Distinguishing Quantitative and Qualitative Research Methods in Communication Sciences and Disorders

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Social scientists frequently have needed to apply diverse research approaches when attempting to understand complex social phenomena. This article provides a simplified description of quantitative and qualitative methods that may be applied in the investigation of communication sciences and disorders. By drawing distinctions between these two research approaches, researchers-in-training are given a preliminary understanding of these valuable tools of social science research.

When investigators select methods for conducting research, they also are choosing theoretical perspectives on what constitutes appropriate data and questions that are worth asking. Reliance on any singular theoretical perspective when studying complex social phenomena, however, may be problematic. Social scientists have not identified definitive theoretical constructs for many complex phenomena, such as communication. Consequently, a researcher may be too narrowly focused if he or she employs only one perspective (which can be potentially incorrect or incomplete) and its resultant view of "how things ought to be."

A more encompassing research strategy would be to utilize divergent research traditions. Drawing upon different investigative paradigms in the study of human behavior would help to provide the empirical coverage and descriptive focus necessary to meet the goals of research. To do this, researchers need to familiarize themselves with various approaches to data collection and analysis. Toward this end, this article focuses on providing entry-level, prototypical distinctions between qualitative and quantitative research methods.

Qualitative and quantitative research traditions may be divided according to four continua: (a) the goal of the research, (b) the nature of the data and the function of the participants, (c) the accountability practices employed, and (d) the role of the researcher (see Appendix).

At the left-hand side of each continua are practices more representative of the qualitative research tradition. On the other end of the continua are techniques and perspectives associated with quantitative research. Continua are used to indicate that toward the middle of each line the distinctions between various research traditions may become blurred. However, when the concepts and practices represented in the Appendix are present in their prototypical forms, it becomes easier to differentiate between qualitative and quantitative paradigms. The remainder of this article addresses each of the four dimensions presented in the Appendix.

THE GOAL OF THE RESEARCH

Two schools of thought have had a significant impact on research in the social sciences: logical positivism and phenomenology (Bogdan & Taylor, 1975). The positivist tradition was strongly influenced by the nineteenth-century writings of Emile Durkheim (1938). Durkheim, who was influenced by the physical sciences, believed that the goal of social science was to uncover objective facts that could ameliorate the human condition. According to his viewpoint, these objective facts existed external to the self and determined human behavior. Durkheim's perspective influenced many social scientists to adopt a more quantitative research approach as described on the right end of the first continuum.

Researchers operating today within this quantitative paradigm often analyze data to prove or disprove a priori hypotheses that can be operationally defined. Controlled experimental conditions typically are employed to limit extraneous influences from the everyday world that could compromise the predictive value of the hypotheses being tested. Because the search is for objective variables that exist external to the self, the internal subjective states of individuals are not considered to be useful as data or research questions (Gadlin & Ingle, 1975; Prutting, 1983).

At the other end of the continuum lies the phenomenological perspective on social reality. Within this tradition the goal is to interpret human conduct by exploring the internal ideas, feelings, and rationale that move people to act in the way they do (Douglas, 1970). The purpose is to *understand* what people do from their own frames of reference and not to predict how they will act from a set of external, objective variables. Maxwell (1990) discusses the important role that Weber (1947) played in introducing the notion of understanding to the social sciences:

> The crucial difference between the social sciences and physical sciences is that the regularities of social action, unlike those of

physical events, are understandable. That is, the social researcher must consider the *intentions* of human behavior. "If meaning is insufficiently understood, then regardless of the degree of uniformity and the numerical precision of probability, the statistical probability is still incomprehensible" (Maxwell, 1990 [quoting Weber, 1947], p 2).

Contrary to the positivist school of thought, in the more qualitative tradition the search is for subjectivity because within the flow of social discourse, objective data must undergo interpretation. To understand, for example, whether a single, objectifiable behavior, such as an eye twitch, is a response to a gust of wind, an indicator of a conspiracy, or a flirtation with another person, a thick interpretation from the actors' frames of reference is required (Geertz, 1973). In other words, people are viewed as subjects of experience whose sensations, feelings, thoughts, and actions combine to influence how they interpret activity.

When adopting research activities from the qualitative end of the continuum, the quest is to understand behavior from the ground up, according to the actor's own social experiences. Consequently, more emphasis is placed on collecting data in naturalistic contexts, rather than in laboratory settings. A priori hypotheses are avoided because they represent the predetermined conceptions of the researcher, rather than the frameworks of those under observation. Instead, categories and hypotheses emerge from the data (Strauss & Corbin, 1990).

