

Quantitative Versus Qualitative Research, or Both?

NURSING RESEARCH WORLDVIEWS

Nursing research falls within the two broad worldviews, the positivist and the naturalistic paradigms. These two worldviews have opposing assumptions about reality and view of the world. For example, in regards to reality, the positivist believes that a single reality exists that can be measured, whereas in the naturalistic paradigm, there are multiple realities that are continually changing, which make it very difficult if not impossible to measure. Other important opposing assumptions are listed in **Table 3-1**.

The two main types of research methods are quantitative and qualitative. Quantitative research aligns with the positivist paradigm, whereas qualitative research most closely aligns itself with the naturalistic paradigm. Quantitative research is a formal, objective, deductive approach to problem solving. In contrast, qualitative research is a more informal, subjective, inductive approach to problem solving. More characteristics of each are compared in **Table 3-2**. Even though quantitative research has been considered the more rigorous of the two in the past, qualitative research has gained more credibility in the science world recently. In fact, both are appropriate methods for conducting research, and each method can contribute greatly to the scientific body of knowledge. Selection of which method to use depends primarily on the research question(s) being asked. These questions flow from the research problem and purpose statement.

For example, testing a new fall prevention program within your hospital would require you to obtain a baseline fall rate before the program and then again after full implementation of the program. Statistically, you could compare rate of falls before the new program with the rate of falls after the new program. Your unit of analysis would be numbers and would lend itself to a

Table 3-1 Comparison of Major Assumptions of the Positivist and Naturalistic Paradigms

Positivist paradigm	Naturalistic paradigm
There is a single reality that can be measured.	There are multiple realities that can be studied only holistically and cannot be predicted or controlled although some level of understanding can be achieved.
The researcher and the research participant can remain independent of one other and not influence one another.	The researcher and the research participant cannot remain separate or independent. They interact and influence one another.
Findings of research can be generalized from the study sample to the larger target population.	Findings cannot be generalized beyond the study sample. Knowledge gleaned from the study is in the form of “working hypotheses.”
Cause and effect relationships can be tested.	Cause and effect relationships cannot be tested since there are multiple realities that are continually changing, so it is impossible to distinguish causes from effects.
Research can be conducted objectively and value free.	Research is subjective and value bound (i.e., the researcher’s own values).

Table 3-2 Characteristics of Quantitative and Qualitative Research Methodologies

Quantitative research	Qualitative research
Considered a hard science	Considered a soft science
Objective	Subjective
Deductive reasoning used to synthesize data	Inductive reasoning used to synthesize data
Focus—concise and narrow	Focus—complex and broad
Tests theory	Develops theory
Basis of knowing—cause and effect relationships	Basis of knowing—meaning, discovery
Basic element of analysis—numbers and statistical analyses	Basic element of analysis—words, narrative
Single reality that can be measured and generalized	Multiple realities that are continually changing with individual interpretation

Table 3-3 Decisions Regarding Type of Design

Research question	Unit of analysis	Goal is to generalize	Methodology
What is the impact of a learner-centered hand washing program on a group of second graders? (Tousman, et al., 2007)	Paper and pencil test resulting in hand washing knowledge scores	Yes	Quantitative
What is the effect of crossing legs on blood pressure measurement? (Keele-Smith & Price-Daniel, 2001)	Blood pressure measurements before and after crossing legs resulting in numbers	Yes	Quantitative
What are the experiences of black fathers concerning support for their wives/partners during labor? (Sengane & Cur, 2009)	Unstructured interviews with black fathers (5 supportive and 5 nonsupportive); results were left in narrative form describing themes based on nursing for the whole person theory	No	Qualitative
What is the experience of hope in women with advanced ovarian cancer? (Reb, 2007)	Semi-structured interviews with women with advanced ovarian cancer (N=20) Identified codes and categories with narrative examples	No	Qualitative

quantitative design. However, if you were interested in studying the impact of falls on patient’s quality of life, you would most likely obtain that information through a personal interview. The unit of analysis would be words, and a qualitative method would be the most appropriate approach to analyze this data.

