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Sampling in Qualitative Research: Insights from an Overview of the Methods Literature

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Abstract

The methods literature regarding sampling in qualitative research is characterized by important inconsistencies and ambiguities, which can be problematic for students and researchers seeking a clear and coherent understanding. In this article we present insights about sampling in qualitative research derived from a systematic methods overview we conducted of the literature from three research traditions: grounded theory, phenomenology, and case study. We identified and selected influential methods literature from each tradition using a purposeful and transparent procedure, abstracted textual data using structured abstraction forms, and used a multistep approach for deriving conclusions from the data. We organize the findings from this review into eight topic sections corresponding to the major domains of sampling identified in the review process: definitions of sampling, usage of the term sampling strategy, purposeful sampling, theoretical sampling, sampling units, saturation, sample size, and the timing of sampling decisions. Within each section we summarize how the topic is characterized in the corresponding literature, present our comparative analysis of important differences among research traditions, and offer analytic comments on the findings for that topic. We identify several specific issues with the available guidance on certain topics, representing opportunities for future methods authors to improve our collective understanding.

Keywords

Qualitative Research Methods, Sampling, Grounded Theory, Phenomenology, Case Study, Methods Literature, Literature Review, Systematic Review, Systematic Methods Overview

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Sampling in Qualitative Research: Insights from an Overview of the Methods Literature

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The methods literature regarding sampling in qualitative research is characterized by important inconsistencies and ambiguities, which can be problematic for students and researchers seeking a clear and coherent understanding. In this article we present insights about sampling in qualitative research derived from a systematic methods overview we conducted of the literature from three research traditions: grounded theory, phenomenology, and case study. We identified and selected influential methods literature from each tradition using a purposeful and transparent procedure, abstracted textual data using structured abstraction forms, and used a multistep approach for deriving conclusions from the data. We organize the findings from this review into eight topic sections corresponding to the major domains of sampling identified in the review process: definitions of sampling, usage of the term sampling strategy, purposeful sampling, theoretical sampling, sampling units, saturation, sample size, and the timing of sampling decisions. Within each section we summarize how the topic is characterized in the corresponding literature, present our comparative analysis of important differences among research traditions, and offer analytic comments on the findings for that topic. We identify several specific issues with the available guidance on certain topics, representing opportunities for future methods authors to improve our collective understanding. Keywords: Qualitative Research Methods, Sampling, Grounded Theory, Phenomenology, Case Study, Methods Literature, Literature Review, Systematic Review, Systematic Methods Overview

Merriam-Webster Dictionary defines sampling as “the act, process, or technique of selecting a representative part of a population for the purpose of determining parameters or characteristics of the whole population.” This popular understanding, however, differs from some of the understandings held by researchers and scholars in the qualitative research domain. Influential qualitative methods authorities from diverse backgrounds have contributed to these latter understandings, and there is much natural variation in the sampling-related ideas they present. The existence of even subtle inconsistencies, ambiguities, or incomplete descriptions in the methods literature regarding certain sampling-related issues can be problematic for students and researchers seeking to develop a coherent understanding of sampling that is applicable to their research situation. This problem can be exacerbated by the fact that these individuals often lack the time to search, retrieve, and review the qualitative methods literature systematically and exhaustively to develop comprehensive and balanced knowledge of the available methods guidance.

Even seasoned qualitative researchers, who are usually expertly versed in the methods of their chosen research approach or tradition, may come to prefer and become most intimately familiar with the ideas of a subset of methods authors within that tradition. Thus, they may not be comprehensively familiar with the full range of opinions across authors (including any inconsistencies among them) within their tradition regarding a specific methods issue—something that can only be revealed through systematic comparison. Systematic comparison in turn depends on systematic selection of the literature to be compared. Systematically

searching and selecting the *methods* literature, however, is generally more burdensome than it is for the *empirical findings* literature. This is because a greater proportion of the methods literature is found in books and edited book chapters, which take substantially more time and effort to identify, retrieve, and scan for relevant content compared to journal articles.

To fill the need for rigorous synthesis of the guidance on sampling in qualitative research, we conducted a systematic methods overview—our term for a defined approach to reviewing the methods literature from diverse sources, described here. This review method involved a rigorous and transparent, yet purposeful, approach to searching the methods literature aimed at selecting and reviewing the most influential publications—ones that students and researchers from multiple jurisdictions are most likely to encounter among the available writings that address sampling. We chose the literature of grounded theory, phenomenology, and case study because these are popular approaches or traditions used in many health-related disciplines, and are also sufficiently different to allow instructive comparisons to be made within each of the sampling topics addressed below.

Our findings are organized under eight distinct topic sections corresponding to the major domains of sampling identified in the review process. In each section, we summarize how the topic is characterized in the literature reviewed, present a comparative analysis of differences among the three research traditions, and finally offer comments representing our analysis of the clarity, consistency and comprehensiveness of the available guidance from the authors reviewed on that topic and potential areas in which more clarity could be provided. Importantly, it is neither our aim nor our intention to convey personal opinions or recommendations about how to do sampling in this review. By unifying the findings and discussion within topic sections, we aim to make it convenient for readers to locate content for any single sampling topic in one place.

The Three Research Traditions Reviewed

Each of the three traditions whose methods literatures were reviewed is characterized by its unique approach to data collection and analysis, which in turn underlies important variation in researchers' approaches and attention to sampling. We briefly review some of the relevant differentiating characteristics of each.

