

Purposeful Sampling in Qualitative Research Synthesis

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ABSTRACT

Informed decisions about sampling are critical to improving the quality of research synthesis. Even though several qualitative research synthesists have recommended purposeful sampling for synthesizing qualitative research, the published literature holds sparse discussion on how different strategies for purposeful sampling may be applied to a research synthesis. In primary research, Patton is frequently cited as an authority on the topic of purposeful sampling. In Patton's original texts that are referred to in this article, Patton does not make any suggestion of using purposeful sampling for research synthesis. This article makes a unique contribution to the literature by examining the adaptability of each of Patton's 16 purposeful sampling strategies to the process of qualitative research synthesis. It illuminates how different purposeful sampling strategies might be particularly suited to constructing multi-perspectival, emancipatory, participatory and deconstructive interpretations of published research.

Keywords: Purposeful sampling, qualitative research synthesis, meta-synthesis, meta-study, qualitative meta-analysis.

Research synthesis is a special type of research review that is not only descriptive, informative and evaluative, but also *connective* (Mays, Pope, and Popay, 2005). 'Synthesis refers to making a whole into something more than the parts alone imply' (Noblit & Hare, 1988, p. 28). The purpose of research synthesis is to produce *new* knowledge by making explicit connections and tensions between individual study reports that were not visible before. It involves purposeful selection, review, analysis and synthesis of primary research reports on a similar topic. In a rigorous synthesis, readers are provided with sufficient information about the synthesis process so that they can make informed decisions about the extent to which the synthesized findings may be adapted to their own contexts.

With the growth of research activity in recent years, each topic tends to be examined by different researchers in diverse contexts, employing a wide range of methods, invariably resulting in disparate findings on the same topic. Making useable sense of such complex bodies of research can be an overwhelming experience for most stakeholders. These stakeholders include policymakers, administrators, educators, health professionals, funding agencies, researchers, students, patients, various advocacy groups and the wider community. Research syntheses can play an important role in disseminating research knowledge and in shaping further research, practice and public perception. Hence, issues of ethical representations (Suri, 2008) and methodological rigour in research syntheses are as crucial as they are in primary research (Petticrew & Roberts, 2006).

Much of the growing body of literature on research synthesis methods has been dominated by quantitative researchers. In the last two decades, however, an increasing number of researchers from education and healthcare have recognised the importance of synthesizing qualitative research. These scholars acknowledge that the emphasis of qualitative research on particularities and complexities of individual contexts is at odds with any synthetic effort. Yet they assert that some form of synthesis is essential to enhance the practical value of

qualitative research in policymaking and informing practice at a broader level (Suri & Clarke, 2009). Stressing that any effort of synthesizing qualitative research should be essentially interpretive rather than aggregative, they have proposed interpretive methods of research synthesis under various names, such as meta-ethnography (Noblit & Hare, 1988), cross-case analysis (Miles & Huberman, 1994), meta-analysis of qualitative research (Jensen & Allen, 1994), qualitative meta-synthesis (Sandelowski, Docherty, and Emden, 1997; Zimmer, 2006), qualitative systematic review (Booth, 2001), meta-study (Paterson, Thorne, Canam, and Jillings, 2001), and qualitative research synthesis (Major & Savin-Baden, 2010).

Several other methodologists argue that a comprehensive synthesis of research should include both quantitative and qualitative studies. They reason that quantitative methods are inappropriate to synthesize methodologically diverse research as quantitative research synthesis methods assume a certain degree of methodological and contextual homogeneity across studies, which is impractical. They assert that only qualitative synthesis methods are suitable for synthesizing methodologically diverse quantitative and qualitative research (Suri & Clarke, 2009). Examples of qualitative methods proposed for synthesizing methodologically diverse research include qualitative meta-analysis (Kasworm, 1990), exploratory case-study oriented review (Ogawa & Malen, 1991), interpretivist-oriented review (Eisenhart, 1998), meta-synthesis (Bair, 1999) and realist synthesis (Pawson, 2006).