THE NATURE OF THE PARTICIPANTS AND THE DATA

Because traditional quantitative methods seek objective data for predictive purposes, the subjective impressions of those receiving the experimental treatments are excluded from analysis (Gadlin & Ingle, 1975). Individuals under investigation are treated as passive participants whose personal views and reflections are not permitted to bias the research process. In this paradigm, relevant data consist of overt subject performance on some set of predetermined dependent measures. Individual performances are significant only to the extent that they represent part of a group mean. In other words, the areas of greatest interest for researchers in this quantitative paradigm involve the differences between groups, not the individual differences within the groups. Within groups, variability typically represents random or chance fluctuations of scores due to measurement error and individual variations among subjects within treatments (Borich, 1983).

Given that the interpretation of human social experience from the actor's own perspective has been a central concern in qualitative research, the people under qualitative investigation are treated as active, reflexive participants whose comments on the research process are considered important. Rather than being passive subjects, participants become consultants or informants who enter into a personal relationship with the researcher. Ideally, the informant's job is to interpret the social world through her or his eyes for the investigator.

Unlike subject selection in quantitative research, these informants are not chosen randomly. Instead, they are selected on the basis of the researcher's judgment and the informant's ties to the community being studied. In this type of research, the individual informant's point of view warrants as much attention and explanation as alternative perspectives offered by other members of the community under investigation. Because the goal is to understand "what's going on" from the actor's frame of reference, the individual perspective is just as important as the group differences focused on in the quantitative research.

The use of judgment samples (as opposed to random samples) raises particular concerns. Barnes (1984), for instance, introduced his investigation of the Omaha Indians by confronting the possibility that Two Crows, historically described as a knowledgeable and authentic Omaha informant, purposefully may have withheld certain information. Because informants have their own agenda, apprehending their comments is a delicate and difficult process. And, because it is so important to richly and appropriately interpret the views of the group under investigation, the veracity of the informants and one's relationship to the data are viewed as matters to be opened up and understood, rather than excluded from data analysis. This would be the case even if it meant that a single unified version of the truth was not to be found (Geertz, 1983).

When considering the nature of the data and its sources in complex social settings, there appear to be advantages for the more qualitative techniques. Some important social information resists quantification and instead requires detailed presentation (Hymes, 1978). Just as a photographer may produce a visual representation of a scene, the qualitative researcher attempts to offer a "social image" of the participants' world and experiences. The idea is to present these scenes in their full complexity, irrespective of their measurement stability.

This sort of description should not be gratuitous. Rather, when detailed descriptions of behavior and context are provided, they should benefit our understanding of the phenomenon under investigation. For example, if portraying the physical surroundings of a speech-language treatment lesson, it would not be appropriate to depict a table with a set of treatment materials and two chairs facing one another merely because these objects were present. The point is to illustrate this scene in a way that dramatizes the mutual involvement of the interactants and their social relationship. Here, the physical setting would be described in order to provide insight into how intervention is accomplished relative to the experiences of the participants.

Similar to quantitative researchers, qualitative investigators also count objects and behaviors. However, the purpose of such information is to understand what is going on in a specific situation at a particular point in time and not to predict what will happen in the future on the basis of some experimental manipulation. As qualitative researchers are enmeshed in interpreting social action rather than making operationalized predictions, there is often less of a concern for adhering to reliability constraints in categorizing and counting human behavior and experience.

ACCOUNTABILITY PRACTICES

In quantitative research, one of the prime ingredients of a quality investigation is reliability. While validity is also a central concern, reliability is the focus of this discussion because it highlights a central difference between these two research paradigms. Reliability refers to the consistency and stability with which a particular behavior can be observed and measured. The more stable the behavior under observation, the more confident researchers can be in correctly interpreting the results of their studies. In quantitative research, behaviors that are inconsistent or unstable tend to be excluded from analysis because they are difficult to operationalize for predictive purposes.

In employing the qualitative paradigm, researchers are quite concerned with many types of complex interpretive phenomena, including those behaviors that are not as stable and that are more difficult to operationalize. During communicative interaction, for example, utterances may serve a variety of functions and convey several potential conversational meanings (Dore & McDermott, 1982; Labov & Fanshel, 1977; van Kleeck, Maxwell, & Gunter, 1985). As discussed by Goffman (1981):

> The difference between what is said and what is meant, and the various different things that can be meant by what is said, allow a speaker to knowingly convey through the same words one meaning to one auditor and a different meaning (or additional meanings) to another . . . a speaker with more than one hearer is likely to be able to find a way of sustaining collusive communication with one of them through the winks and under-the-breath remarks that words themselves can be tricked into providing. (p. 53)

Goffman goes on to note that these types of multiple-meaning utterances also can be found in dyadic communication in which certain interpretations can be denied, even if they are intended. As Labov and Fanshel (1977) observe, speakers need a form of communication that is ambiguous because it is often "advantageous to express hostility, challenge the competence of others, or express friendliness in a way that can be denied if they are held to account" (p. 46).

