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WHY INVESTIGATE ONLINE TALK?

Introducing the Research Design Framework

Scope of the Chapter

- Establishment of the purpose and goals of this book
- Introduction to the authors and their experience with investigating online talk
- A brief history of online talk research
- Definitions of key terms
- A preview of the research design framework
- An outline of the structure of each chapter

Introduction

In late 2018 as we were finishing this book, the Pew Research Center reported that the American population had reached near-saturation levels of computer, cell phone, Internet, and social media adoption. In February of that year, roughly seven out of ten Americans reported being active on social media—engaging with news and entertainment, sharing information, and connecting with each other (Smith & Anderson, 2018). As social science researchers, we want to understand human life—what happens in social worlds and how people experience them. Our research methods for doing so have been honed over time—surveys, observations, interventions, interviews. Studying how people talk together online—or designing interventions that invite people to talk online—can provide invaluable insights into what is happening in a social world increasingly connected through its devices. However, online talk (also referred to as computer-mediated communication, online discussions, Internet-based communication, and so on) is complex—it is varied in form, ambiguous in origin, persistent, and often without a natural endpoint. It involves multitudes of prospective participants competing for the floor, overlapping their turns of talk, and conversing on virtually limitless

topics of interest. As such, online talk as a research focus can be challenging to define and analyze. Researchers have, however, been studying computer-mediated communication for over four decades now. We wrote this book to help researchers learn from this previous work and better design studies to investigate the phenomenon that is online talk.

People talk together online in a multitude of ways and in a variety of spaces. While in 2018 *social media* refers to interactions that take place through the latest generation of mobile-enabled apps, these platforms are not the only spaces in which online talk occurs. Online support and hobby groups engage using threaded discussion forums, people share their stories in blog posts, and educators teach in entirely online learning management systems. These spaces can emerge spontaneously or be intentionally designed, can occur as part of formal or grassroots endeavors, and are of research interest because they are spaces in which insights, transformation, and learning among people are made visible. Understanding what happens in these spaces can have value across a wide range of disciplines from public health to consumer marketing and from international politics to environmental education.

Yet too little attention has been paid to the methodological design of studies into online talk, bringing into question the validity of the conclusions that can be drawn. In this book we overview the particular set of analytic issues and challenges that arise in identifying and analyzing the insights, transformations, and moments of learning that occur (what we call the “objects of interest”) in online talk—whether they arise by intentional design, incidentally, or sometimes not at all.

About the Authors

I (Trena M. Paulus) was trained as an applied linguist, language teacher, instructional designer, and qualitative research methodologist. My language teaching experiences in the early 1990s coincided with the development of the Internet, and I was instantly intrigued by how virtually connecting native and novice speakers of a language might facilitate faster fluency. This grew into a more general interest in online teaching and learning, and my first study of online talk was an analysis of the asynchronous (delayed-time) threaded discussions that took place in an online university teacher education course in 2002—long before Facebook, Twitter, or anything called social media was mainstream. Our research team was fascinated by how these discussions among future teachers were, in essence, visible displays of what they knew and believed about the course topics. Even more revelatory was that it seemed almost possible to trace a *change* in these beliefs—online talk seemed to be, in essence, a space that displayed visible evidence of *learning*.

In that first study we used Garrison, Anderson, and Archer’s (2001) practical inquiry model as a theoretical framework to understand the online talk by coding, counting, and tallying up the segments that fit into each phase. I clearly remember how difficult it was to operationalize the theoretical framework into

coding categories and the struggle to come to agreement with other analysts on which segment fit into which category. It seemed like it should be completely straightforward, but it was not, and this sparked my interest in methodological innovation around ways to make sense of online talk.

Since then, I've worked as a methodologist with dozens of researchers interested in tackling this ubiquitous "source of data" to answer important questions about what happens in online spaces—not only in university courses, but also in support groups, hiking communities, crowdfunding campaigns, library chat reference interactions, and on Twitter. Each study poses unique challenges around identifying the precise object of interest, how an enormous corpus of online talk should be bounded for analysis, and how best to approach that analysis.