Table 3-3 depicts this strategy using sample research questions.

QUANTITATIVE DESIGNS

Four main types of quantitative designs are descriptive, correlational, quasi-experimental, and experimental. In general, choice of design is greatly influenced

by the level of knowledge of the research problem. If the amount of descriptive level research is abundant over a particular problem area, then the next logical step is to do a correlational study to examine relationships between variables. If the problem area has been described and the relationships between variables tested, the next level of research would be quasi-experimental or experimental research. For example, a large amount of research exists on surgical site infections, particularly descriptive, correlational, and quasi-experimental studies. It would therefore not make sense to do another descriptive or even correlational study. Instead, conducting experimental studies by testing interventions to prevent surgical site infections would be the next step.

Matching Research Design to Research Question

Dickoff and James (1968) developed four levels of researchable questions. Each level leads to a specific quantitative research design. Then, as discussed in Chapter 1, the research design then becomes the blueprint for the rest of the study, including sampling, data collection, and analysis.

Level One

Factor-isolating questions ask, “What is this?” These questions name and describe factors or variables of interest to the researcher. Questions such as, “What factors impact the decision to participate regularly in physical activity?” or “What factors influence mother–infant bonding?” would be included in this category of questions. The most appropriate research design to answer these questions would be descriptive. Descriptive studies are designed to gain more information about characteristics of a topic of interest. Descriptive level research is most appropriate when very little research is available on the topic. Factors need to be described before they can be tested. Descriptive level research includes survey research or case study methodology. Survey research involves gathering data, usually through a written survey/questionnaire. The purpose of survey research is to describe characteristics, opinions, attitudes, or behaviors as they currently exist in a target population. A case study design explores in depth a single participant or event through detailed information. Case studies are commonly used in nursing practice to depict a particular disease or illness.

One advantage to descriptive level research is that the researcher is able to collect a large amount of data. However, even though there is breadth of data, it tends to lack depth for the sample. On the other hand, case study research provides depth and richness of data but lacks breadth since it is limited to one person or event. One important distinction of descriptive level research is that nothing is manipulated or controlled. Phenomena are studied in real-life situations. Thus, cause and effect relationships cannot be determined using

this design. Data are analyzed using descriptive statistics such as frequencies, means, and percentages. A comparative descriptive design adds to the basic descriptive design by making it possible to compare two or more groups on the factors of interest. In the previous example on mother–infant bonding, a comparative descriptive study could compare mother–infant bonding to father–infant bonding. Now, you have two groups and you are comparing them on the factor of interest, infant bonding.

An example of this design is McAuliffe’s (2007) study on oral hygiene. The purpose of this study was to explore and identify factors that may influence nursing students’ oral hygiene practice in hospitalized patients. As you recall, factor-isolating questions ask the question “What is this?” which is what McAuliffe is doing here. Only an aim and objectives, not hypotheses, were used in this study. A survey was used to gather the student’s perspectives on what they were taught versus what they practiced as it relates to oral hygiene practices. Descriptive statistics (percentages) were performed to answer their objectives. Findings indicated that there was incongruence between what the students thought they were taught and what was actually taught in the classroom. Further, students were picking up not-necessarily good habits from their nurse role models within the clinical setting.

Level Two

Factor-relating questions would be the next category of research questions and would ask, “What is happening here?” Correlational research is used to answer relational type questions such as this. However, before this question can be answered, the factors or variables have to be described by either a prior descriptive level study or synthesis of published literature. Specific factor-relating questions could include “What is the relationship between depression and suicide among teenagers?” or “What is the relationship between motivation and exercise behavior?”