Quantitative researchers either would tend to exclude these complex communicative acts from analysis because of difficulties faced in reliably counting them, or force such utterances to fit certain pre-established, operationalized definitions or categories for coding purposes. The latter "ad hoc-ing" strategy, according to Garfinkel (1972), is common among all investigators who must negotiate how people and experiences are to be categorized, even when they do not conveniently fit any a priori definitions. In other words, understanding complex social processes like communication requires interpretation, a process that runs the risk of being obscured and misrepresented because of the constraints imposed by reliability.

In the qualitative paradigm, accountability is attained through triangulation. The investigator "triangulates" (compares and contrasts) a variety of data sources to ensure the authenticity of her or his interpretations (Sevigny, 1981). Data gained from informant interviewing and participant observation typically are compared and contrasted over time. Both of these have to do with the role of the researcher in collecting information.

THE ROLE OF THE RESEARCHER

In quantitative inquiry, the researcher is an objective observer who is separable from the people being examined and the data being collected. It is the experimental treatment—not the presence of the researcher and not her or his beliefs, values, or expectancies—that is being evaluated according to a predetermined set of dependent measures. The impact of the examiner on the subjects, unless specifically built into the design of the study, is viewed as a form of bias to be eliminated.

Bias also has been of concern to qualitative researchers; however, it is dealt with in a very different way. Where quantitative methods seek to eliminate investigator bias, in qualitative research there is more interest in understanding how fieldworkers influence and are influenced by the data they collect. The concern is, in part, to (a) explain how the researcher's own predispositions may impact on data collection and analysis, and (b) account for the observer paradox. Each of these concerns is discussed subsequently.

Researcher Bias

Over the past 15 years, particularly in the field of cultural anthropology, qualitative researchers have been exploring their own partiality and its consequences. Bronislaw Malinowski (1922) and his work in the Trobriand Islands, for example, played a central role in the development of cultural anthropology as an academic discipline. With the publication of his diary in 1967, however, it was discovered that "he had rude things to say about the natives, and rude words to say it in" (Geertz, 1983, p. 56). As anthropologists began reflecting on this book, a serious issue was raised:

> If it isn't, as we have been taught to believe, through some sort of extraordinary sensibility, an almost preternatural capacity to think, feel, and perceive like a native (a word, I should hurry to say, I use here "in the strict sense of the term"), how is anthropological knowledge of the way natives think, feel, and perceive possible? (Geertz, 1983, p. 56)

With this epistemological question, investigators have become more aware of how their own personal traits may influence the data they collect (Liebow, 1993). Generally speaking, qualitative research reflects more of a concern for exposing personal biases and experiences, rather than for excluding them from analysis.

The Observer Paradox

It also is recognized that the mere act of observing social behavior may change its nature. The dilemma is how to view natural social interaction when the presence of an investigator can cause the actors to behave differently. To

address the observer paradox, researchers engage in different types of participant observation.

Participant observation. Rather than viewing people from afar, the participant observer seeks a deeper understanding of those under investigation by interacting with them during their everyday activities. Hammersley and Atkinson (1983) discuss four roles that a fieldworker can occupy along the participant-observer continuum: (a) complete participant, (b) participant-as-observer, (c) observer-as-participant, and (d) complete observer.

As complete participants, researchers go undercover, concealing their true identities and their data collection activities from the community under investigation. While this may not aggravate the observer paradox as much as other forms of observation, there are two problems with taking the identity of a complete participant (Sevigny, 1981). First, investigative mobility is lost because questions must be asked in ways that do not make those being studied suspicious of the researcher's identity or motives. To avoid drawing unwanted attention, the fieldworker also may have to refrain from taking notes for fear of blowing her or his cover. Second, the researcher risks "going native" and losing perspective on the investigation.

At the other extreme lies the role of complete observer. In this case, the impact of the observer paradox is limited because the observer is removed from the scene being investigated. However, there are other problems. For example, this role results in an inability to question those under observation, making it impossible for investigators to test their interpretations against feedback from those being viewed.