Grounded theory, with its origins in symbolic interactionism, is a flexible method for developing substantive theory that traditionally emphasizes understanding of social processes, although it is also recognized for its utility in explaining broader phenomena (Charmaz, 2006, 2014; Corbin & Strauss, 2008, 2015). Its traditional reliance on interview data and to a lesser extent document data, and its emphasis on constant comparison and emergent analysis, have important implications for approaches to sampling.

Phenomenology is a qualitative approach in which researchers aim to develop new understandings of human lived experience, relying on first person accounts generally obtained through participant interviews. Different methods authors have developed several distinct sub-approaches to analysis, which reflect the philosophical premises of the historically influential thinkers on whose ideas the research approach was founded (Creswell, 2013).

Although grounded theory and phenomenology are sometimes considered true *methodological* traditions (whose epistemological and methodological positions can be traced to philosophical roots), case study is much less so. As Stake (2005) underlines: "Case study is not a methodological choice but a choice of what is to be studied" (p. 443), distinguished from other forms of qualitative research by its analytic focus on one or a small number of bounded cases, each of which is studied within its distinct context. Moreover, the data one collects to learn about each case often take varying forms including observations, interviews, documents, and so forth.

Methods

We derived the analytic insights presented here from the findings of a systematic overview of the methods literatures of the three traditions in question. While a systematic methods overview involves some of the same steps of a systematic review, its output is different—a synthesis of the guidance that authors from selected publications have provided on a specific methods topic. Briefly, we employed a rigorous approach to searching the literature, selected publications for inclusion according to a transparent and iterative process, abstracted textual data using structured abstraction forms, and analyzed the data using a systematic approach. We chose a systematic approach over an “authoritative” narrative approach to ensure the review process was thorough and accountable (Oxman & Guyatt, 1993), thus promoting credibility and auditability (Guba, 1981; Jensen & Allen, 1996; Sandelowski, 1986). A detailed account of these methods, prepared as a separate report, is available from the corresponding author and are summarized below.

We did not seek to include descriptions of sampling from primary empirical research reports because our focus was on understanding how sampling is characterized in the available guidance from the three research traditions rather than on how sampling has been implemented in specific research projects. To select publications that are most likely to have widely influenced students’ and researchers’ ideas about sampling, we used a purposeful, multistep process to represent the most *influential* guidance from authoritative authors within each tradition, as defined using bibliometrics and expert opinion according to the separate methods report referred to above.

We used multiple analytic steps—abstraction of text, summary of information in matrices, and analytic comparisons—to ensure interpretations were logically supported by published words as analysis progressed. In data abstraction, we recorded extensive quotes ranging from a single phrase to numerous paragraphs in individual topic-relevant fields of abstraction forms. We developed flexible definitions for topic-relevant concepts (e.g., theoretical sampling, data saturation) as a heuristic device to guide what information to abstract, iteratively adapting them to accommodate new information from subsequent publications. In constructing topic-specific matrices, we copied relevant quotes from abstraction forms into appropriate cells, yielding tables ranging from one to five pages in which nested row headings identified the methodological tradition, author, and publication, while column headings identified topic-relevant fields for which we abstracted data. We used the matrices to facilitate analytic comparisons across methodological traditions, and between authors within traditions. We described analytic comparisons of interest in narrative summaries, which retained fewer illustrative quotes, and from which we derived final analytic comments.

Publications Selected

For this synthesis, we selected and analyzed 24 tradition-specific publications from among grounded theory (Charmaz, 2003, 2006, 2014; Clarke, 2005; Corbin & Strauss, 2008, 2015; Glaser, 1978, 1992, 1998; Glaser & Strauss, 1967; Schatzman & Strauss, 1973; Strauss & Corbin, 1998), phenomenology (Cohen, Kahn, & Steeves, 2000; Colaizzi, 1978; Giorgi, 2009; van Manen, 1997, 2014), and case study (Merriam, 2009; Stake, 1995, 2005, 2006; Yin, 2009, 2011, 2014). We retrieved and reviewed 16 additional full publications, but ultimately excluded these because they either contributed nothing novel when carefully compared to other more recent publications included by the same author (i.e., author-level saturation; 8 publications), contained negligible information relevant to sampling (7 publications), or were

primary research reports (1 publication). We derived additional insights regarding two of the sampling-related topics (Sampling strategy, and Purposeful sampling) from an analysis of a selection of 13 supplementary publications from the general qualitative methods literature. Support for the descriptions and comparisons below can be traced to the quoted data (text from publications) that we recorded in the topic-specific matrices during the analysis, available on request from the corresponding author.

Substantive Findings and Discussion

We present our main findings within each of the eight topic sections that follow. We also include our analytic comments on the topic-specific findings continuously within each section. It is potentially useful to understand these topics as providing answers to generic questions one can ask about sampling such as what is sampling, how to sample, and what to sample (Table 1).

Table 1. Eight Sampling-Related Topics Discussed Matched to Conceptually Descriptive Questions About Sampling

Sampling-Related Topic	Question Addressed
Definitions of Sampling	What is sampling?
Usage of the Term “Sampling Strategy”	How to sample?
Purposeful Sampling	
Theoretical Sampling	
Sampling Units	What to sample?
Saturation	How much to sample?
Sample Size	
Timing of Sampling Decisions (a priori vs ongoing)	When in the research process to decide about sampling?

Note, there are no topics corresponding to the question of “why do sampling?” This is primarily because the purposes of sampling are numerous and vary according to the objectives and contexts of qualitative research. We thus address some of the multiple purposes of sampling within the three topics corresponding to “how to sample?” (Table 1).

