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Are We There Yet? Data Saturation in Qualitative Research

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Abstract

Failure to reach data saturation has an impact on the quality of the research conducted and hampers content validity. The aim of a study should include what determines when data saturation is achieved, for a small study will reach saturation more rapidly than a larger study. Data saturation is reached when there is enough information to replicate the study when the ability to obtain additional new information has been attained, and when further coding is no longer feasible. The following article critiques two qualitative studies for data saturation: Wolcott (2004) and Landau and Drori (2008). Failure to reach data saturation has a negative impact on the validity on one's research. The intended audience is novice student researchers.

Are We There Yet? Data Saturation in Qualitative Research

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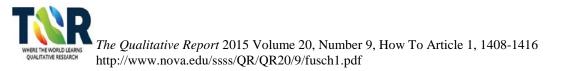Walden University, Minneapolis, Minnesota, USA

Failure to reach data saturation has an impact on the quality of the research conducted and hampers content validity. The aim of a study should include what determines when data saturation is achieved, for a small study will reach saturation more rapidly than a larger study. Data saturation is reached when there is enough information to replicate the study when the ability to obtain additional new information has been attained, and when further coding is no longer feasible. The following article critiques two qualitative studies for data saturation: Wolcott (2004) and Landau and Drori (2008). Failure to reach data saturation has a negative impact on the validity on one's research. The intended audience is novice student researchers. Keywords: Data Saturation, Triangulation, Interviews, Personal Lens, Bias.

Failure to reach data saturation has an impact on the quality of the research conducted and hampers content validity (Bowen, 2008; Kerr, Nixon, & Wild, 2010). Students who design a qualitative research study come up against the dilemma of data saturation when interviewing study participants (O'Reilly & Parker, 2012; Walker, 2012). In particular, students must address the question of *how many interviews are enough to reach data saturation* (Guest, Bunce, & Johnson, 2006). A frequent reference for answering this question is Mason (2010), who presented an extensive discussion of data saturation in qualitative research. However, the paper's references are somewhat dated for doctoral students today, ranging in dates from 1981-2005 and consisting mainly of textbooks. Although the publication date of the article is 2010, this is one of those types of articles that have older data masquerading as newer. The Mason (2010) article was recently updated to reflect a more contemporary date; however, the article did not update the content other than a few more recent citations. That is not to say that the article has no merit; instead, the concepts behind data saturation remain universal and timeless. Mason has a talent for explaining the difficult in terms that most can understand. Moreover, many students use Mason's work as support for their proposals and studies. To be sure, the concept of data saturation is not new and it is a universal one, as well. What is of concern is that Mason supported his assertions with textbooks and dated sources.

When deciding on a study design, the student should aim for one that is explicit regarding how data saturation is reached. Data saturation is reached when there is enough information to replicate the study (O'Reilly & Parker, 2012; Walker, 2012), when the ability to obtain additional new information has been attained (Guest et al., 2006), and when further coding is no longer feasible (Guest et al., 2006).

One Size Does Not Fit All

The field of data saturation is a neglected one. The reason for this is because it is a concept that is hard to define. This is especially problematic because of the many hundreds if not thousands of research designs out there (Marshall & Rossman, 2011). What is data saturation for one is not nearly enough for another. Case in point: ethnography is known for a great deal of data saturation because of the lengthy timelines to complete a study as well as the multitude of data collection methods used. In contrast, meta-analysis can be problematic

because the researcher is using already established databases for the information; therefore, the researcher is dependent upon prior researchers reaching data saturation. In the case of a phenomenological study design, the point at which data saturation has been attained is different than if one were using a case study design. To be sure, the use of probing questions and creating a state of *epoché* in a phenomenological study design will assist the researcher in the quest for data saturation; however, a case study design parameters are more explicit (Amerson, 2011; Bucic, Robinson, & Ramburuth, 2010).

There is no *one-size-fits-all* method to reach data saturation. This is because study designs are not universal. However, researchers do agree on some general principles and concepts: no new data, no new themes, no new coding, and ability to replicate the study (Guest et al., 2006). When and how one reaches those levels of saturation will vary from study design to study design. The idea of data saturation in studies is helpful; however, it does not provide any pragmatic guidelines for when data saturation has been reached (Guest et al., 2006). Guest et al noted that data saturation may be attained by as little as six interviews depending on the sample size of the population. However, it may be best to think of data in terms of rich and thick (Dibley, 2011) rather than the size of the sample (Burmeister, & Aitken, 2012). The easiest way to differentiate between rich and thick data is to think of <u>rich as quality</u> and <u>thick as quantity.</u> Thick data is a lot of data; rich data is many-layered, intricate, detailed, nuanced, and more. One can have a lot of thick data that is not rich; conversely, one can have rich data but not a lot of it. The trick, if you will, is to have **both**.