An advantage to using correlational research is that this method provides an evaluation of strength and direction of relationship between variables. Correlational studies also provide for a basis for experimental studies to follow. The primary disadvantage with this design is that no conclusions can be made regarding causality, just that there is a relationship between the tested variables. Predictive studies also fit under this level, and they describe the relationship between a predictor variable(s) and the dependent variable (outcome measure).

Data from correlational studies would primarily include descriptive statistics as described above and correlations. For example, correlational analysis would test whether there is a relationship between depression and suicide among teenagers, whether it is a positive or negative relationship, and how strong that relationship is.

An example of this design is a study completed by Al-Kandari, Vidal, and Thomas (2008) examining the relationship between a health promoting lifestyle and body mass index among college students in Kuwait. The study sample included all 350 nursing students enrolled in the AND program during one semester. Walker's Health Promoting Lifestyle Questionnaire (HPLP-II) was administered to assess health promoting attitudes and behaviors. A Pearson's correlation was done to find out the relationship of the levels of enrollment with the HPLP-II and BMI. Findings included a significant positive correlation between the BMI and the level of nursing course. That is, as students progressed in their nursing courses, their BMI increased.

Level Three

Situation-relating questions ask, "What would happen if?" This is the first level of researchable questions that examines causality. These types of questions are best answered through quasi-experimental designs where the researcher is evaluating some intervention. Quasi-experimental designs are called "quasi" because they lack one of the requirements of being a true experimental design. To be considered a true experimental design, there must be a treatment, control over who gets the treatment or intervention, and randomization of the treatment into treatment and control groups. The requirement most commonly lacking is randomization of the sample.

Advantages include the ability to infer causality, which is stating that the treatment (independent variable) caused the effect in the outcome measure (dependent variable). However, the investigator cannot definitively determine causality since the sample was not randomized. Representativeness of the sample comes into question due to this lack of randomization from the target population. This type of research also provides the basis for future true experimental studies that include randomization of the sample.

Examples of specific situation-relating questions include, "Will a hand-hygiene intervention increase healthcare workers' compliance with hand hygiene?" or "Will hourly rounding decrease adverse events in hospitals?" Data analysis for these studies may include a variety of tests depending on the research question, the type of data collected, number of participant groups, and sample size.

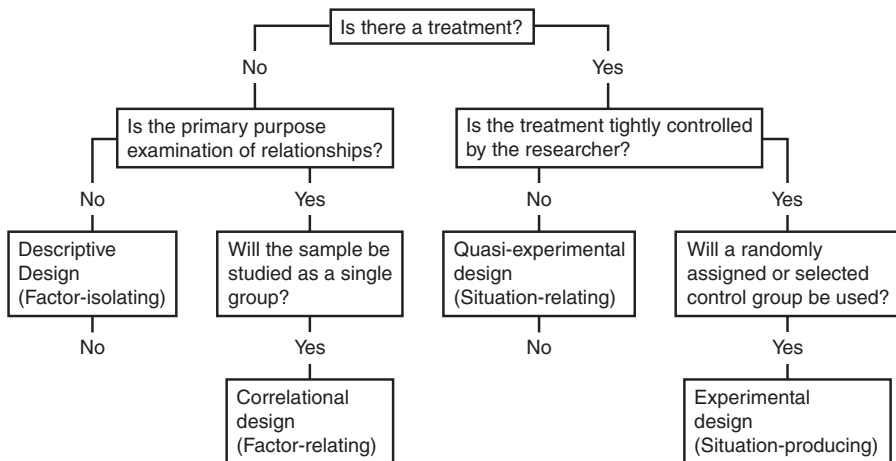
An example of a quasi-experimental study is a hand-hygiene interventional study done by Siegel & Korniewicz (2007). The authors state that the study was conducted to investigate hand-hygiene compliance of healthcare professionals before and after the introduction of a handheld sanitizer spray. A pretest post-test quasi-experimental design was used with the pretest observations serving as the control group and the posttest observations serving as the experimental group. Participants self-selected into the study without any randomization

being performed. No significant differences were found from pretest to post-test on hand-hygiene compliance.