It should also be noted that the amount of guidance available within the different tradition-specific literatures varies greatly for some topics. Specifically, for two topics (Usage of the Term “Sampling Strategy,” and Purposeful Sampling), case study guidance is featured prominently because its literature contains substantial discussion compared to the other traditions. For two other topics (Theoretical sampling, and Saturation), grounded theory is predominantly featured for similar reasons. For a few topics, the scarcity of guidance available within a tradition is a noteworthy finding in itself.

Definitions of Sampling

Definitions of sampling were often not explicitly stated across the methods literature reviewed. In most cases we were nevertheless able to deduce a logically implied definition from authors’ sampling-related descriptions. We found marked variation in how the term sampling was understood across the three research traditions. For data abstraction purposes (see Methods) we developed an overarching definition for *sampling*, which was iteratively constructed to be inclusive of and consistent with as many of the definitions abstracted from individual publications as possible. Thus, we defined sampling in qualitative research in its broadest sense as follows: the selection of specific data sources from which data are collected to address the research objectives. We also identified variations in the concept of sampling across the three traditions reviewed (Table 2).

Table 2. Aspects of Variation in the Concept of Sampling among the Three Research Traditions Reviewed

Grounded theory	<u>What is selected</u> in theoretical sampling is <u>unclear or inconsistent</u> between authors (see topics Theoretical Sampling and Sampling Units)
Phenomenology	<u>What is selected</u> is restricted to <u>people</u> only—a single type of data source
Case study	<u>What is selected</u> includes <u>cases</u> in addition to <u>data sources</u>

As the underlining in Table 2 highlights, the main point of variation in how different traditions understand sampling concerns the nature of the sampling unit (what is sampled)—as the following representative quotes and interpretive comments help illustrate:

- Grounded theory: Sampling is “where to go to obtain the data” (Strauss & Corbin, 1998, p. 201)—Note how this definition does not specify what is sampled.
- Phenomenology: Sampling is “choosing informants” (Cohen et al., 2000, p. 45)—What is sampled is clearly people.
- Case study: Sampling applies to selecting cases and selecting data sources “that best help us understand the case” (Stake, 1995, p. 56)—Thus, what is sampled occurs at two levels, the case and unspecified data sources within the case.

A notable exception to the definitions of sampling found in most of the case study literature is Yin’s (2014) most recently articulated interpretation the term. This position diverges from Yin’s earlier portrayals of *sampling* (2009, 2011), which were more consistent with the definition implied by the other two case study authors, summarized above. In his recent articulation (2014), Yin argues that the language of *sampling* implies a desire to achieve *statistical generalizability*, an understanding that would be consistent with the common dictionary definition cited in the introduction above; in case study research, however (and indeed in much qualitative research), the aim should be to achieve analytic generalizability (where generalization is at a conceptual level higher than that of the specific case). Thus, Yin reasons, even referring to one’s case or cases as a “purposive sample” may raise conceptual and terminological problems:

You have intended to convey that the *purposive* portion of the term reflects your selection of a case that will illuminate the theoretical propositions of your case study. However, your use of the *sample* portion of the term still risks misleading others into thinking that the case comes from some larger universe or population of like-cases, undesirably reigniting the specter of statistical generalization. The most desirable posture may be to avoid referring to any kind of sample (purposive or otherwise). (pp. 42, 44)

Instead, Yin (2014) consistently uses the term *selection*, and mindfully avoids descriptors that imply knowledge of an overall population, such as *unique* or *typical* (2014, p. xxiv). This interpretation of *sampling* (as consistent with the common dictionary definition), is at odds with how sampling has generally come to be used in qualitative research (i.e., as the selection of data sources to address research objectives; see our definition above Table 2). Thus, Yin’s suggestion to avoid the language of sampling altogether is a potentially radical one. We propose that a critical examination of how and why the term *sampling* came to be adopted in the qualitative research methods literature in the first place is warranted, and might reveal additional arguments for avoiding the term *sampling* in qualitative research contexts.

Within phenomenology, van Manen (2014; but not 1997) was the only author reviewed besides Cohen (2000) to explicitly refer to the term *sampling*. He suggests that the commonly accepted concept of qualitative sampling is not compatible with phenomenology, and differentiates phenomenology from other qualitative research traditions in doing so: “external concepts of validation, such as sample size, sampling selection criteria, members' checking, and empirical generalization...are concepts that belong to the languages of different qualitative methodologies.” (p. 351). Further emphasizing that the common idea of sampling is irrelevant to phenomenology, van Manen (2014) states, “the term sample should not refer to an empirical sample as a subset of a population. This use of the notion of sampling presupposes that one aims at empirical generalization, and that is impossible within a phenomenological methodology” (p. 352). He does, however, allow that an alternative understanding of the term is acceptable: “But the term sample can be related back to the French root word *exemple*, which has paradigmatic significance, as has been pointed out with reference to Buytendijk, Agamben, Figal, and others” (p. 352).

A particularly interesting observation within the grounded theory literature reviewed is the inconsistency and lack of clarity regarding what is sampled in grounded theory—discussed further under the topics *Theoretical Sampling* and *Sampling Units*.

Usage of the Term “Sampling Strategy”

Understanding usage of the term sampling strategy is of importance because Patton's typology of purposeful sampling strategies (Patton, 1980, 1990, 2002, 2015) has been so highly influential as to dominate the general qualitative methods literature on sampling, with many well-known methods authors citing his descriptions (for example, Goetz & LeCompte, 1984; Kuzel, 1999; LeCompte, Preissle, & Tesch, 1993; Lincoln & Guba, 1985, 1989; Miles, Huberman, & Saldaña, 2014; Morse, 1994). As a result, many students and researchers have come to understand or describe qualitative sampling methods in terms of these sampling strategies (some examples of which are described in the next topic).