I (Alyssa Friend Wise) come from a background in the sciences with subsequent training in instructional technology, learning analytics, and the learning sciences. Despite this apparent focus on quantitatively oriented methodologies, I also have a longstanding interest in understanding the ways people come together to build up systems of meaning, which has kept me engaged with and open to the different kinds of knowledge qualitative approaches offer. More recently, I have become fascinated with the possibilities for data mining and interpretive approaches to inform each other, and the possibility that such combination might be the start of bridging the quantitative-qualitative divide.

I initially became interested in online talk through the lens of assumptions—I wanted to investigate many of the untested ideas that people held about how online talk occurred, in order to validate, refine, or refute them. My first study focused on the idea of "social presence" (Wise, Chang, Duffy, & Del Valle, 2004), that is, the degree to which people feel like they know the other people they are talking to online. Along with notions of community, social presence had been commonly considered important for online learning; however, all empirical support for this claim was correlational. So we conducted a study that directly manipulated the level of instructor social presence in a one-on-one online mentoring environment. The results were surprising; students both recognized and reciprocated the social presence exhibited by the instructors, but this didn't appear to impact the learning. Since then, I've conducted numerous studies to explore other assumptions about online talk: That people necessarily explore disagreements before moving past them, if and how people actually "listen" to each other before "speaking" online, and that meaningful community cannot be found within large online crowds of conversants. Time after time, I've seen how the decisions we make around how to transform online talk into data for a study and how that data is analyzed have critical implications for the quality of a study's outcomes.

When we were approached about writing a handbook chapter on analyzing online learning discussions for the second edition of *The SAGE Handbook of E-Learning Research* (Haythornthwaite, Andrews, Fransman, & Kazmer, 2016), we jumped at the chance to combine our years of experience studying online talk from different methodological stances in an effort to create a congruent framework for identifying moments of insight, transformation, and learning. In doing so, we realized that this framework was the first of its kind. While information on how to conduct some individual parts of the process was available, a comprehensive (and coherent) guide for studying online talk did not exist. This book extends that original handbook chapter to offer such a guide, the kind of comprehensive resource we wished we had available when we were learning how to conduct research in these spaces. We hope it is useful to researchers embarking on studies of online talk for the first time.

Definitions and Scope of the Book

Because not all communication in online environments can necessarily be characterized as multiparty *conversations*, we adopt the phrase “online talk” to describe what we are studying. While somewhat awkward, we use the phrase “author of the talk” when referring to those who participate in these spaces, because they are talking through writing (or typing, or voice-texting). We limit our scope in this book to the analysis of online talk in which the communication occurs in a *written (text-based) form*, both because this is still one of the most frequently occurring modalities through which such discussions take place and because this single channel allows for a clear focus on how the talk can be analyzed as evidence for insights, transformation, and learning. We acknowledge that image- and video-based communication platforms are increasing at a rapid rate and, alongside this growth, research methods are evolving that can best capture these exchanges for meaningful analysis. Certainly, much of the guidance presented will also be applicable to the analysis of talk which occurs via voice or video technologies; however, the addition of these channels adds analytic concerns not dealt with here (for example, see Goldman, Pea, Barron, & Derry, 2014 and O’Halloran, Tan, Smith, & Podlasov, 2011).

We consider online talk to include both discussions that are *designed* in the hopes that particular insights, transformation, and/or learning will occur—such as online university courses or social media campaigns—as well as those that *emerge* informally among people with a common interest, such as online support or hobby groups. Researchers may enter the online talk space as part of the design team, in which case the online talk is *researcher-influenced*. In contrast, researchers can also work with *pre-existing* talk as a source of data. Online talk includes exchanges that occur synchronously in real time, such as via text messaging, and those that occur asynchronously across “delayed time” (Christie & de Alberdi, 1985), through platforms such as blogs and discussion forums. It includes conversations that

grow as a single linear string of comments, those that branch out into multiple threads, and those distributed across multiple communication tools.