Level Four

Situation-producing researchable questions are the highest level of inquiry, requiring the most control by the researcher. Situation-producing questions ask, “How can I make it happen?” and can include questions such as, “How can humor be used to mediate the suffering of patients in chronic pain?” or “How can an individualized exercise prescription impact exercise behavior in a group of Mexican-American adults?” Often called a randomized control trial (RCT), an experimental research design is the “gold standard” for research and evidence-based nursing practice. It provides the most convincing evidence to support the value of a treatment. To be considered experimental level research, there must be random selection and/or random assignment of subjects, control/manipulation of the treatment/intervention, and include treatment and control groups. Experimental designs are the most difficult to implement since it takes more time and money to produce a randomized sample. Also, it may not be ethically possible to withhold treatment from the control group, thus preventing a true RCT design. Further, if an experimental design is used and the investigators find that the experimental treatment is effective in producing the desired effects, the study is stopped and the treatment is given to the control group participants. **Figure 3-1** presents a decision tree on selecting the correct type of quantitative research design.

Figure 3-1 Decision tree matching research design to category of research question.



An example of an experimental study provided by Hoadley (2009) compared the effects of low- and high-fidelity simulation in learning advanced cardiac life support (ACLS). This study compared results of two ACLS classes on measures of knowledge and resuscitation skills. One of the four hypotheses was, “ACLS course participants will have significantly higher scores on the ACLS posttest when they experience computerized, high-fidelity simulation rather than instructor-led, low-fidelity simulation for resuscitation practice (Hoadley, 2009).” The theoretical framework for the study was John Dewey’s experiential learning philosophy. The study sample was made up of 53 healthcare providers randomly assigned into experimental or control groups. For the sample hypothesis given above, T-tests were done to test for significant differences. No significant difference was found between the high-fidelity versus the low-fidelity modes of instruction on ACLS posttest scores.

Validity of the Research Design

Both internal and external validity are important to the overall validity of the research study. Internal validity refers to whether or not the manipulation of the independent variable really makes a significant difference on the dependent variable (Wilson, 1993). For example, an investigator may want to study the effects of an individualized exercise intervention on exercise compliance. They would want to state that the increase in exercise compliance is due to the individualized exercise intervention and not something else. Potential confounding variables, discussed in Chapter 2, can threaten internal validity. As an investigator, you want your study’s findings to be a true reflection of the real world and not false findings. If the investigator makes a wrong decision regarding study findings, a type I or II error is made. Type I and II errors were introduced in Chapter 2 under the discussion on sampling. To review, a type I error is concluding that a difference exists between groups when in reality it does not. A type II error occurs when an investigator concludes that no differences exist when in reality there are significant differences. The ideal situation is not to commit either one of these errors but to make true conclusions. **Table 3-4** lists threats to internal validity and suggested remedies to reduce them.

External validity refers to the representativeness or generalizability of a study’s findings. In the exercise compliance example above, we not only want the findings to be due to the intervention but we would also like to generalize those findings to a larger population. Ability to generalize findings increases as the rigor and control of the study design increases. Therefore, quasi-experimental and experimental designs offer the greatest

