical for Yi to include the details of inductive and deductive procedures she employed in her analysis. When preparing qualitative studies for publication, I usually highlight how I read the data multiple times during the analysis before understanding it sufficiently and employ a conceptual framework to aid in interpretation. I specify the focus of each reading of the data (e.g. gaining a general understanding of the data, identifying frames, developing codes, and refining categories of codes in relation to a conceptual framework) (see Gao, 2015). I include a data extract and details in relation to its analysis in the methodology section, with which I illustrate how the data were analysed according to the outlined procedures. I then discuss specific efforts undertaken to enhance the quality of interpretation (e.g. intercoder analysis, member checking). This elaborate description of data analysis responds to the need to ensure analytical robustness in qualitative research. It must be noted that such a presentation may project a misleading picture of qualitative research, as we all must live with the reality that "day-to-day research comprises short-cuts, hunches, serendipity and opportunism" (Holliday, 2002, p. 7). Nevertheless, qualitative researchers should undertake these efforts to provide readers with a clear understanding of the role data analysis plays in qualitative research.

### *Researcher subjectivity*

Underlying these efforts to make the analysis of data more transparent and trustworthy is the need to navigate researcher subjectivity in qualitative research endeavours. However, it must be acknowledged that all research, not just qualitative, involves the interpretation of data, and thus researcher subjectivity needs to be managed in any research process (e.g. Ratner, 2002). Quantitative research presents an image of objectivity through the use of standardised statistical procedures, which are presumably less likely to be influenced by researcher subjectivity. However, no matter how carefully a questionnaire or a semi-structured interview guide is developed, either will always contain theorisations of constructs or concepts that are used to shape the data being collected. Both qualitative and quantitative researchers also need to interpret results, whether they take the form of numerical calculations or narrative extracts.

Interpretation is never value free. Therefore, we qualitative researchers need to undertake a variety of efforts to increase the transparency and integrity of the analysis and interpretation of qualitative data. We should openly acknowledge the conceptual frameworks we employ when interpreting data. Qualitative researchers also need to reflect critically on our own prior theoretical assumptions, as despite our best efforts, we always approach a research issue or dataset with assumptions we have accumulated from exposure to particular intellectual resources, personal experiences, and what kind of researchers we aspire to be. Since it is impossible to remove subjectivity from the process of data analysis, it is important for researchers to acknowledge these assumptions honestly and discuss how we mediate our approaches to research. When presenting findings, researchers should clearly distinguish data from interpretation. In addition, we qualitative researchers can manage research subjectivity by inviting colleagues to comment on our interpretations of relevant data extracts. In fact, novice researchers may find it particularly beneficial to work with peers in a collaborative community of practice. Last but definitely not least, we can involve participants in critiquing preliminary interpretations and co-constructing interpretations that align with the participants' perspectives. Thus, readers may be able to evaluate the verisimilitude and quality of findings presented by qualitative researchers.

### *Conclusion*

I understand that novice researchers may feel uneasy about inviting close examination by readers when reporting the results of their analysis. However, it may be valuable for researchers to note that we must carefully manage our subjectivity in the research process. Understanding that most research data are not just collected but also constructed through the process of data collection can help researchers to be open about our assumptions, experiences, and aspirations while also ensuring that we present a transparent account of our research processes. By taking these steps, qualitative researchers may also gain the trust of our readers.

## Reflection questions

- What is needed for qualitative data analysis to be 'rigorous'?
- What differences, if any, are there between reliability and trustworthiness?
- What are the main differences between the analysis of quantitative and qualitative data?
- What challenges might arise in transcribing bi/multilingual data?
- What are the benefits and limitations of software data analysis programmes?
- How acceptable is it to receive assistance from 'critical friends'?

## Notes

1 More generally, CA has come to be seen as "arguably the most rigorous" approach available to emic analysis (Groom & Littlemore, 2011, p. 82).

2 Already, there has been at least one concerted attack intended to expose allegedly poor standards in credible journals: as part of a hoax 'sting', 20 purportedly absurd papers were submitted to humanities journals, of which a third were accepted for publication (Egginton, 2018, October 6).

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