There is yet another group of methodologists, for example Lather (1999) and Schwandt (1998), who make a case for post-structural reviews of research which they insist are not research syntheses per se as they focus on identifying the cracks, or the gaps, in a field rather than producing a meta-narrative. Unlike Lather (1999) and Schwandt (1998), I have deliberately used the term 'research synthesis' as a blanket term, which includes critically oriented post-structural reviews, to reclaim its usage for an inclusive context rather than being limited to only those syntheses that produce meta-narratives. I have retained the term research synthesis 'to both circulate and break with the signs that code it' (Lather, 1993, p. 674) by rupturing the exclusive notion of research synthesis as an objective and reductionist aggregation of research findings.

I have used the term *qualitative research synthesis* as an umbrella term for all qualitative methods of synthesizing research which are informed by interpretive, critical, emancipatory and/or postmodern sensibilities. Primary research included in a qualitative research synthesis may be qualitative and/or quantitative, depending on the purpose of the synthesis.

METHODOLOGICAL UNDERPINNINGS

This article is based on a larger project in which a *methodologically inclusive research synthesis (MIRS)* framework was conceptualised (Suri, 2007) by distilling and synthesizing diverse ideas, theories, and strategies from the extensive bodies of literature on research synthesis methods and primary research methods. The MIRS framework was developed to address the following overarching question: 'Given that contemporary educational research is marked by diversity, complexity, and richness of purposes, methods, and perspectives, how can such variety and complexity be accommodated and reflected at the level of synthesizing educational research?' In developing the MIRS framework, a combination of purposeful sampling strategies were employed, some of which are described later in this article to illustrate the applicability of various purposeful sampling strategies.

The goal of this article is to contest the notion that exhaustive sampling is the only legitimate form of sampling for research synthesis. The question that is addressed here is not

'what sampling strategies are typically employed by qualitative research synthesists?' Rather, by drawing upon hypothetical examples, the question that is being addressed is 'how might different purposeful sampling strategies be adapted to expand possibilities within research syntheses?' It is hoped that the readers will use this discussion as a departure point to synthesize research for a wide range of purposes, many of which are typically not attempted by contemporary research synthesists.

I begin this article by building a case for purposeful sampling in research synthesis. Then I draw on the concepts of data saturation and data sufficiency for guiding decisions related to enacting closure when searching for relevant evidence in research synthesis. I conclude this article by outlining key questions which must be considered in making strategic decisions in relation to sampling in research synthesis. In the literature on primary research methods, Patton (1990, 2002) has provided a comprehensive discussion of purposeful sampling and is frequently cited as an authority on purposeful sampling:

The logic and power of purposeful sampling lie in selecting *information-rich cases* for study in depth. Information-rich cases are those from which one can learn a great deal about issues of central importance to the purpose of the inquiry, thus the term *purposeful sampling*. Studying information-rich cases yields insights and in-depth understanding rather than empirical generalizations (Patton, 2002, p. 230, emphasis in original).

Patton has suggested 16 strategies for purposeful sampling in qualitative research, each of which is intended to serve a different purpose. In Patton's original texts that I refer to, Patton does not make any suggestion of using purposeful sampling in research syntheses. Patton's original texts exclusively discuss utilisation of purposeful sampling in primary research. In this article, I explore the potential adaptation of Patton's concept of purposeful sampling to the process of a research synthesis by using three techniques. First, the terms that I use here are the verbatim terms that Patton (2002) has used to distinguish between the 16 strategies under the broad umbrella of purposeful sampling. Second, I seamlessly integrate Patton's ideas in my discussion of purposeful sampling in research syntheses. In many instances, I have adapted Patton's quotes to the process of a research synthesis beyond their originally intended context of primary research. Third, I illustrate with examples how each of Patton's 16 strategies may be utilised in syntheses with varied purposes.