When searching publications for the term *sampling strategy* we found almost no mention of it within the traditions reviewed, excepting case study. Of the five grounded theory authors reviewed, only Charmaz uses the term. Instead, grounded theory authors use the alternative terms sampling methods, sampling techniques, forms of sampling, or data gathering strategies when conveying guidance on how to sample. In phenomenology, sampling strategy is not mentioned by any of the authors reviewed, who instead describe methods of choosing a sample, or approaches to sampling. In case study, all three major authors describe sampling strategies that comprise guidance for how to select data sources.

In conclusion, although the idea of an explicit sampling strategy is well known from a general qualitative methods and case study perspective, this language is not inherent in the commonly employed traditions of grounded theory and phenomenology. This represents a potential pitfall for students and researchers, who might use the language about qualitative sampling they are most familiar with (preferring terms like sampling strategies) even though this language might be inconsistent or absent from the methods literature of their chosen research tradition. Whenever authors use different sets of terminology to describe sampling methods in a single research report or proposal, readers may find it difficult to reconcile these terms unless the authors clarify the relationship between them.

Purposeful Sampling

As noted previously, usage of the term purposeful sampling, and the subtypes of purposeful sampling strategies that it encompasses, is of interest because Patton's typology of purposeful sampling strategies (Patton, 1980, 1990, 2002, 2015) has been so influential. Purposeful sampling is probably the most commonly described means of sampling in the qualitative methods literature today. Perhaps reflecting an awareness of this influence, Patton expanded his typology from 16 purposeful sampling options in the third edition (2002) to 40 options in the fourth edition (2015).

To provide essential context for this topic, we reviewed some of the general qualitative methods literature referring to purposeful or purposive sampling (Chein, 1981; Goetz & LeCompte, 1984; Kuzel, 1999; LeCompte et al., 1993; Lincoln & Guba, 1985, 1989; Miles et al., 2014; Morse, 1994; Patton, 1980, 1990, 2002, 2015; Ritchie & Lewis, 2003). As with Patton (Patton, 2015) and others (e.g., Teddlie & Yu, 2007), we consider the terms purposeful and purposive sampling to be equivalent. Here we follow Patton's convention, preferentially using the term purposeful (Patton, 2015, p. 265). Note, the term purposive does not necessarily imply qualitative sampling any more than the term purposeful because the former has been previously applied to forms of representative sampling used in quantitative research (Chein, 1981; Patton, 2015).

Patton (2015) provides the following description of purposeful sampling: "The logic and power of purposeful sampling lie in selecting information-rich cases for in-depth study. Information-rich cases are those from which one can learn a great deal about issues of central importance to the purpose of the inquiry... Studying information-rich cases yields insights and in-depth understanding" (p. 264). Patton (2015) further specifies that, according to his use of the term, *purposeful sampling* applies specifically to qualitative research, "I introduced *purposeful sampling* as a specifically qualitative approach to case selection" (p. 265).

Of the three traditions reviewed, there is little usage of the term purposeful or purposive in relation to sampling in grounded theory (only in Corbin & Strauss, 2008, 2015; Strauss & Corbin, 1998) or phenomenology (only in Cohen et al., 2000; van Manen, 2014). Of these two traditions, only van Manen (2014) suggests a definition for purposive sampling, although he suggests it may not be applicable to phenomenology: "The notion of purposive sampling is sometimes used to indicate that interviewees or participants are selected on the basis of their knowledge and verbal eloquence to describe a group or (sub)culture to which they belong. This is helpful for ethnographic-type studies, but, of course, phenomenology is not ethnography" (p. 353).

In contrast, within case study, all three included authors promote purposeful sampling. Yin (2011), for example, defines purposeful sampling as "The selection of participants or sources of data to be used in a study, based on their anticipated richness and relevance of information in relation to the study's research questions" (p. 311). Yin's definition is similar to others we reviewed from the general qualitative methods literature with respect to an important shortcoming—it lacks sufficient conceptual clarity to allow for adequate classification of all available sampling strategies as either purposeful or non-purposeful.

The lack of definitional clarity is further reflected by an inconsistency among case study authors regarding what qualifies as purposeful. For example, according to Yin (2011) "Purposive sampling differs from several other kinds of sampling, snowball sampling, and random sampling" (p. 311). Merriam, by contrast, counts snowball sampling as a prominent form of purposeful sampling (2009, p. 79). Authors also treat theoretical sampling inconsistently: Merriam (2009) seems to exclude it by reasoning that purposeful sampling happens "before the data are gathered" (p. 82). Patton, meanwhile, includes theoretical sampling in his typology of purposeful sampling strategies (1990, 2002, 2015).

Disagreement about what qualifies as purposeful sampling extends into the general qualitative research methods literature. While many of the published typologies of purposeful

sampling strategies can be traced to Patton's list, there are some variations in similar lists published by other authors (notably among earlier publications such as Chein, 1981; Goetz & LeCompte, 1984; LeCompte et al., 1993; Lincoln & Guba, 1985).

Some authors argue that all sampling strategies are, in some sense, purposeful. Guba and Lincoln (1985) suggest that, "All sampling is done with some purpose in mind," even if it is to represent a population through random sampling as in quantitative research (p. 199). It is for similar reasons that LeCompte and colleagues (1993) take issue with the arbitrariness of the purposeful-purposive label, calling it "misleading" for implying that certain forms of sampling are non-purposeful (p. 69).