Online talk can take place between an individual and the “invisible audience” of anyone who may be listening out there on the Internet, two individuals talking directly to each other, members of multiparty groups, or across large aggregations of people. It may take place as an event unto itself or be coordinated with actions in a system (e.g., a chat that is linked to editing a Google Doc). Thus, situations as diverse as an email exchange, a text chat among a project team, or the multi-participant comment stream following an online news story would all be considered spaces of interest to researchers of online talk. What all of these different situations have in common is the use of a sequence of discrete messages between different individuals that use written language as a means to exchange ideas and, at times, generate new insights, undergo transformations, or engage in moments of learning. This is online talk.

While there are a multitude of existing research studies looking at online talk from a variety of lenses—e.g., online learning, social media influence or community development—surprisingly, there is still no unified body of knowledge about the analysis of online talk *itself* in a systematic way. Early studies of online communities and spaces were conducted as case studies or ethnographies—relying on survey and interview data, with perhaps some participant observation. In face-to-face research, “talk” as a data source is not readily accessible; it is considerable work to record and transcribe multiparty conversations. A few traditions such as ethnomethodology and conversation analysis have developed methods for closely attending to this type of data (Sidnell & Stivers, 2013). Online, however, this everyday talk appears as written text and is persistent, making it more readily available for analysis. Over the years, scholars have adapted a variety of methods initially developed for face-to-face conversations for the analysis of online talk. Studies that do engage in systematic analysis of the online talk itself seem to pop up in isolation—across fields and disciplines with little awareness of similar work being done elsewhere.

As with any research study, claims that are made from an analysis of online talk must be grounded in a series of epistemological, theoretical, and methodological decisions. There are persistent questions about the difficulties posed by treating online talk as a data source. For example, how do you know who the author of the online talk *really* is? In the age of bots and artificial intelligence systems, these are not inconsequential concerns. Even in spaces in which the identities of the participants are known (such as university courses), online talk can be theorized as a performance—people talk in certain ways for particular audiences. Online talk, then, cannot be treated unproblematically as evidence for what people “really” think, feel, believe, or have learned. In some cases, when interior psychological states (learning, motivation, emotions) are the primary objects of interest, the analysis of online talk may need to be combined with additional types of data to make robust claims.

What Counts as Insight, Transformation, and Learning?

Online talk takes place in a larger social context and, while we feel the talk itself often is at the heart of what happens in these contexts and should not be ignored, it's an epistemological question as to what the online talk represents. What, exactly, counts as a meaningful insight, transformation, or learning event must be decided by the researcher. We call this the “object of interest,” and it will be explored in Chapter 2.

There are at least three ways in which researchers become interested in understanding online talk, and we call these *entry points*. These entry points have implications for research design. Forming the first entry point are questions about the world related to one's practice—questions that an analysis of online talk could help answer. Mary Alice Varga was a doctoral student at the University of Tennessee-Knoxville in counselor education who specialized in grief counseling. When she realized that many people were turning to online support groups to talk about their grief, rather than coming to face-to-face support groups, she began to wonder what was happening in those spaces. This was a practical question about the world that led to the design of a research study to closely examine online talk in order to answer it (Varga & Paulus, 2014; Paulus & Varga, 2015).

In other cases, a researcher will gain access to an existing corpus of online talk that is of interest for some reason, and must go about designing a study to examine it. This has become more commonplace as increasingly large stores of data are collected as part of everyday digital practice, e.g., “big data.” For example, Wise was given access to a corpus of online talk from a massive open online course (MOOC) on psychology as part of a data challenge¹ to predict weekly attrition. Initial examination revealed a broad variety of topics of talk, leading to curiosity about how these could be usefully differentiated and if the different types would have different characteristics (Cui & Wise, 2015). The final study design involved manual coding of content-related and non-content-related discussions, the use of natural language processing (NLP) and predictive modelling techniques to detect such talk, and the acquisition of several additional corpora from other MOOCs to test the developed model on increasingly distal subject matter areas, including statistics and physiology (Wise, Cui, Jin, & Vytasek, 2017).