BUILDING A CASE FOR PURPOSEFUL SAMPLING IN RESEARCH SYNTHESIS

Research syntheses on the same topic conducted for different purposes can have different sampling strategies, each being equally legitimate but tailored to serve the different purposes. Synthesists must carefully identify sampling strategies that are conceptually aligned with the synthesis purpose, that credibly and sufficiently address the synthesis purpose, and that are feasible, ethical and efficient (Kemper, Stringfield, and Teddlie, 2003). Synthesists must also delineate the caveats associated with their sampling strategies and speculate on how these caveats may impact upon the synthesis findings. In doing so, it is worth reflecting on the politics of publishing: that is, who/what is more likely to get published. This involves being aware of various publication biases, that is, outcome bias, confirmatory bias, funding bias and methodological bias (for a methodologically inclusive discussion of these biases, see Suri, 2008). Synthesists must be reflexive about how these potential biases might impact

upon their synthesized product as well as how their synthesis might reify/contest some of these biases.

A rigorous research synthesis makes much more demand on time and resources when compared with *ad hoc* reviews (Elmore, 1991; Ogawa & Malen, 1991; Stock, Benito, and Lasa, 1996). Just as the perfect primary research study has never been conducted, neither has the perfect synthesis. The issue that confronts a synthesist is often 'how to maximise the quality of the synthesis within the available resources', rather than 'how to do the most rigorous synthesis'. Several primary researchers discuss various pragmatic constraints which must be kept in mind when identifying a suitable purpose for study (e.g. Blaxter, Hughes, and Tight, 2001). Research synthesists are also bound by the pragmatic constraints of time, resources and access to information and expertise (for a detailed discussion of these pragmatic constraints, see Suri, 2007). Often decision-makers and stakeholders want relevant, understandable, and accurate information which they can use soon. In many practical situations, synthesists may find that a highly rigorous approach is overly formalistic, too time consuming, and unnecessarily expensive within the available resources and deadlines (Patton, 1991, pp. 287-289).

Many research syntheses which attract large funding, such as the systematic reviews of the EPPI-centre, cost about £75,000 (Oakley, 2003, p. 28). Often these reviews tend to address the questions of politicians or other decision-making bodies who can provide adequate funds. Systematic reviewers typically aim for extensive sampling and assume sufficient access to financial resources, information and expertise. Unless synthesists strategically design syntheses within various pragmatic constraints, they may inadvertently contribute to the silencing of concerns of certain groups of stakeholders who cannot commission syntheses that require large scale funding.

Many qualitative research synthesists also question the viability of holistically synthesizing a large number of qualitative reports in a way that adequately attends to the intersections between the findings, contexts, epistemologies, ontologies and methodologies of individual studies. These qualitative synthesists recommend that an in-depth synthesis of purposefully selected studies is more desirable than a superficial synthesis of a large number of studies (e.g. Bondas & Hall, 2007; Booth, 2001; Lloyd Jones, 2004; Noblit & Hare, 1988; Pawson, Greenhalgh, Harvey, and Walshe, 2005). Even though several qualitative research synthesists have recommended purposeful sampling in research syntheses, the published literature holds sparse discussion on how different strategies for purposeful sampling might be applied to research synthesis. In the next section, I attempt to partially fill this gap in the literature by discussing how different purposeful sampling strategies may be adapted to synthesize research for facilitating understanding, participation, emancipation and/or deconstruction.