One cannot assume data saturation has been reached just because one has exhausted the resources. Again, data saturation is not about the numbers *per se*, but about the <u>depth</u> of the data (Burmeister & Aitken, 2012). For example, one should choose the sample size that has the best opportunity for the researcher to reach data saturation. A large sample size does not guarantee one will reach data saturation, nor does a small sample size—rather, it is what constitutes the sample size (Burmeister & Aitken, 2012). What some do not recognize is that no new themes go hand-in-hand with no new data and no new coding (O'Reilly & Parker, 2012). If one has reached the point of no new data, one has also most likely reached the point of no new themes; therefore, one has reached data saturation. Morse, Lowery, and Steury (2014) made the point that the concept of data saturation has many meaning to many researchers; moreover, it is inconsistently assessed and reported. What is interesting about their study results is that the authors noted that in their review of 560 dissertations that sample size was rarely if ever chosen for data saturation reasons. Instead, the sample size was chosen for other reasons (Morse et al., 2014).

Data Collection Methods to Reach Saturation

During the study, a novice researcher can conduct the research in a manner to attain data saturation (Francis et al., 2010; Gerring, 2011; Gibbert & Ruigrok, 2010; Onwuegbuzie, Leech, & Collins, 2010) by collecting rich (quality) and thick (quantity) data (Dibley, 2011), although an appropriate study design should also be considered. One could choose a data collection methodology that has been used before (Porte, 2013) that demonstrated data saturation had been reached; moreover, one would correctly document the process as evidence (Kerr et al., 2010).

Interviews are one method by which one's study results reach data saturation. Bernard (2012) stated that the number of interviews needed for a qualitative study to reach data saturation was a number he could not quantify, but that the researcher *takes what he can get.* Moreover, interview questions should be structured to facilitate asking multiple participants the same questions, otherwise one would not be able to achieve data saturation as it would be

a constantly moving target (Guest et al., 2006). To further enhance data saturation, Bernard (2012) recommended including the interviewing of people that one would not normally consider. He cautioned against the *shaman effect*, in that someone with specialized information on a topic can overshadow the data, whether intentionally or inadvertently (Bernard, 2012). Finally, care should be taken when confronting gatekeepers at the research site who may restrict access to key informants (Holloway, Brown, & Shipway, 2010) which would hamper complete data collection and data saturation.

Another example of data collection methods would be a focus group session. A focus group interview is a flexible, unstructured dialogue between the members of a group and an experienced facilitator/moderator that meets in a convenient location (Brockman et al., 2010; Jayawardana & O'Donnell, 2009; Packer-Muti, 2010). The focus group interview is a way to elicit multiple perspectives on a given topic but may not be as effective for sensitive areas (Nepomuceno & Porto, 2010). This method drives research through *openness*, which is about receiving multiple perspectives about the meaning of truth in situations where the observer cannot be separated from the phenomenon (Natasia & Rakow, 2010). This concept is found in interpretive theory wherein the researcher operates thorough a belief in the multiplicity of peoples, cultures, and means of knowing and understanding (Natasia & Rakow, 2010).

For focus groups it is recommended that the size of the group include between six and 12 participants, so that the group is small enough for all members to talk and share their thoughts, and yet large enough to create a diverse group (Lasch et al., 2010; Onwuegbuzie et al., 2010). Focus groups have limitations pertaining to a propensity for groupthink in that members pressure others to conform to group consensus (Dimitroff, Schmidt, & Bond, 2005). Furthermore, a focus group session that elicits useful information can be dependent on the skills of the facilitator as well as the failure to monitor subgroups with the focus group (Onwuegbuzie et al., 2010). Therefore, a focus group is one way to elicit a number of perspectives on a given topic to reach data saturation if one had a large pool of potential participants to draw from. This would be appropriate if one were already conducting individual interviews with a small number of participants and one would like to get a group perspective about the phenomenon. For example, after interviewing five senior executive level leaders individually, one could interview 5-8 more senior executive level leaders as a group. To be sure, there are individual perspectives that should be explored as well as a group perspective that could also be relevant. It is a good strategy to use to gather a great deal of data in a short amount of time.