Table 3-4 Threats to Internal Validity with Strategies to Reduce the Threat

Threat	Remedy
History—defined as the influence of events that occur during study implementation but not part of study	Randomly select or assign into treatment and control groups to ensure the effect of history is equal in both groups.
Maturation—referring to changes that occur within the participants as a function of time	Be careful with longitudinal studies and randomly select or assign into treatment groups for the same reason as listed in #1.
Testing—referring to the effects of multiple testing; this might influence how the participant responds on successive testing	Try not to test the same participants. Build in another control group that is tested the same number of times as the treatment group so you can measure this effect.
Instrumentation—whether the instruments used for data collection were valid and reliable; can also refer to the way data collectors assign scores on the dependent variable	Keep data collectors “blind” as to which participants are assigned into what groups. Train data collectors thoroughly to collect data correctly and consistently.
Statistical regression—the tendency for subjects who initially score either very high or very low, that upon multiple testing, these scores become less extreme	Randomly select or assign participants into treatment and control groups.
Selection—referring to a tendency of types of participants to be alike (most motivated, educated, etc.)	Randomly select or assign participants into treatment and control groups.
Attrition—referring to participants that drop out of the study before completion	Give clear instructions and guidelines about required commitment for participating in the study. Collect as much demographic information as possible on these dropouts to see if they are different from the participants that continued in the study.

opportunity for generalization of study findings to a larger population. The most serious limitation of a study would only be the ability to generalize findings to the sample within the current study. Remember, the ultimate goal of quantitative research is generalizability. Thus, both internal and external validity are important to make valid conclusions and generalizations.

Before determining that a causal relationship exists between the treatment and the outcome, three conditions must exist:

1. Changes in the presumed cause must be related to changes in the presumed effect. That is, if you change the treatment, the outcome will change.
2. The presumed cause must occur before the presumed effect. That is, the treatment or intervention must come before the outcome is measured.
3. There are no plausible alternative explanations. In other words, no other factors or variables could be responsible for the outcome (Houser, 2008).

QUALITATIVE DESIGNS

Qualitative research is a systematic, subjective approach used to describe life experiences and give them meaning. Three of the most common qualitative designs that are discussed in this book are phenomenology, grounded theory, and ethnography. Table 3-2 lists some general characteristics of both quantitative and qualitative research. Additional characteristics discussed in Lincoln & Guba (1985) include:

- Natural setting
- Human as instrument
- Intuitive, felt knowledge
- Purposive sampling
- Emergent design
- Negotiated outcomes
- Tentative application
- Special criteria for trustworthiness/rigor

Natural Setting

Qualitative research is conducted in the natural setting for which the study is proposed. Based on the naturalistic worldview or paradigm, the belief is that realities cannot be understood in isolation from their contexts. For the fullest understanding, participants are recruited and studied within their natural day-to-day environment.

Human as Instrument

The researcher uses themselves and other humans as the primary data-gathering instruments, whereas in quantitative research paper and pencil or physiologic measures are more common. It is believed that the researcher influences the study findings through their interaction with the study participants, and that the human as instrument is the best one capable of grasping and evaluating the meaning of that interaction.

Intuitive, Felt Knowledge

Data collected in qualitative research is much more than the data spoken or written down by the participant. Much of the knowledge that can be gained occurs at a much more abstract, often nonverbal level. This level of knowledge is critical for really appreciating and understanding the depth of interaction between the researcher and the participants and between participants.

Purposive Sampling

Purposive sampling is a process that involves the conscious selection of certain participants for the study. Remember, the goal of qualitative research is meaning, discovery, and richness of detail of the phenomena of interest for that group of individuals experiencing that reality for that given time period. Generalizability of study findings to a larger population is not the goal as it is in quantitative research. Thus, researchers recruit participants who have the qualities they are attempting to understand. For example, if the purpose of the study were to explore what it is like to be a caregiver of a dying loved one, participants would be caregivers of dying patients.

Emergent Design

Qualitative researchers allow the research design to emerge or unfold as the study progresses rather than construct it prior to the study, as one would do with quantitative research studies. Philosophically, qualitative worldviews believe that what emerges from the data is a function of the interaction between the participant and the researcher, which cannot be determined before the study begins.

Negotiated Outcomes

Both the researcher and the participant—often through a negotiated process—determine findings from qualitative research. A process called “member checking” occurs, which involves the researcher taking the data/information that they have gleaned and reflecting this information back to the participant. Participants may or may not agree with the researcher’s interpretation of the data. This process allows for some give and take between the two and a belief that the results will be a more accurate reflection of reality.