EXAMINING THE ADAPTABILITY OF PATTON'S PURPOSEFUL SAMPLING STRATEGIES TO QUALITATIVE RESEARCH SYNTHESES

Purposeful sampling requires access to key informants in the field who can help in identifying information-rich cases. Qualitative research synthesists can draw upon the 'invisible college' technique frequently utilised by quantitative researchers. A traditional invisible college involves a group of central figures investigating a particular field along with the numerous researchers who are in touch with any of these key researchers. Research retrieved through this channel is likely to be biased towards the beliefs prevalent among these key researchers (Rosenthal, 1994). Electronic invisible colleges include listservs or newsgroups, some of which might

focus on research while others might focus on contemporary practices (Cooper, 1998). Listservs with a research focus can be useful in identifying primary research studies or previous syntheses. Practice-focused listservs can be useful in identifying reports that are particularly valued among practitioners or in identifying the synthesis questions that might be of particular interest to practitioners. Browsing through listservs can also help identify researchers and practitioners who have expertise in the substantive domain of interest. The synthesist can later contact these experts directly to request references to the specific studies on which their claims and opinions are based.

Extreme or Deviant Case Sampling

The extreme or deviant case sampling in a research synthesis would involve selecting 'illuminative cases' (Patton, 2002, p. 232) that exemplify contexts where an innovation was perceived notably as a success or a failure. The main weakness of extreme case sampling is its lack of generalisability through representativeness. This weakness is of less concern for synthesists who focus on *how things should be or could be* rather than *how things are*. This strategy would be particularly suitable for 'realist syntheses', proposed by Pawson (2006), which investigate how a program is likely to work under particular circumstances by examining successful as well as unsuccessful implementations of the program.

Intensity Sampling

Intensity sampling in a research synthesis would involve selecting studies that are 'excellent or rich examples of the phenomenon of interest, but not highly unusual cases... cases that manifest sufficient intensity to illuminate the nature of success or failure, but not at the extreme' (Patton, 2002, p. 234). To develop a comprehensive understanding of many educational changes, it is crucial to examine cases where these changes have been embedded thoroughly in the system over a sufficient period of time. However, such intense manifestation of an innovation can be cost-intensive and/or associated with high risk-factors. As a result, the innovation might be implemented with sufficient intensity in only a few studies. Many other studies might examine the implementation of the innovation over short durations of time with minimal interventions. As an example, a large number of studies have been conducted to investigate how students learn in collaborative environments. Given the individualistic nature of most high stake testing, most studies use collaborative learning strategies as an add-on to regular teaching and learning activities. Many students in these studies might engage with collaborative tasks superficially. In a small number of studies, the learning activities as well as assessment tasks have been revised intensely to reward collaboration. An in-depth synthesis of the latter type of studies would be particularly useful in illuminating a range of opportunities, challenges, advantages and disadvantages associated with curricula driven by an ethos of collaborative learning.

Maximum Variation (Heterogeneity) Sampling

A maximum variation sample is constructed by identifying key dimensions of variations and then finding cases that vary from each other as much as possible. This sampling yields: '(1) high-quality, detailed descriptions of each case, which are useful for documenting uniqueness, and (2) important shared patterns that cut across cases and derive their significance from having emerged out of heterogeneity' (Patton, 2002, p. 235). Employing maximum variation sampling, research synthesists can identify essential features and variable features of a phenomenon as experienced by diverse stakeholders among varied contexts to facilitate informed

global decision-making. Presuming that different study designs illuminate different aspects of a phenomenon, maximum variation sampling can be utilised to construct an holistic understanding of the phenomenon by synthesizing studies that differ in their study designs on several dimensions. In conceptualising the MIRS framework, I used a combination of sampling strategies, one of which is maximum variation sampling. I deliberately drew ideas from methods of primary research and research synthesis that were markedly different from each other on many dimensions.