The final entry point is curiosity about whether or not a particular theoretical framework about how the offline world works is applicable to how people talk together online. This was the entry point for our own early investigations into online talk. University courses were being put online at an accelerated pace in the early 1990s, but no one really knew what was happening in the online discussions that were (and still are) often a required component of the coursework. So, we each designed studies using theoretical frameworks about learning to see if the conversations were consistent with what we already knew about how learning takes place (Pawan, Paulus, Yalcin, & Chang, 2003; Wise, Chang, Duffy, & Del Valle, 2004).

Introducing the Research Design Framework

Figure 1.1 illustrates a research framework for designing methodologically congruent studies of online talk. It will appear at the start of each chapter with an indicator of which part of the framework is being addressed as a reminder of where we are in the process.

As each chapter of this book works through a part of the framework, it will address a series of guiding questions that, made well, will lead to a research study with *trustworthy knowledge claims*. Table 1.1 provides an overview of the research focus and guiding questions for each chapter of the book. Within each chapter, a series of more detailed design decisions are presented to guide researchers through the creation of their study.

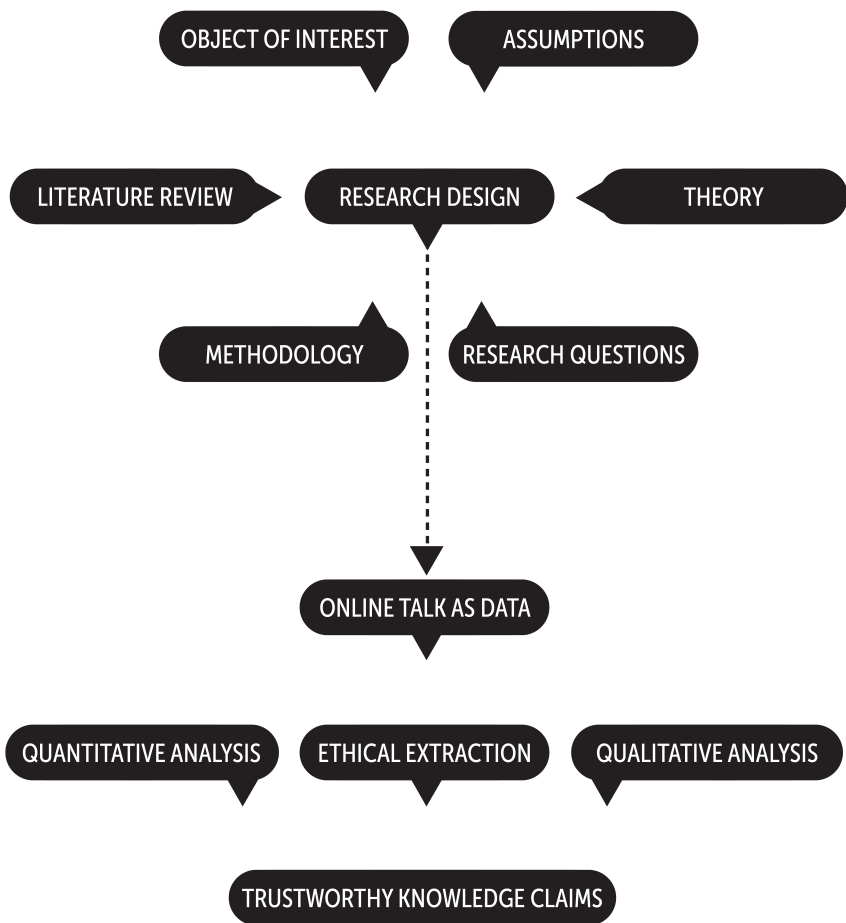


FIGURE 1.1 Research design framework for investigating online talk

TABLE 1.1 Research focus of each chapter

<i>Chapter</i>	<i>Research Focus</i>	<i>Guiding Questions</i>
2	Articulating the entry point and defining the object of interest	<ul style="list-style-type: none">• Is the interest in online talk driven by a practical question, the availability of a data source, or theory?• Is the object of interest related to the extent to which people are engaging (“who is talking?”), the topics being discussed (“what are they talking about?”), or the interpersonal dynamics that take place (“how are they talking?”)?
3	Identifying assumptions	<ul style="list-style-type: none">• What assumptions are being made about the nature of the object, the nature of language, and the intended claims?• How will these impact the design of the study?
4	Framing research questions and choosing a methodology	<ul style="list-style-type: none">• What do we already know about the object of interest from the literature review and theoretical frameworks?• Are the research questions a priori or emergent?• What methodology will guide the study design?• What measures will be taken to ensure the quality of the study?
5	Treating online talk as data in an ethical manner	<ul style="list-style-type: none">• How (from what site) will data be generated or acquired?• How will permission be gained to treat the online talk as a data source?