Tentative Application

Again, the goal of qualitative research is not generalizability but an understanding of a phenomenon of interest for a group of participants within a very small slice of time. Philosophically, the belief is that realities are multiple, different, and change over time and may not be duplicated anywhere else. Thus, the qualitative researcher is likely to be hesitant about trying to make broad application of findings.

Qualitative Research and Nursing Practice

Qualitative research fits very nicely with nursing practice. Nurses are experts in synthesizing data acquired through observing and listening to patients' stories about their subjective, lived experiences. As discussed in Chapter 1, understanding the meaning of a phenomenon of interest is what qualitative research is all about. For example, questions such as "understanding what it is like to live with chronic pain, living with AIDS, or living with any chronic disease" would lend themselves to qualitative research. Qualitative research is useful when the research context or the nature of the problem is poorly understood. Examples of the most common qualitative designs discussed here are phenomenology, grounded theory, and ethnography.

Phenomenology

Phenomenology is an approach to exploring people's everyday life experiences. Phenomenological researchers investigate subjective phenomena. Examples of questions asked by this type of research include, "What is this experience like?" "What is the meaning of this experience or phenomena?" Phenomenology uses bracketing of preconceived values and ideas and intuitive knowledge. Participant observation is often used to collect data. This involves a combination of observing participants in a natural real-life setting and interaction of the researcher with the participant in this setting. Interviews are commonly used. Literature review is commonly done after the data has been collected to help prevent preconceived findings. Data is often presented as a clustering of themes through use of poems, pictures, and case scenarios to help describe the phenomenon. Another common characteristic of phenomenology is the use of paradigm and exemplar cases to describe the findings. Paradigm cases are whole cases that include all of the characteristics of the phenomenon, whereas exemplar cases are shorter stories that depict the phenomenon but may not include all of the characteristics.

For example, Sengane & Cur (2009) described the experience of black fathers concerning support for their wives/partners during labor. Unstructured interviews with 10 black fathers revealed both positive and negative feelings. Suggestions regarding future interventions with this population included enforcing positive feelings and removing obstacles such as lack of information, fear, and cultural factors. Tanner et al. (1993) describe the phenomenology of knowing the patient. The authors describe a paradigm case for knowing the patient as a person. They go into detail about George, a quadriplegic for many years after a motor vehicle accident who could not verbally communicate after a radical neck dissection. Participants' own words provide vivid descriptions, case scenarios, and stories.

Grounded Theory

Grounded theory, a qualitative method developed by Glaser and Strauss (1967), is an approach to theory development grounded or rooted in the data. The constant comparative method involves gathering and interpreting data simultaneously. This provides an example of the emergent design process. The design flows and changes direction based on data collection and interpretation that is occurring simultaneously. The grounded theory approach does assume the possibility of discovering fundamental patterns in life. These patterns, called basic social processes or core variables, guide the rest of data collection and analysis and are important in being able to explain and attach meaning to the study's findings.

Reb (2007) described the experience of hope in women with advanced ovarian cancer. Grounded theory approaches using focused interviews were conducted to collect data. The constant comparison method provided a means to analyze the data and the core variable that emerged from the data, which was transforming the death threat. Three phases of this process included shock (reverberating from the impact), aftershock (grasping reality), and rebuilding (living the new paradigm). Hope, linked to the core variable, was necessary for finding meaning in the experience. Support and perceived control contributed the most to hope. Hagerty et al. (1993) developed a theory of human relatedness using grounded theory. Grounded in the data through both an integrative review of the literature and through a focus group approach, states of relatedness such as connectedness and disconnectedness emerged. Social processes or core variables that contributed to movement of the individual through these states are a sense of belonging and reciprocity. Relatedness is a central idea in nursing practice and can offer a way to explain the impact of relatedness to the development of the nurse–client relationship.