In actual practice, researchers often vacillate between these two extremes, adopting several of the four roles at various times. Sevigny (1981), for instance, assumed the positions of complete participant, complete observer, and observer-as-participant to illuminate teacher-student interaction within college art classes. Corsaro (1981) began as a complete observer, viewing children from behind a one-way mirror for approximately 2 months, before becoming a participant-as-observer in a preschool setting.

Adopting different roles along the participant-observer continuum places researchers in a better position to see how their presence is influencing data collection. It also allows investigators to maintain methodological flexibility when they have to collect data under different social circumstances.

Informant interviewing. Because participant observers traditionally seek some level of mutual involvement with those being investigated through such means as asking questions, concerns also arise about how informants are interviewed. Spradley (1979) characterized the link between interviewers and informants as a teacher-pupil relationship. The interviewee assumes the role of teacher, while the interviewer is the pupil. To minimize the impact of the researcher's perspective on the informant's point of view, initial interviewer questions tend to be open-ended. During a recent study of women's responses to the Anita Hill/Clarence Thomas hearings, for example, Trix (in press) posed broad questions during face-to-face interviews to clarify quantitative survey data gathered by public opinion

pollsters over the telephone. This ethnographic questioning framework has been adopted for use in many areas of social science, including the study of communicative disorders (Westby, 1990).

The relationship between interviewer and interviewee, however, is not straightforward and can be complicated in at least two ways. First, as was mentioned earlier, informants are people, not subjects, who have their own agenda and who may misinform interviewers according to their purposes. During fieldwork, the researcher may be just as much an object of study as the community under investigation.

A second complication in interviewing has to do with whether or not the investigator is conducting a study within her or his native community. When engaged in research among peers, the interviewer's questions may be regarded with suspicion, especially if the informants believe that the information being sought is common knowledge. In such cases, researchers can become objects of mistrust because they are asking questions for which they already have the answers. Informants are apprehensive because they believe that they are being scrutinized according to the investigator's hidden agenda. The intricate relationship between interviewers and their informants requires the researcher to move away from simple conceptions of informants as either good or bad and toward an understanding of why informants say the things they do.

Traditionally, face-to-face interviews have been conducted without the aid of audiovisual equipment. However, with recent technological advances, more use has been made of audio- and videotape procedures. Particular activities are recorded and then replayed to various audiences to ascertain their perspectives on these events, a procedure that Circourel (1974) referred to as "indefinite triangulation." Data gathered from different viewers then are contrasted to make more valid inferences (see Emihovich, 1983; Gumperz & Tannen, 1979; Kovarsky & Maxwell, 1992).

CONCLUSION

This article provides a starting point for distinguishing between quantitative and qualitative research approaches according to four continua. With the distinctions discussed in this article, researchers-in-training may be directed to more in-depth investigation of these approaches. A full appreciation of these methods and their differences, of course, will require more detail because the issues and concepts are far more complex than presented in this simplified discussion. Implementing qualitative and quantitative research requires specialized training.

The intent of this article is not to champion one paradigm over another, but, rather, to assist in proper implementation of either approach when appropriate. The utilization of either form of research should be guided by questions that are worth asking and not by a concern for whether or not quantitative or qualitative methods of inquiry are involved—especially because both types of investigation are

effective when appropriately applied. Although individuals have their own preferences and skills regarding the investigative techniques they employ, no method should stand in the way of asking important questions.

Inquiry into social phenomena is no easy task. Teasing out data and both describing and interpreting these data for various purposes may require methodological flexibility. Both current and future social researchers should be familiar with different approaches to conducting research if they are to achieve greater understanding of these complex issues. To strive for anything less would be naive and counterproductive.

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APPENDIX

DISTINGUISHING RESEARCH METHODS ALONG FOUR CONTINUA

Qualitative Research   Quantitative Research

$\longleftrightarrow$

The goal of the research

Phenomenological
  Subjective understanding
  Naturalistic contexts
  Hypotheses emerge from data
  Reflexive participants

Positivist
  Objective prediction
  Controlled laboratory settings
  A priori hypotheses
  Non-reflexive subjects

The nature of the data and the role of the participants

Active informants
Judgment samples
Presentational and objective data
Individual differences important
Interpretation of bias

Passive subjects
Random samples
Objective data only
Within-group differences minimized
Elimination of bias

Accountability practices

Triangulation
  Unstable phenomena of interest

Reliability
  Unstable phenomena excluded

The role of the researcher

Actively seeks to illuminate biases
  Subjective influences on data explored
    (including informants and researcher)
  Observer paradox interpreted through
    participant observation and informant
    interviewing

Actively works to eliminate biases
  Subjective influences on data eliminated