6	Characterizing, bounding, and extracting online talk as data	<ul style="list-style-type: none">• What characteristics of the online talk will impact analytic decisions?• How will the data be bounded in terms of platform, people, and time?• How much data will be needed and in what units?• How will the data be extracted for analysis?
7	Analyzing the data quantitatively and generating high-quality findings	<ul style="list-style-type: none">• How can quantitative methods be used to generate answers to the research question(s)?• How will the quality of the knowledge claims be ensured?
8	Analyzing the data qualitatively and generating high-quality findings	<ul style="list-style-type: none">• How can qualitative methods be used to generate answers to the research question(s)?• How will the quality of the knowledge claims be ensured?
9	Bringing closure to the study	<ul style="list-style-type: none">• Have we found what we were looking for?

The Structure of this Book

Each chapter starts with a list of what is covered in the chapter. At critical junctures in the text, a series of design decisions are presented, with questions to help guide the reader through their own study design. We include many examples taken from published empirical research studies, a handful of which appear regularly throughout the book, to serve as real-world illustrations of the design process. These are typically from our own work and include our reflections on the design decisions that guided the study design.

RESEARCH STUDIES SERVING AS EXAMPLES THROUGHOUT THE BOOK

Graham, T. & Wright, S. (2014). Discursive equality and everyday talk online: The impact of “superparticipants”. *Journal of Computer-Mediated Communication*, 19(3), 625–642.

Matza, L. S., Chung, K. C., Kim, K. J., Paulus, T. M., Davies, E. W., Stewart, K. D., McComsey, G. A., & Fordyce, M. W. (2017). Risks associated with antiretroviral treatment for Human Immunodeficiency Virus (HIV): Qualitative analysis of social media data and health state utility valuation. *Quality of Life Research*, 26(7), 1785–1798.

Paulus, T. M. & Varga, M. A. (2015). “Please know that you are not alone with your pain”: Community member responses to bids for membership in online grief support groups. *Death Studies*, 39(10), 633–640.

Varga, M. A. & Paulus, T. M. (2014). Grieving online: Newcomers’ constructions of grief in an online support group. *Death Studies*, 38(7), 443–449.

Wise, A. F. & Chiu, M. M. (2011). Analyzing temporal patterns of knowledge construction in a role-based online discussion. *International Journal of Computer-Supported Collaborative Learning*, 6(3), 445–470.

Wise, A. F. & Cui, Y. (2018). Learning communities in the crowd: Characteristics of content related interactions and social relationships in MOOC discussion forums. *Computers & Education*, 122, 221–242.

Wise, A. F., Cui, Y., Jin, W., & Vytasek, J. (2017). Mining for gold: Identifying content-related MOOC discussion threads across domains through linguistic modeling. *The Internet and Higher Education*, 32, 11–28.