Homogenous Sample

‘In direct contrast to maximum variation sampling is the strategy of picking a small, homogenous sample, the purpose of which is to describe some particular subgroup in depth’ (Patton, 2002, p. 235). Research synthesists are frequently criticised for ‘mixing apples and oranges’. Research synthesists can overcome this problem to some extent by selecting studies that are relatively homogenous in their study designs and conceptual scope. Homogenous samples can facilitate meaningful comparisons across studies. Underscoring the epistemological incommensurability of different qualitative methods, some qualitative research synthesists recommend a certain level of methodological homogeneity among primary research studies which are included in a qualitative research synthesis (e.g. Eastabrooks, Field, and Morse, 1994; Paterson et al., 2001). Homogenous samples are particularly suitable for *participatory syntheses* in which the synthesist co-synthesizes research with practitioners about a phenomenon that has direct implications for their practice (for a detailed discussion of participatory synthesis, see Suri, 2007). For instance, a group of secondary math teachers intending to introduce collaborative learning activities into their classroom might benefit more from co-synthesizing collaborative learning research in secondary math rather than collaborative learning research across all grade-levels and different disciplines.

Typical Case Sampling

The purpose of typical case sampling ‘is to describe and illustrate what is typical to those unfamiliar with the setting’. Typical cases are selected ‘with the cooperation of key informants’ or using ‘statistical data... to identify “average-like” cases’. When employing typical case sampling, it is crucial ‘to attempt to get broad consensus about which cases are typical—and what criteria are being used to define typicality’ (Patton, 2002, p. 236). Research synthesists can select typical primary research studies employed in the field with the cooperation of key researchers in the field to describe typical methodologies and study designs employed to examine the phenomenon. This would be particularly useful for studying how common themes recurring in the published literature might be related to the relative strengths and weaknesses of the typical methodologies or theories underpinning the typical studies.

Critical Case Sampling

Critical case sampling can facilitate ‘logical generalizations’ with the reasoning ‘that “if it happens there, it will happen anywhere,” or, vice versa, “if it doesn’t happen there, it won’t happen anywhere”’ (Patton, 2002, p. 236). Critical case sampling in a research synthesis might be employed to assist stakeholders in making informed decisions about the viability of an educational program. For example, consider an innovation that produces desirable outcomes, but is being rejected by many practitioners as they believe that its implementation requires substantial resources. A synthesis of primary research studies which describe in detail successful implementation of the innovation with minimal resources might be useful to al-

leviate the practitioners' resistance towards the innovation. Alternatively, consider an innovation which requires substantial financial resources. However, the proponents of the innovation assert that the innovation is cost-effective provided sufficient resources are invested in its implementation. In such an area, a research synthesist can selectively synthesize cases reported in primary research studies that were sufficiently endowed with resources to logically verify, or challenge, the claims made by those advocating the innovation.

Snowball or Chain Sampling

Snowball sampling involves seeking information from key informants about details of other 'information-rich cases' in the field. 'The chain of recommended informants would typically diverge initially as many possible sources are recommended, then converge as a few key names get mentioned over and over' (Patton, 2002, p. 237). Snowball sampling can be utilised by seeking information from various listservs to identify primary research reports that are frequently referred to by various stakeholders interested in the phenomenon. Even though snowball sampling can introduce an 'expert bias (e.g. preferences for large samples or frequently cited studies)' (Light & Pillemer, 1984, p. 40), it is particularly useful for capitalising on expert wisdom, identifying studies that are highly valued by different stakeholders and identifying studies outside the academic mainstream. Another way in which snowball sampling may be utilised in a research synthesis is based on the assumption that the most cited primary research reports are the most information-rich cases. The synthesist might identify the most cited primary research reports by 'footnote chasing', which involves searching the citation indices, or by browsing through the bibliographies of selected reports on the relevant topic: previous research syntheses, primary research reports, policy documents, papers written by practitioners and papers written for practitioners. Unlike footnote chasing for exhaustive sampling, footnote chasing for snowball sampling would involve locating the most cited papers. However, this approach can reinforce confirmatory bias where studies that agree with the prevalent wisdom are more likely to be published and cited while studies that contest the conventional wisdom are less likely to be published or cited (Suri, 2008). To overcome this problem, Booth (2001) suggests that we regard a key article as one which references a broad selection of key articles to demonstrate that the study is informed by a wide range of perspectives. However, Booth's suggestion can also be problematic as it may exclude methodologically rigorous and relevant studies which focus deeply, rather than broadly, on a certain aspect of the phenomenon studied.