Ethnography

Ethnographies focus on studying the culture of a group of people. They involve the description and interpretation of that culture's behavior. A classic phase of ethnographies is what is called "fieldwork," where the researcher becomes involved within the community and gains an "insider's perspective" through intense participant observation over an extended period (months to years). Gaining entry can be a problem particularly if it is a much-closed cultural group or the researcher comes from a different culture than the one under study. Ethnographers analyze data through rich and detailed descriptions of the culture.

Hancock and Easen (2006) examined the decision making of nurses when extubating patients following cardiac surgery. Semi-structured interviews and participant observation were used to collect data over an 18-month period.

Decision making of the nurses used other factors than the current best evidence protocol. Decision making was influenced by factors such as relationships, hierarchy, power, leadership, education, experience, and responsibility. Comparison of categories and themes between observational and interview data provided a method of data source triangulation.

As you can see by the description of each of these specific qualitative methods, there are more similarities than differences. Threats to rigor are present in each method, with some more relevant than others depending on the methodology chosen. See **Table 3-5** for a comparison of the three methodologies, giving their characteristics, purpose, and potential threats to rigor.

Special Criteria for Trustworthiness/Rigor

Trustworthiness/rigor in qualitative research is similar to validity and reliability in quantitative research. However, the conventional definitions and ways to ensure validity and reliability of a study and its findings run counter to the beliefs or worldviews of the qualitative paradigm. Internal validity fails since

Table 3-5 Characteristics of Phenomenology, Ethnography, and Grounded Theory

Phenomenology	Ethnography	Grounded Theory
Description of lived experience	Description and analysis of culture	Used for theory development
Bracketing used	Access or gaining entry to study population can be difficult	Immersed in social environment and seen through the eyes of the study participant
Data collected by interview and participant observation	Participant observation and interviews used to collect data	Data collected primarily by interviews, observation, and journal/document review
Intuit, identify, and describe phenomenon	Thick description and rich detail of data important	Constant comparison method used to collect and analyze data
Clustering of themes, paradigm versus exemplar cases	Codes to categories to clusters as a way of organizing data	Coding used to conceptualize data into patterns or concepts. Identification of core variable important for direction of rest of study

it is based on a single reality that can be measured and quantified. External validity fails because generalizability of study findings is neither the goal nor a possibility with qualitative research. Reliability fails because stability and consistency is not part of the qualitative paradigm based on researcher and study participant interaction and influence of values with each other.

Sandelowski (1986) presents an argument on how qualitative research can be rigorous without sacrificing its relevance or richness. She discusses four factors that are critical for rigor in qualitative research: truth-value, applicability, consistency, and neutrality.

Truth-value

Truth-value is similar to the internal validity that was discussed with quantitative research methods. In quantitative research, this usually involves how well threats to internal validity have been controlled (see Table 3-4). The truth-value of a qualitative study deals more with the discovery or experiences of life phenomena as they are perceived by participants. To achieve truth-value, a qualitative study must present a faithful description or interpretation of the human experience so that people having that experience can identify with it. A threat to truth-value is what Sandelowski terms “going native.” “Going native” is the possibility of the researcher becoming so enmeshed with the participants that they have a difficult time separating their own experiences from that of their participants. The close relationship that often occurs between the researcher and the study participant can be viewed as both a strength and a limitation. The close bond increases trust between the two, but this closeness can also cause the researcher difficulty in separating their values and preconceived ideas from those of the participant. Bracketing, a process where the researcher mentally separates and puts “brackets” around these values, is encouraged to help decrease this threat.