Ziegler, M., Paulus, T. M., & Woodside, M. (2006). “This course is helping us all arrive at new viewpoints, isn’t it?” Making meaning through dialogue in a blended environment. *Journal of Transformative Education*, 4(4), 302–319.

Ziegler, M., Paulus, T. M., & Woodside, M. (2014). Understanding informal group learning in online communities through discourse analysis. *Adult Education Quarterly*, 64(1), 60–78.

We have included many citations to published studies and additional methodological guidance, with a list of references at the end of each chapter. These are meant to serve as examples for further learning. We encourage the reader to seek

out, read, and critically examine the details of these designs before embarking on their own. By reading and deconstructing numerous examples of studies of online talk across a variety of subject areas, researchers new to this area will see what has worked in the past, be exposed to novel ideas for study design and learn how to conduct studies in a rigorous manner.

Each chapter closes with a chapter summary that revisits the content and previews the next chapter. Next, we provide a preview of the book by briefly describing what will be discussed in each chapter.

Chapter-by-Chapter Descriptions

Be it social action, community development, or learning, we often want to know whether or not something substantial is taking place in online talk. In Chapter 2, we discuss the importance of defining an “object of interest” and note the three typical starting points for identifying one: Practical questions about the world, access to online talk, and/or the relevance of theoretical frameworks. We then discuss strategies for narrowing the focus on an object of interest, such as the amount of participation, the topics of the talk, or how the talk functions. Further, we note how objects of interest may be defined in terms of the presence, absence, or change over time of an entity and/or process. Finally, the importance of clearly defining the object of interest is connected back to ensuring the congruence of the overall research design.

In Chapter 3, we move to unpacking three key assumptions underlying any analysis of online talk: Assumptions about whether the object of interest is a group or individual construct, whether language primarily functions to represent an individual’s interior life or construct the social world, and whether knowledge claims are meant to be generalizable or rooted in a local, possibly unique, context. We argue that in order to create a successful research study to understand online talk, each of these assumptions must be congruent with the subsequent design decisions.

Research studies should be designed in order to speak to a particular audience, so in Chapter 4 we provide strategies for establishing the need for a study. An effective research study should address a problem that matters to that audience. Reviewing previously published studies and identifying relevant theoretical frameworks can help ensure that the problem hasn’t already been solved by earlier research efforts. A clear problem statement and need for the study, once articulated, should lead to clear research questions—be they *a priori* or emergent in nature. We outline how to choose an appropriate methodology to inform the research design and discuss which methodologies tend to be used, or avoided, in studies of online talk. We also introduce criteria by which the quality of a research study can be assessed. Finally, we further discuss the difference between researcher-influenced (designed) online talk and pre-existing online talk, and how this will impact research design.

Despite the ubiquitous nature of online talk, its authors do not necessarily expect their words to be treated as data. In Chapter 5, we explore the ethical

dilemmas posed by doing so. Professional organizations and ethics board can help guide the decision-making process around whether and how to treat online talk as data. Ethical practices for working within researcher-influenced contexts of online talk are different from working with pre-existing talk. The rise of social media as sources of “big data” also pose an ethical dilemma. We provide considerations for thinking through how best to gain permission to treat online talk as a data source. Whatever procedures are followed, these should be clearly documented in the research report as guidance for future researchers.

Several phases are involved in the process of turning online talk into a data corpus, and Chapter 6 explores these issues. First, the online space of interest should be characterized by its technological and situational features to have a clear understanding of how these features will impact the resulting talk. This characterization will also allow study findings to be compared with previous and future studies. Both macro decisions delimiting the boundaries of the talk to be treated as data and micro decisions about sampling talk within these boundaries need to be made. In defining the macroscopic scope of talk, there are four dimensions to consider: The platform in which the talk occurs, the people involved, the topic being discussed, and the temporal period over which the talk takes place. Once the overall scope has been defined, micro decisions come into play including what portion of talk will be taken as the unit of analysis. Once the unit of analysis is set, decisions around sampling (the number of units to be analyzed), the time window (how the units are related to the larger structure of the data corpus), and how to treat para-data that is included in the corpus (upvotes, hashtags, analytic data, etc.) can be made. This chapter also discusses how to extract and organize online talk for analysis, and how to create a data archive for future use.