Criterion Sampling

Criterion sampling involves reviewing and studying 'all cases that meet some predetermined criterion of importance' (Patton, 2002, p. 238). This approach is frequently employed by research synthesists to construct a comprehensive understanding of all the studies that meet certain pre-determined criteria. Most research synthesists employ criterion sampling by stating explicit inclusion/exclusion criteria which includes specifications for methodological rigour. It is crucial to reflect critically and realistically on the criteria being used, especially the criteria for methodological rigour. Very strict criteria for methodological rigour can result in inclusion of such a small number of studies that the transferability of synthesis findings becomes questionable. At the same time, including methodologically weak studies can also result in the synthesis findings being based on questionable evidence. Rather than looking for methodologically perfect studies, the synthesist must reflect on how the methodological specifications of the study might have influenced its report.

Theory-Based Sampling, Operational Construct Sampling, and Theoretical Sampling

Theory-based sampling involves selecting cases that represent important theoretical constructs about the phenomenon of interest. This is similar to operational construct sampling in which one selects cases that represent ‘real-world examples (i.e. *operational* examples) of the constructs in which one is interested’ (Patton, 2002, pp. 238-239, emphasis in original). Grounded-theorists define theoretical sampling as the sampling that is based on the concepts emerging from the data for the purpose of exploring ‘the dimensional range or varied conditions along which the properties of concepts vary’ (Strauss & Corbin, 1998, p. 73). Research synthesists who employ constant comparative methods or grounded-theory approaches can fruitfully utilise theoretical sampling to systematically elucidate and refine the ‘variations in, manifestations of, and meanings of a concept as it is found’ (Patton, 1978, p. 238) in the selected primary research studies. Many qualitative synthesists recommend theoretical sampling as a suitable option for research syntheses (Dixon-Woods, Agarwal, Jones, Young, and Sutton, 2005; Mays et al., 2005). For example, in their meta-study, Paterson and her colleagues (2001) draw on theory-based sampling or operational construct sampling by setting out operational definitions of the key constructs about the phenomenon of interest. The boundaries of these operational definitions are further articulated by explicitly stating inclusion/exclusion criteria in relation to selecting primary research reports for the synthesis.

Confirming and Disconfirming Cases

‘Confirmatory cases are additional examples that fit already emergent patterns; these cases confirm and elaborate the findings, adding richness, depth, and credibility’ (Patton, 2002, p. 239). Confirmatory cases may be sought in an openly ideological synthesis when the synthesist wishes to advocate a particular stance for ethical, moral and/or political reasons. A synthesist may also seek confirming cases in order to validate the perceptions of a particular group of marginalised stakeholders. Disconfirming cases ‘are the examples that don’t fit. They are a source of rival interpretations as well as a way of placing boundaries around confirmed findings’ (Patton, 2002, p. 239). To shake our complacent acceptance of popular myths and/or generalisations in a field, synthesists can exclusively seek primary research studies that disconfirm generalisations proposed in policy documents, previous syntheses or primary research studies.

Stratified Purposeful Sampling

‘Stratified samples are samples within samples’ where each stratum is ‘fairly homogenous’. The purpose of stratified purposeful sampling is ‘to capture major variations’ even though ‘a common core... may also emerge in the analysis’ (Patton, 2002, p. 240). Stratified purposeful sampling is useful for examining the variations in the manifestation of a phenomenon as any key factor associated with the phenomenon is varied. In a research synthesis, this factor may be contextual, methodological, or conceptual. It is particularly useful to study different models of implementing a particular teaching and learning strategy, such as distinct models of cooperative learning that are commonly used by teachers. Often, traditional reviewers tacitly draw on stratified purposeful sampling by clustering studies according to a key dimension of variation and then discussing each cluster in-depth. In developing the MIRS framework, I employed stratified purposeful sampling to select key publications from many distinct qualitative research traditions. By seeking input from qualitative researchers with diverse methodological orientations and reading general qualitative research methods

texts, I identified distinct strata of qualitative research methodologies and clusters of key texts within each stratum.