Applicability

Applicability is similar to external validity in quantitative research. To ensure generalizability and representativeness, samples are randomly selected or randomly assigned into treatment groups. Power analysis procedures are used prior to beginning the study to determine how large the sample size needs to be to achieve statistical significance if present. However, sample sizes in qualitative research are generally small because of the depth of data obtained. Sandelowski (1995) shares some rules of thumb for sample sizes depending on the qualitative design used; 6 for phenomenologies, and for ethnographies and grounded theory a minimum of 30 to 50 interviews and/or observations. Sample size depends on when data saturation occurs. Reaching data saturation, which involves obtaining data until no new information emerges, is critical

for obtaining applicability in qualitative research. Threats to applicability include “elite bias” and “holistic fallacy.” Elite bias may occur when the most articulate, accessible, or high-status members of the group of interest volunteer to participate in the study. Holistic fallacy occurs when the researcher stops data collection prematurely before data saturation occurs, yet the researcher presents the data as complete.

Consistency

Consistency in qualitative research is similar to reliability in quantitative research. As discussed with quantitative methods, reliability is getting consistent results every time a data collection instrument is administered. In contrast, qualitative research emphasizes uniqueness of human experiences. The researcher seeks variations of these experiences. A study is consistent when another researcher can follow the “decision trail” used by the study’s researcher. This is very similar to an audit done by the Internal Revenue Service (IRS). A paper trail is presented to the auditor so that they can follow your decisions on type and amount of deductions taken on your taxes.

Neutrality

Neutrality is the freedom from bias in the research process. In quantitative research, this is achieved when validity and reliability are established. In qualitative research, it occurs when truth-value, applicability, and consistency are established. Qualitative research values meaningfulness of data, which is promoted by increasing connection between the researcher and the research participant through engagement, and valuing subjectivity rather than objectivity. In general, to reduce threats to rigor, strategies such as member checking, data saturation, peer debriefing, expert panel, and triangulation may be used. Member checking and data saturation have already been discussed. Peer debriefing and expert panel involve discussing your findings and the process and decision regarding those findings with peers and experts for their feedback. Experts may come from the specific qualitative methodology used and/or from the phenomena of interest.

MIXED METHODS

A popular trend today is the planned integration of qualitative and quantitative methods within the same study. Many researchers argue that the worldviews/paradigms that underpin qualitative and quantitative research are so opposing that this cannot be done. Many others believe that using methods from both of the paradigms can be very complementary and enriching. Since each methodology has its own inherent strengths and limitations, using both may

emphasize each one's strengths and minimize their limitations. One typical way to approach a mixed methods design is by doing the study in phases. For example, Keele (2009) developed a new instrument to measure exercise motives for Mexican-American adults. The process included two phases; a small qualitative portion utilizing interviews about individual motives for exercising and then a quantitative portion, which included administering the instrument developed from these interviews to a larger sample to test for instrument validity and reliability.

QUANTITATIVE VERSUS QUALITATIVE VERSUS BOTH (MIXED METHODS)?

You need all of the information presented in this chapter to be able to make correct decisions regarding choice of design. As already stated, selection of which method to use depends primarily on the research question(s) being asked. These questions flow from the research problem and purpose statement. The rest of the research process is dictated by the design choice. The simplest way to demonstrate this is by a visual depiction using decision trees.

THE BIG "SO WHAT?"

- Quantitative and qualitative research are the two main research methodologies available to researchers.
- Quantitative research parallels the positivist paradigm, and qualitative research parallels the naturalistic paradigm.
- If the goal of the research study is to generalize findings from the sample to the bigger target population, then a quantitative study is the method of choice.
- If the goal of the research study is to find meaning and understand the subjective experience of the study participants, then a qualitative study is the method of choice.
- Four of the most common quantitative designs are descriptive, correlational, quasi-experimental, and experimental.
- There are advantages and limitations with every research design.
- Causality is not examined unless the design is at a quasi-experimental or experimental level.
- External and internal validity of a study design are both important for the study's findings to be credible.
- Three of the most common qualitative research designs are phenomenology, grounded theory, and ethnography.

- Selection of research method depends primarily on the research question(s) being asked. These questions flow from the research problem and purpose statement.
- Special criteria for trustworthiness/rigor in qualitative research are truth-value, applicability, consistency, and neutrality.

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