Other methods to ensure that data saturation has been achieved include having the researcher construct a saturation grid, wherein major topics are listed on the vertical and interviews to be conducted are listed on the horizontal (Brod, Tesler, & Christiansen, 2009). Further recommendations include the possibility of having a second party conduct coding of transcripts to ensure data saturation has been reached (Brod et al., 2009). Additionally, the researcher should avoid including a one-time phenomenon that elicits the dominant mood of one participant (Onwuegbuzie, Leech, Slate, Stark, & Sharma, 2012) that could hamper the validity and transferability of the study results. At the end of the study, if new information is obtained in the final analysis, then further interviews should be conducted as needed until saturation is reached (Brod et al., 2009; Rubin & Rubin, 2012).

The Researcher's Personal Lens and Data Saturation

The role of the researcher is an important part of a study. One of the challenges in addressing data saturation is about the use of a personal *lens* primarily because novice researchers (such as students) assume that they have no bias in their data collection and may not recognize when the data is indeed saturated. However, it is important to remember that a

participant's as well as the researcher's bias/worldview is present in <u>all</u> social research, both intentionally and unintentionally (Fields & Kafai, 2009). To address the concept of a *personal lens*, in qualitative research, the researcher is the data collection instrument and cannot separate themselves from the research (Jackson, 1990) which brings up special concerns. To be clear here, the researcher operates between multiple worlds while engaging in research, which includes the cultural world of the study participants as well as the world of one's own perspective (Denzin, 2009). Hence, it becomes imperative that the interpretation of the phenomena represent that of participants and not of the researcher (Holloway et al., 2010) in order for the data to be saturated. Hearing and understanding the perspective of others may be one of the most difficult dilemmas that face the researcher. The better a researcher is able to recognize his/her personal view of the world and to discern the presence of a *personal lens*, the better one is able to hear and interpret the behavior and reflections of others (Dibley, 2011; Fields & Kafai, 2009) and represent them in the data that is collected. How one addresses and mitigates a personal lens/worldview during data collection and analysis is a key component for the study. It is important that a novice researcher recognizes their own personal role in the study and mitigates any concerns during data collection (Chenail, 2011). Part of the discussion should address how this is demonstrated through understanding when the data is saturated by mitigating the use of one's personal *lens* during the data collection process of the study (Dibley, 2011). Hence, a researcher's cultural and experiential background will contain biases, values, and ideologies (Chenail, 2011) that can affect when the data is indeed saturated (Bernard, 2012).

The Relationship Between Data Triangulation and Data Saturation

To reiterate, data saturation can be attained in a number of methods; however, a researcher should keep in mind the importance of data triangulation (Denzin, 2009, 2012). To be sure, the application of triangulation (multiple sources of data) will go a long way towards enhancing the reliability of results (Stavros & Westberg, 2009) and the attainment of data saturation. Denzin (2009) noted that triangulation involves the employment of multiple external methods to collect data as well as the analysis of the data. To enhance objectivity, truth, and validity, Denzin (2009) categorized four types of triangulation for social research. Denzin (2009) suggested data triangulation for correlating people, time, and space; investigator triangulation for correlating the findings from multiple researchers in a study; theory triangulation for using and correlating multiple theoretical strategies; and methodological triangulation for correlating data from multiple data collection methods. Multiple external analysis methods concerning the same events and the validity of the process may be enhanced by multiple sources of data (Fusch, 2008, 2013; Holloway et al., 2010).

There is a direct link between data triangulation and data saturation; the one (data triangulation) ensures the other (data saturation). In other words, data triangulation is a method to get to data saturation. Denzin (2009) argued that no single method, theory, or observer can capture all that is relevant or important. Denzin (2006), however, did state that triangulation is the method in which the researcher "must learn to employ multiple external methods in the analysis of the same empirical events" (p. 13). Moreover, triangulation is the way in which one explores different levels and perspectives of the same phenomenon. It is one method by which the validity of the study results are ensured. Novice researchers in particular should keep in mind that the triangulation of data can result in sometimes contradictory and inconsistent results; however, it is up to the researcher to make sense of them for the reader and to demonstrate the richness of the information gleaned from the data (O'Reilly & Parker, 2012). Saturation is important in any study, whether quantitative, qualitative, or mixed methods. Methodological triangulation goes a long ways towards

ensuring this (Bekhet & Zauszniewski, 2012) through multiple data sources. Methodological triangulation ensures that that data is rich in depth. Denzin (2012) made the point that it is somewhat like looking through a crystal to perceive all the facets/viewpoints of the data. Moreover, he posited that triangulation should be reframed as *crystal refraction* (many points of light) to extrapolate the meaning inherent in the data. This is especially important in ethnographic research where one is expected to have multiple data collection techniques to find the meaning that participants use to frame their world (Forsey, 2010). One does not necessarily triangulate; one *crystallizes* thorough recognizing that there are many sides from which to approach a concept (Richardson & Adams St. Pierre, 2008), although this distinction may be merely the same concept with a different label.