Chapter 7 introduces quantitative approaches to analyzing online talk. These are useful for identifying repeating and replicable patterns in order to make generalizations and predictions about future talk or to identify typical or atypical areas for further in-depth analysis. The first step in analyzing online talk quantitatively is generally the transformation of message text into coded values through content analysis. While traditionally done manually, new computational methods incorporating natural languages processing techniques now also offer semi- and fully automated approaches that can be employed. Once a quantitative representation of the data is generated, various statistical and computational analyses are possible. Statistical analyses involve either group comparisons or an examination of relationships between variables generally done through group-level analyses or multilevel modeling. Temporal analysis is an area of current methodological innovation that focuses on either the flow of events over time or their relative arrangement. In addition to these methods, computational approaches for structure discovery provide entry points into large online corpora that can identify areas where in-depth examination of the talk is warranted. Social network analysis (SNA) provides a robust set of tools for modeling online talk as a collection of interactions or relationships. Topic modeling allows a researcher to identify a

set of underlying themes that are present in varying degrees in different portions of online talk and examine how these topics manifest themselves across the talk. This chapter provides an overview of these different methods of analysis and guidance as to which is most appropriate given the intended outcomes of the study and the research design. Additionally, we provide pointers to particular software tools or packages that can be used to conduct the analyses.

Chapter 8 introduces qualitative approaches to analyzing online talk. Thematic analysis, probably the most common approach to inductively analyzing text-based data, is best used when researchers are interested in what topics are being discussed in online talk and how they are being discussed. This is often useful when the online talk is in a novel context or environment in which it is not yet clear which theoretical framework may be most relevant to the analysis. Narrative analysis can be used to better understand how storytelling, metaphor, emplotment, and other techniques are used by the participants. Conversation analysis is most useful when researchers are interested in a micro-analysis of each turn in the online conversation and what happens with each new contribution. Finally, discourse analysis can provide insights into how identity, power, and broader social categories are made visible through the online talk. We provide guidance around how to select which method of analysis may be most appropriate given the intended outcomes of the study and the research design. This chapter also provides examples of each of the four approaches, how findings are typically reported, and criteria for assessing study quality. Additionally, we provide recommendations for the use of qualitative data analysis software.

By working through the design decisions presented in this book, we hope that researchers will develop confidence in their ability to conduct methodologically congruent studies to answer questions about the objects of interest in online talk. In Chapter 9, we bring together the entire framework by working through one example to demonstrate its comprehensive alignment. We revisit how insight, transformation, and learning were identified through studies of online talk by exploring findings selected examples. We propose areas for future methodological innovation in the analysis of online talk, and close with some final recommendations.

Chapter Summary

In this chapter, we have shared our goals for this book, why it is needed, and what we hope it accomplishes for the reader. We have reflected on our own positionality as researchers of online talk and articulated our motivations for undertaking this endeavor. We defined key terms and outlined the scope of the book, as well as introduced the research design framework that will guide the book as it unfolds. We have briefly introduced the book's structure to provide a roadmap for the reader. Through many examples and carefully constructed design decisions, we encourage the reader to learn from those who have gone before and

to make each choice in constructing their study with intention and reflection, and with an eye to the consequences for the study's validity. In Chapter 2, we begin this process by emphasizing the importance of clearly defining an “object of interest” that can be better understood by investigating online talk.

Note

- 1 A “data challenge” is an activity in the data science community where different groups compete to build the best model for a given (usually predictive) task using shared data.

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