In our review, we observed important inconsistencies and ambiguities in the definitions for specific purposeful sampling strategies. For example, authors have implied at least three definitions for maximum variation sampling, suggesting it involves selecting outlier cases at the far ends of a range (Miles et al., 2014, p. 32), selecting heterogeneous examples throughout the possible range (Patton, 2015, p. 283), or that its purpose is to achieve representativeness (LeCompte et al., 1993, pp. 72-73).

In conclusion, although discussion of purposeful sampling is quite prominent in the general qualitative methods literature, among the three traditions reviewed it is only significantly addressed in case study. Moreover, the term purposeful sampling is fraught with ambiguity and lack of clarity. This has two important implications. First, the arbitrariness and lack of agreement among methods authors regarding what qualifies as purposeful sampling compromises the clarity and utility of this concept. Similarly, we observed a general lack of consistency among the definitions of certain specific purposeful sampling strategies included in typologies offered by some case study and general qualitative methods authors, and the original descriptions of the same purposeful sampling strategies provided by earlier authors. These inconsistencies throughout the literature can ultimately render these different purposeful sampling strategies more confusing than helpful if the goal is to establish a common language for communicating about sampling in qualitative research.

Second, in light of these ambiguities, we suggest that whenever researchers describe a sampling process as purposeful they should describe what this means in their specific context, rather than simply state that purposeful sampling was employed. In neglecting to do so, researchers fail to provide any information that is precise enough for judging the rigor of their study. In fact, they fail to convey anything concrete or meaningful about how sampling was conducted at all, particularly how or whether their approach differs from *convenience sampling*—the practice of "doing what's fast and convenient" (Patton, 2002, p. 228), historically positioned by Patton (1980, 1990, 2002, 2015) as least desirable because it is neither purposeful nor strategic, although it "is probably the most common sampling strategy" (Patton, 2002, pp. 228-229).

Theoretical Sampling

Although the concept of theoretical sampling originated with grounded theory (Glaser & Strauss, 1967), it has become more broadly influential as authors make increasing reference to it in the general qualitative methods literature outside grounded theory. We therefore sought to summarize how the influential grounded theory developers defined theoretical sampling. All grounded theory authors reviewed except Clarke (i.e., Glaser, Strauss, Corbin, and Charmaz) provide implicit or explicit statements useful for defining theoretical sampling. We carefully examined the consistencies we observed in wording to identify essential elements from which we constructed the following consolidated definition for theoretical sampling: A process in which data gathering is guided by the evolving theory and

the aim is to develop categories in terms of their properties and dimensions and integrate those categories (i.e., relate them to each other within the theory being developed).

Because this definition was derived from highly foundational and influential literature in grounded theory, we used it as a standard to evaluate other definitions of theoretical sampling provided by authors outside grounded theory. We found that definitions available in case study and some of the general qualitative methods literature lacked consistency and oversimplified the concept. While non-grounded theory authors all correctly portray theoretical sampling as involving sampling decisions made after some data are already collected (what we define as ongoing sampling, below), several fail to specify any additional elements essential to our consolidated definition. For example, non-grounded theory authors regularly fail to acknowledge that theoretical sampling is intended specifically for developing or integrating conceptual categories within a study, rather than simply to follow leads in the data to select the next data source. In a strict sense, such definitions are distortions of the original meaning conveyed by the major grounded theory authors.

Another important issue regarding theoretical sampling arose from reviewing grounded theory authors' descriptions. We found that the sampling unit (what is sampled theoretically) is not articulated clearly and consistently across grounded theory methods publications. This issue is discussed in the next topic section, which also considers the problem of defining sampling units more broadly in the two other traditions (phenomenology and case study) and qualitative research in general.

Sampling Units

The nature of the sampling unit (or what is selected when sampling is carried out) was straightforward to discern for two research traditions. In phenomenology individual people are sampled, while in case study either whole cases or the data sources within the cases are sampled (Table 2).

Careful examination of the grounded theory literature, however, revealed that the nature of the sampling unit in theoretical sampling is not consistently clear. The variations in what authors say should be selected in theoretical sampling include the following:

- “groups” (Glaser, 1978, p. 42; Glaser & Strauss, 1967, p. 47) defined as “aggregates or single people” (Glaser & Strauss, 1967, p. 47)
- “sample incidents, events, or happenings and not persons per se...[which] represent situations” (Strauss & Corbin, 1998, p. 202)
- “concepts and not people, per se” (Corbin & Strauss, 2015, p. 135)
- “people, events, or information to illuminate and define the properties, boundaries and relevance of this category or set of categories” (Charmaz, 2014, p. 345)

Additionally, several grounded theory authors describe how theoretical sampling should involve sampling flexibly from multiple sources (Charmaz, 2003, 2014; Clarke, 2005; Glaser 1978, 1998; Glaser & Strauss, 1967). For example, Glaser (1998) describes how “Theoretical sampling takes *all as data*,” listing the myriad places where “slices of data” (a term earlier used in Glaser & Strauss, 1967, p. 65) can be found: “interviews, casual comments, observations, reports, manuals, files, newspaper articles, tables, and charts etc.” (p. 159). Another important data source that multiple authors describe sampling from is *secondary data*, or data previously collected within another research project (Clarke, 2005; Corbin & Strauss, 2008, 2015; Glaser & Strauss, 1967; Glaser 1978; Strauss & Corbin, 1998).

Based on the variations above, theoretical sampling appears to involve the selection of two different, but not necessarily incompatible possibilities. First, in some descriptions, theoretical sampling implies the selection of groups, persons, or varied data types—in other words, *data sources* are the sampling units. Alternatively, theoretical sampling appears to involve the selection of specific *examples of concepts* or categories—in which case, it is not data sources but rather specific pieces of illustrative data (whatever their source) that are the true objects of sampling.