Two Examples

Rich and thick data results may not represent data saturation, particularly when it comes to a type of study known as an *auto-ethnography* (Wolcott, 2004). Auto-ethnography was coined by David Hayano (1979) to describe a study where the researcher was an insider member of the group being studied; in his case it was a group of people he was acquainted with who gathered to play cards (Wolcott, 2004). This is in contrast to the traditional role played by anthropologists where they are on the outskirts of a group, as "a peripheral participant" (Wolcott, 2004, p. 98). Renowned anthropologist H. F. Wolcott wrote about the confusion between the terms auto-ethnography and ethnographic autobiography (Wolcott, 2004). Wolcott used his seminal study of a sneaky kid, a seminal work in auto-ethnographic studies, to illustrate how the term auto-ethnography morphed from a meaning about the researcher as a part of a studied group to a term illustrating a personal history as biography (Wolcott, 2004). The term auto-ethnography in the classic sense came to describe the "narratives of the self" (Wolcott, 2004, p. 99), as opposed to more contemporary definitions such as evocative autoethnography which offers one an opportunity to reflect on personal experience or analytic autoethnography which uses personal data to address a broader social phenomenon (Anderson, 2006). Therefore, as Wolcott stated, an ethnographic autobiography is "a life story told to an anthropologist" (Wolcott, 2004, p. 93). One can see the apparent data saturation issues present in this type of study, regardless of the detail, as the data is limited to self-reported data presented by the subject. In particular, upon review of Wolcott's study of the sneaky kid, one notes the absence of collaborating data about the life history of the subject, including court records or data provided by third parties associated with the subject. While the authors of this article harbor great respect for Wolcott and his seminal work in ethnography, they are also somewhat uncomfortable with this type of research due to the lack of methodological triangulation.

In contrast to Wolcott's study of the sneaky kid, Landau and Drori's (2008) qualitative study included data triangulation as evidenced by multiple sources of data and analysis. Their research centered on an R & D laboratory in Israel that had recently experienced a change in direction from science-based research to profit-making production (Landau & Drori, 2008). The researchers conducted a three-year ethnographic field study using participant observation, induction, interpretation, close proximity and unmediated relationships (Landau & Drori, 2008). They conducted their work between 1996 and 1999 and based it on an inductive grounded theory case study analysis that used both specific and general questions asked of participants to determine viewpoints, and included a cross section of the organization's employees including scientists and managers (Landau & Drori, 2008). They found that confrontational sense-making resulted from the conflict between scientists and mangers' efforts to construct a new organization culture from the old of pure science to the new of profitability (Landau & Drori, 2008). The viewpoints were perceived as mutually

exclusive at the beginning of the process, until management allowed "both to save face by promoting sense-making accounts sufficiently blurred to enable each side to admit its own cultural rationale" (Landau & Drori, 2008, p. 713) for the lab's existence. Mixed sense-making tolerates the side-by-side existence of both past and present into a cultural pool that allows an organization to move forward when choosing strategies to address change (Landau & Drori, 2008).

Are We There Yet?

In C.S. Forester's book *Beat to Quarters*, the author describes the leadership abilities of his hero, as …"like a calculating machine, judging wind and sea, time and distance…" (p. 160), as an illustration of how Horatio Hornblower was able to so effectively wage his English sea war against the Napoleonic juggernaut in the early 1800s. So, too, must qualitative researchers account for multiple sources of data and perspectives to insure that their study results demonstrate validity through data saturation, so that they too may hear of their research…"I am both astonished and pleased at the work you have accomplished" (p. 167).

It can be said that failure to reach data saturation has a negative impact on the validity on one's study results (Kerr et al., 2010; Roe & Just, 2009); however, there is no *one-size-fits-all* method to reach data saturation; moreover, *more* is not necessarily better than *less* and vice versa. There are, rather, data collection methods that are more likely to reach data saturation than others, although these methods are highly dependent on the study design. To be sure, the *concept* of data saturation may be easy to understand; the *execution* is another matter entirely (Guest et al., 2006). When deciding on a study design, the student should aim for one that is explicit regarding how data saturation is reached. Data saturation is reached when there is enough information to replicate the study (O'Reilly & Parker, 2012; Walker, 2012), when the ability to obtain additional new information has been attained (Guest et al., 2006), and when further coding is no longer feasible (Guest et al., 2006). Rich and thick data descriptions obtained through relevant data collection methods can go a long ways towards assisting with this process when coupled with an appropriate research study design that has the best opportunity to answer the research question.

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