Opportunistic or Emergent Sampling

'Opportunistic, emergent sampling takes advantage of whatever unfolds as it unfolds' by utilising 'the option of adding to a sample to take advantage of unforeseen opportunities *after* fieldwork has begun' (Patton, 2002, p. 240, emphasis in original). Opportunistic or emergent sampling can be useful for synthesizing a research area which is at its exploratory stage, such as mobile learning, or when the synthesist does not have an emic or insider status in the relevant field of research. Emergent sampling is also suited to participatory syntheses where the synthesis purpose evolves in response to the changing needs of the participant co-synthesists (Suri, 2007). For instance, the purpose of a synthesis in the area of mobile learning might be guided by the key questions or concerns of a group of professors who are teaching with mobile technologies. The synthesist might then enter the field and search for reports to address these questions. When the synthesist feeds this information back to the professors, their questions might also change. In response to their changing questions, the synthesist might seek further studies with a different set of criteria. While pursuing these searches, the synthesist is also likely, serendipitously, to find primary research reports that will provide useful insights into the phenomenon of mobile learning. Given the exploratory nature of the process of developing the MIRS framework, I employed opportunistic sampling at the broadest level.

Purposeful Random Sampling

'For many audiences, random sampling, even of small samples, will substantially increase the credibility of the results' (Patton, 2002, pp. 240-241). In theory, research synthesists can employ exhaustive searches to locate most of the primary research reported on a topic and then randomly select a few reports from this pool of reports for in-depth discussion. However, given the resources required for locating all primary research reports on a topic, it would be cost-ineffective to randomly discard studies from further consideration. Hence, this sampling has little appeal in practice.

Sampling Politically Important Cases

Sampling politically important cases involves 'selecting (or sometimes avoiding) a politically sensitive site or unit of analysis' (Patton, 2002, p. 241). Like most scholarly endeavours in education, research syntheses are essentially political. A synthesist might consciously select politically important reports so that the synthesis gains the attention of different stakeholders and the synthesis findings get used. For instance, in a synthesis of key criticisms of educational research published in the 1990s, Oancea (2005) illustrated her key observations through a detailed analysis of three politically important documents that were frequently cited in the newspapers. Syntheses of hot topics, in which several stakeholders are interested, are also likely to attract appropriate funding and more impact (Elmore, 1991).

Convenience Sampling

Convenience sampling is 'probably the most common sampling strategy—and the least desirable'. It would involve selecting reports that are 'easy to access and inexpensive to study'. This form of sampling is 'neither purposeful nor strategic' (Patton, 2002, pp. 241, emphasis in original). As in many primary research studies, convenience sampling is also employed

in many research reviews. Both primary researchers and research synthesists must resort to convenience sampling as the last option. First, synthesists must reflect on various other purposeful sampling strategies to identify a strategy that is most suitable for their purpose and is also viable within the pragmatic constraints associated with the synthesis. When convenience sampling has been employed in a research synthesis, the nature of its use and associated caveats must be clearly described.

Combination or Mixed Purposeful Sampling

Synthesists often employ a combination of two or more sampling strategies to select evidence that adequately addresses their purpose. Mixed purposeful sampling can facilitate triangulation and flexibility in meeting the needs of multiple stakeholders (Patton, 2002). For example, synthesists may strategically utilise extensive sampling to draw generalisations at a higher level of abstraction. Then, they may employ typical case sampling to provide readers with an immediacy of typical studies that contributed towards informing the more abstract generalisations. When selecting a combination of sampling strategies, synthesists must reflect on how those strategies complement each other.