Sampling is more commonly understood to stand for the first of these possibilities—the selection of data sources—which is consistent with the Merriam-Webster definition of sampling and the broad definition we abstracted (see *Definitions of Sampling*). By contrast, the alternative possibility regarding what is sampled in theoretical sampling (i.e., concepts or categories) is more abstract and difficult to apprehend. Fortunately, some grounded theory authors have provided some concrete descriptions of sampling examples of a category. Corbin (2008), for instance, describes sampling *examples of concepts* by encouraging participants to share instances of relevant experiences by revising “the questions to be asked in the next interview or observation...based on what was discovered in the previous analysis,” or by literally searching sources of previously collected data for “data about a concept” (p.145).

Although rare, one can also find descriptions of sampling in the latter, more obscure sense—selecting examples of a concept or category—in the general qualitative methods literature. Cook and colleagues (Cook, Leviton, & Shadish, 1985) provide an especially helpful description; they differentiate explicitly between sampling in the typical sense from “populations of persons and settings,” and sampling “operational instances of constructs” where there is “no concrete target population” (p. 763). On careful inspection of the grounded theory literature, however, we found no author who makes it explicitly clear which of the two possible types of sampling units discussed above is actually selected in theoretical sampling, or whether theoretical sampling can entail selecting both.

Making the above distinction explicitly clear would be helpful for students and researchers seeking to develop their understanding of theoretical sampling. If one understands theoretical sampling to imply the selection of instances of a category rather than data sources, it follows that although it is wise to consider different data types when searching for examples of a concept or category (e.g., stories of loss can be found in interviews, or memoir-type documents), these different data types are not technically the target of sampling—i.e., the sampling unit. Some interviews or documents, for example, will contain no instances of a concept, while others will contain one or multiple instances of it. Conversely, it is generally not an entire data source but rather only a portion of it that comprises the operational instance of the concept or category one is sampling. In an interview, for example, the instance could be a brief phrase or a dominant story spanning most of the transcript.

Saturation

Saturation is an important topic because it is so widely discussed in the general qualitative methods literature on sampling (e.g., Lincoln & Guba, 1985; Morse, 1994, 1995, 2007; Sandelowski, 1995). There, it usually refers to reaching a point of informational redundancy where additional data collection contributes little or nothing new to the study. We label this particular form of saturation, *data saturation* to differentiate it from the grounded theory concept of *theoretical saturation*, described further below. Saturation has also become widely recognized as a guide or indicator that sufficient data collection has been achieved (discussed under Sample Size, below).

On reviewing the three research traditions, there was almost no mention of saturation outside of grounded theory. One case study author, Merriam (2009), mentions the term,

referring specifically to the concept of data saturation. Among the phenomenology publications reviewed, only van Manen (2014) employs the term, explaining how “data saturation” is irrelevant to phenomenology (p. 353). Meanwhile, Cohen (2000), although she does not use the term saturation, describes how reaching a point where “nothing new” is encountered (implying the concept of data saturation) usually does not happen in hermeneutic phenomenology (p. 55). This noteworthy point sets phenomenology apart, because stopping short of saturation is generally discouraged in most other qualitative research traditions.

In grounded theory, descriptions of saturation focus almost entirely on the concept of theoretical saturation, which is defined specifically and fairly consistently across the main authors who discuss it (Glaser, Strauss, Corbin, and Charmaz). Glaser and Strauss (1967), for example, define theoretical saturation as when “...no additional data are being found whereby the sociologist can develop properties of the category” (p. 61). Notably, theoretical saturation is an idea these authors all apply to individual categories and their relationships within a grounded theory study. Some authors suggest that it is not necessary to strive for equally complete theoretical saturation of all categories: “Core theoretical categories, those with the most explanatory power, would be saturated as completely as possible” (Glaser & Strauss, 1967, p. 100). Charmaz (2014) distinguishes theoretical saturation from the concept of data saturation, emphasizing, “The common use of the term *saturation* [i.e., to imply data saturation] refers to nothing new happening...Theoretical saturation is not the same as witnessing repetition of the same events or stories....” (p. 213).

Sample Size

Whereas quantitative research requires sufficiently large sample sizes to produce statistically precise quantitative estimates, smaller samples are used in qualitative research. This is because the general aim of sampling in qualitative research is to acquire information that is useful for understanding the complexity, depth, variation, or context surrounding a phenomenon, rather than to represent populations as in quantitative research.

The commonly proposed criterion for determining when sufficient sample size has been reached in qualitative research is saturation (Charmaz, 2003; Glaser, 1992; Glaser & Strauss, 1967; Lincoln & Guba, 1985; Merriam, 2009; Morse, 1995), described previously. Several authors, however, have argued this can be problematic given researchers’ tendency to arbitrarily claim saturation in justifying premature closure of their data collection activities (see for example, Charmaz, 2006, 2014; Dey, 1999). Saturation is not the only benchmark, however, because for Cohen (2000, p. 56): “The scientifically important criterion for determining sample size for the hermeneutic phenomenological researcher is the intensity of the contact needed to gather sufficient data regarding a phenomenon or experience. This intensity is measured in both length of time it takes for an event to occur...and how often a participant should be contacted to understand the changes undergone.”

However sufficient sample size is defined, qualitative methods authors generally agree that it is impossible to specify in advance of a study (for example, Colaizzi, 1978; Glaser & Strauss, 1967). Despite this, several authors recognize the pragmatic need to provide sample size estimates in funding proposals (Cohen et al., 2000; Glaser, 1998). In Table 3 we summarize published sample size suggestions from within the three traditions. Note that some authors represent sample size estimates as the number of interviews rather than the number of participants. Also, as the quotes in Table 3 illustrate, authors employ abundant qualifications and tentative language, underscoring the imprecision of these numbers. It may be useful to refer to Table 3 to provide literature-supported ballpark estimates of appropriate sample sizes when preparing research proposals.

Table 3. Flexible Sample Size Estimates Suggested by Authors from Three Research Traditions

Tradition	Sample Size Estimate	Quotes
Grounded theory	At least 25 interviews	“A small study with modest claims might allow proclaiming saturation early... . A study of 25 interviews may suffice for certain small projects but invites skepticism when the author’s claims are about, say, human nature or contradict established research” (Charmaz, 2014, p. 214).
	>6 interviews	“It is rare that five or six one-hour interviews will provide sufficient data to lead to saturation” (Corbin & Strauss, 2015, p. 140).
Phenomenology	Hermeneutic phenomenology: <10 participants, if following intensely; >30 participants, if following less intensely	Estimates were suggested by examples (Cohen et al., 2000, p. 56): “Interviewing at least five would not ensure that I would have a survivor in my sample, but it would increase my chances. I wanted to follow fewer than 10 because I wanted to follow each informant intensely rather than spread my attention over a larger group...A review of the literature on caregivers of dying patients led me to believe that the experience was not as intense and variable day to day as having a bone marrow transplant. Thus, I believed I could use a larger sample, 30 at least.”
	Descriptive phenomenology: Around 12 participants	“Regarding the number of subjects selected, this depends on various factors that must be tried out in each research project. In this research I used 12 subjects” (Colaizzi, 1978, p. 58).
Case study	Multiple case study: 4-10 cases	“The benefits of multicase study will be limited if fewer than, say, 4 cases are chosen, or more than 10... . 15 or 30 cases provide more uniqueness of interactivity than the research team and readers can come to understand. But for good reason, many multicase studies have fewer than 4 or more than 15 cases” (Stake, 2006, p. 22).
	Within a single case: 25-50 units (data sources)	“The number of interviewees, practices, policies, or actions included in a study can easily fall in the range of 25-50 such units...” This depends on, “the complexity of your study topic and the depth of data collection from each unit” (Yin, 2011, p. 91).

Timing of Sampling Decisions

If the aims and procedures of any approach to sampling are to be thoroughly understood, it is necessary for methods authors to consider and specify when in the research process sampling decisions should be made. Failing to do so leaves too much uncertain regarding how to implement a proposed sampling approach. We defined three categories for classifying published descriptions of individual types of sampling according to when authors suggest the corresponding sampling decisions could be made: *a priori*, involving decisions made before the collection of substantive data begins; *ongoing*, involving decisions made after or in response to such data collection; and *either* (either, and sometimes both, a priori or ongoing sampling decisions may be involved). Some authors, however, leave the timing unclear or unspecified in their descriptions. We review below how the timing of sampling decisions has been addressed within each of the three research traditions.

Ongoing sampling. Ongoing sampling is most prominently specified in grounded theory, whose authors consistently portray theoretical sampling as the major form of sampling. In theoretical sampling (described previously), it is clear that new data are selected in response to data already collected.

In phenomenology, Cohen and colleagues (2000) were the only authors to describe an ongoing form of sampling. Their description of a “two-tier system” for selecting informants involves both a priori and ongoing sampling decisions—following initial selection of a large group of participants to interview, the researcher selects a smaller group to follow up based on themes they raised (Cohen et al., 2000, p. 51). They imply the necessity of ongoing sampling decisions within hermeneutic phenomenology in other comments, such as the following: “Exploring who shares a way of talking about a particular experience cannot be determined before the researcher enters the field” (p. 54).

In case study, although each author describes at least one type of sampling classified as ongoing, the total number of such descriptions (five) is negligible compared to the many types of sampling they describe that are not ongoing. Moreover, the available descriptions are brief. Additionally, there is little consensus among authors within this tradition in terms of what types of sampling are presented as ongoing—excepting snowball sampling, an ongoing sampling strategy described by two authors.

Overall therefore, ongoing sampling is much less emphasized in phenomenology and case study than in grounded theory. This does not necessarily mean, however, that ongoing sampling decisions are unimportant to phenomenology and case study research or that researchers within these two traditions necessarily make such decisions infrequently. Greater acknowledgment within these two research traditions of the role of ongoing sampling decisions, including more detailed guidance about the forms that ongoing sampling can take, would provide valuable clarity for qualitative researchers and students.

A priori sampling. In reviewing a priori forms of sampling across the three traditions, we were initially interested in whether grounded theory authors consistently discuss the necessity and means for implementing sampling decisions prior to theoretical sampling. While all the reviewed grounded theory authors acknowledge the existence of a priori or initial sampling, they are inconsistent regarding whether it is appropriate in grounded theory—compare Glaser (Glaser, 1992, p. 105) to Glaser and Strauss (Glaser & Strauss, 1967, p. 47). Those authors who support the appropriateness and necessity of initial sampling in grounded theory provide almost no clear guidance on how to implement it (Clarke, 2005; Corbin & Strauss, 2008, 2015; Strauss & Corbin, 1998). Charmaz (2014) provides perhaps the clearest suggestion: “For initial sampling, you establish sampling criteria for people, cases, situations, and/or settings before you enter the field” (p. 197).