SAMPLE SIZE AND ENACTING CLOSURE TO FURTHER SEARCHES

Decisions associated with enacting closure to further searches for evidence must be guided by the purpose of the synthesis, the overarching logic of sampling, and pragmatic constraints. There are two main logics associated with these decisions in primary research as well as research synthesis: data saturation and data sufficiency.

Data Saturation

Data saturation may be associated with the stage when further collection of evidence provides little in terms of further themes, insights, perspectives or information in a qualitative research synthesis. The concept of data saturation is dependent on the nature of the data source as well as the synthesis question. There is a higher likelihood of reaching data saturation if the data collection is purposeful. The more precise a question, the quicker it tends to reach data saturation. Progressive refinement of a synthesis question is likely to bring an earlier stage of data saturation. With open ended questions, every new report is likely to offer additional information. A broad question, like 'what does research tell us about virtual classrooms?', is not likely to bring about a sense of closure or data saturation. On the other hand, the synthesist is likely to reach the data saturation stage earlier with a focused question like 'what are the key methodologies being employed to examine gender differences in math achievement on standardised tests among middle school students?'

Data Sufficiency

Most research synthesists refrain from rigidly prescribing a minimum or maximum number of primary research studies to be included in a synthesis. Some methodologists recommend their methods are suitable for synthesizing even a small number of qualitative research studies: for example, meta-ethnography for three studies (Noblit & Hare, 1988), aggregated analysis for four studies (Eastabrooks et al., 1994) and meta-study for twelve studies (Paterson et al., 2001, p. 38). Many qualitative research synthesists who synthesize methodologically diverse research tend to conduct extensive searches and include a large number of studies. For example, Wideen and colleagues (1998) included 93 studies and Kasworm (1990) in-

cluded 96 documents. Paterson and her colleagues identify the following principles that ought to guide the sample size of the synthesis: 'the data should be sufficient to permit comparisons among selected dimensions and constructs'; 'the reports should reflect the work of several distinct and independent investigators'; and 'the data should be sufficient to answer the research question' (Paterson et al., 2001, p. 37). These principles can be usefully applied to most qualitative research syntheses. A research synthesist, like a primary researcher, is often confronted with various pragmatic constraints of time and resources as well as access to expertise and information. The stage of data saturation is not frequently reached in either primary research or research synthesis projects. The logic of data sufficiency is guided by the synthesist's perception of what constitutes sufficient evidence for achieving the synthesis purpose. The synthesist must repeatedly ensure that the claims made in the synthesis are sufficiently grounded in the evidence collected for the synthesis.

USING THIS DISCUSSION AS A DEPARTURE POINT

In general, synthesists must leave an 'interpretive trail' of the different ways in which studies have been used or omitted (Pawson et al., 2005, p. 31). In leaving an interpretive trail of their searches, research synthesists must critically reflect and report on the following questions:

- What sampling logic is amenable to meet the synthesis purpose, within the available resources and pragmatic constraints, efficiently and sufficiently?
- What logic will guide the decision to cease searching for further evidence?
- What are the justifications for these decisions?
- What are the caveats associated with these decisions?

In this article, I have illustrated how different, purposeful sampling strategies may be suited for research syntheses conducted for diverse purposes. By drawing on a range of hypothetical examples, I have illuminated how various purposeful sampling strategies might be particularly suitable for syntheses geared to facilitate understanding, participation, emancipation and deconstruction. I have discussed how research synthesists can draw upon the concepts of data saturation and data sufficiency to inform their decisions to cease searches for further studies. In my discussion of strategic sampling in research syntheses, I urge synthesists to carefully identify sampling strategies which address the synthesis purpose *efficiently*, *credibly*, *sufficiently* and *ethically*. I make no attempt to prescribe certain sampling strategies for research synthesis. Rather, the intention here is to expand methodological possibilities within research syntheses by proposing new ways of thinking about the methodology of synthesis. I hope the users and producers of research synthesis will use this article as a departure point to think creatively and critically about purposes and amenable sampling strategies for a research synthesis.

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