With the exception of Cohen (2000), the phenomenologists reviewed make no mention of the timing of sampling decisions (Colaizzi, 1978; Giorgi, 2009; van Manen, 1997). Similarly, in case study, the a priori timing of sampling decisions is rarely specified. There are two exceptions: First, Merriam (2009) defines purposeful sampling to include only a priori strategies (p. 77; although she later includes an ongoing sampling type—snowball sampling—as purposeful). Second, Yin describes a two-stage screening procedure for selecting cases that is consistent with true a priori sampling (2009, p. 92; 2014, p. 95).

One case study author, Merriam (2009), describes several of the purposeful sampling strategies previously outlined by Patton (1980, 1990, 2002, 2015). Some of these commonly described sampling strategies (e.g., typical case, extreme case, maximum variation) involve selecting sampling units (whether data sources or cases) from a larger pool of candidates by applying selection criteria—specific properties or characteristics possessed by some but not all sampling units in the pool. Thus, one first specifies one or more explicit properties or characteristics that will be used as the basis for defining cases as typical, extreme, or maximally varied (according to the sampling strategy chosen); subsequently, one applies these defined criteria when selecting units from the greater pool or population. Although the selection criteria may often be decided a priori, in describing the above sampling strategies Merriam fails to

specify if the decisions to select (include or exclude) sampling units according to pre-specified criteria are made a priori or while data collection is ongoing.

True a priori sampling based on pre-specified criteria requires two conditions: the presence of a sampling frame (a complete list of the eligible sampling units in the pool available to be sampled), and definitive information about each available sampling unit concerning the criteria to be used for selection. Morse has described how the availability of both is necessary in her strategy of qualitative quota sampling (Morse, 1991, p. 128). Ritchie and Lewis also describe “sample frames” at length, suggesting that advance knowledge of potential sample members is a requirement for purposeful sampling and without it an extra step generally needs to be designed to collect relevant information about the possible units to be sampled from (Ritchie & Lewis, 2003, pp. 86-97). Since comprehensive participant lists (necessary to construct sampling frames) and the relevant participant data (necessary for applying specified selection criteria) are not routinely available prior to data collection in many qualitative research contexts, criteria-based sampling often cannot be feasibly implemented in a strict a priori fashion. To more clearly understand how criteria-based sampling strategies might be implemented a priori, we suggest there is need for further explicit guidance regarding how, or under what conditions, one can feasibly apply pre-specified criteria to select sampling units from a greater pool prior to data collection.

Important issues arise when using pre-specified criteria to select human participants, and definitive participant data for applying selection criteria is lacking. In such cases, researchers must either sample by convenience (accepting the next qualifying participant who becomes available) or exclude at least some individuals who do not meet selection criteria from the study according to two possibilities: Pre-recruitment data being absent, researchers can either exclude potential participants without their knowledge before inviting them to participate, in which case researchers must make judgments based on incomplete observation and personal assumptions that some candidates do not meet criteria; or they can exclude participants after inviting their participation, effectively denying continued participation to some volunteers post-recruitment after finding that they do not qualify based on some kind of preliminary data collection that precedes primary data collection for the study. Both forms of exclusion are problematic. First, by excluding participants according to criteria requiring prior assumptions, researchers risk ignoring excellent and knowledgeable participants (Morse, 1991, p. 128). Second, excluding participants after they have volunteered is potentially unethical because it may offend volunteers who discover they did not qualify for a study they committed to participate in, producing negative associations with research participation. Such issues represent the kind of important considerations that methods authors should ideally explicate for their readers when describing sampling strategies that may be used a priori.

Conclusion

Since analytic comments discussing the findings were already provided within each topic section, we provide here only a brief summary of those conclusions and discuss some of the more general implications of the article. To our knowledge, this represents the first methods overview to summarize and provide a critical analysis of the sampling-related guidance available within the influential methods literature of three qualitative research traditions: grounded theory, phenomenology, and case study. Together, the eight topics provide broad coverage of the key conceptual domains of qualitative sampling. Through systematic comparison among traditions we have explicitly characterized several noteworthy variations in conceptions of and approaches to sampling. These include important differences in the definitions and usage of sampling-related terminology, differences in the nature of sampling units, variation in the feasibility and forms of saturation, and differences in emphasis on the

timing of sampling decisions. These variations therefore also provide a useful basis for differentiating each tradition.

An important limitation of this study relates to our exclusion of less influential methods publications and our decision not to consider the methods sections of empirical study reports (see Methods). As a result, we have not covered the full range of innovative ideas regarding sampling, nor alternative interpretations of the publications we reviewed as have been published by other authors in this more expansive literature. The scope of the literature that we included was limited partly for feasibility reasons, since including all empirical study reports in the three qualitative traditions, for example (including journal articles, monographs, books, theses, and conference proceedings), would have been unmanageable. We argue, however, that focussing on the influential methods literature has resulted in a useful synthesis of the most common and well known ideas regarding sampling. Our selective coverage of the literature, however, leaves multiple potential opportunities for future analysis of the literature regarding aspects of sampling in qualitative research. For example, an analysis of the methods sections of published grounded theory studies, including dissertations and theses, would be useful to establish the range of researcher interpretations of the concept of theoretical sampling, with attention to the clarity of researchers' understandings of *what* is sampled in this approach.

Finally, we have identified in this article several issues involving the clarity, consistency and comprehensiveness of the guidance available within one or more of the three qualitative research traditions reviewed regarding certain sampling topics—specifically the topics of purposeful sampling, theoretical sampling, sampling units, and the timing of sampling decisions. While these currently represent potholes of varying sizes for individual researchers to be mindful of, they also reflect opportunities for research methods authors to provide needed guidance to build consensus and clarify our collective understanding of how sampling might best be carried out within specific research traditions or qualitative research more generally.

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