Combining Stories and Numbers: A Methodologic Approach for a Critical Nursing Science

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Abstract

The critical paradigm is increasingly being recognized as an appropriate perspective for the development of nursing knowledge.While different research approaches including feminist, neo-Marxist, and participatory research have been described, all share the goals of empowerment, emancipation, and change. As a relatively new world-view for nursing, the concept of a critical nursing science faces much the same resistance as the interpretive paradigm did a decade ago. This article reviews the aims and assumptions of the critical paradigm; discusses the merits of combining stories and numbers for the agenda of change; and, using examples from our research, describes three strategies for combining stories and numbers in the critical paradigm.

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Key words: critical nursing science, critical paradigm, methodology, methods

Early efforts in the development of nursing knowledge were shaped almost exclusively by the assumptions and methodologies of positivism and its postpositivist successor. In recent years, researchers have broadened their scope and have begun to examine the relevance of other paradigmatic perspectives for the development of nursing science. Qualitative methodologies emanating from the interpretive or constructivist paradigm, considered to be the "cutting edge" alternative to postpositivism in the not-so-distant past, are now well-accepted and respected ways of developing in-depth understandings about phenomena of interest to nursing. Today there is a growing cadre of nursing scholars with expertise in interpretive research, and qualitative methodologies are an integral component of many graduate nursing programs.

Interest in developing a critical nursing science with its own paradigmatic perspective is on the rise. Scholars have argued that a critical perspective has much to offer in the development of nursing knowledge, and have examined the fit of this perspective with nursing philosophy, ethics, agenda, and research traditions. [1-5] Yet, proponents of this emerging paradigm find themselves in much the same position as interpretive scientists did a decade ago. There is caution and confusion and a need to demystify the essence of a critical nursing science. Similarly, it is incumbent upon researchers to clarify how scientific norms of postpositivist and interpretive research pertain to this new perspective. Thus, as new paradigms evolve, existing methodologies must be transformed and new approaches developed that fit the aims and assumptions of the emerging paradigm.

Openness to the possibilities that newer perspectives have to offer provides an opportunity to look at existing tensions in a new light. There have been spirited debates about whether paradigmatic assumptions dictate the use of particular research methods, and hence, whether the combination of quantitative and qualitative methods in a single study represents "good science." [6-8] While this discourse has been informative and stimulating, much of it has focused on the relative merits of various methods. In an earlier issue of this journal, [9] we argued that there is an important distinction to be made between "methods" and "methodologies"; that failure to acknowledge this distinction has contributed to a dichotomized view of nursing research; that methods are not paradigm specific; and, ultimately, that a combination of methods may be used to achieve the purposes of research in any paradigm without violating paradigm assumptions. At the same time, we acknowledged that combining methods is most easily accomplished in the critical paradigm.

In this article, we extend the discussion by examining how it is possible, even advantageous, to employ the use of different research methods within the critical paradigm while remaining faithful to paradigmatic assumptions, agenda, and methodologic principles. A brief overview of the critical paradigm is presented; key assumptions and their relationship to the agenda of change are addressed; and three broad approaches to combining "stories" and "numbers" in critical research are described. Examples from our research are used to illustrate each approach. Finally, we address inherent challenges faced by those who are attempting to use multiple methods in new and evolving ways.

A CRITICAL PARADIGM: ASSUMPTIONS AND AGENDA

Many schemata have been put forth to distinguish between the epistemologic and ontologic assumptions and goals of differing paradigms. Within the social sciences, Guba and Lincoln [10] depicted four inquiry paradigms: positivist, postpositivist, "critical theory et al," and constructivist, previously referred to by these authors as the "naturalistic" or "interpretive paradigm." The use of the phrase "critical theory et al" reflects Guba and Lincoln's [10] inclusion of multiple approaches, namely neo-Marxism, feminism, materialism, and participatory research under a single mode of inquiry because they share common goals and assumptions. In a similar vein, Coyne and associates [11] described an "emancipatory paradigm" that includes at least seven distinct modes of inquiry, all of which share an interest in sociopolitical or structural change. Since these modes of inquiry are evolving, different terminology is used to describe them depending on the source consulted. The phrase "critical paradigm" as used in this article, is

similar to these conceptualizations. It refers to multiple perspectives that differ on certain dimensions but that share as a goal the generation of knowledge, which contributes to emancipation, empowerment, and change.

From the critical perspective, knowledge is not something that stands alone or is produced in a vacuum by a sort of "pure" intellectual process. Instead, all knowledge is value laden and shaped by historic, social, political, gender, and economic conditions. [10,12,13] Ideology-the taken-for-granted assumptions and values that usually remain hidden and unquestioned-creates a social structure that serves to oppress particular groups by limiting the options available to them.

A fundamental assumption among critical researchers is that knowledge ought not be generated for its own sake but should be used as a form of social or cultural criticism. [14] Critical scholars hold that oppressive structures can be changed by exposing hidden power imbalances and by assisting individuals, groups, or communities to empower themselves to take action. [15] The notion of research as praxis, or the combination of research and action, is a basic tenet embraced by researchers working within any of the critical approaches. A critical "agenda" then focuses on creating knowledge that has the potential to produce change through personal or group empowerment, alterations in social systems, or a combination of these.

Implicit in this view is a valuing of people as the experts in their own lives, who have an important stake in how issues are resolved. Critical researchers acknowledge the value of both causal explanation, characteristic of the postpositivist paradigm, and interpretive understanding, characteristic of the constructivist paradigm, as legitimate types of knowledge. [5] However, critical scholars are not content with the goals of either the postpositivist or the constructivist paradigms. They do not wish to control and predict, or to understand and describe, the world; they wish to change it. Hence, the type of knowledge sought must be capable of meeting this challenge.

ON METHODS AND METHODOLOGY

The distinction between method and methodology is a thorny issue that has been seriously misunderstood by many both in and out of nursing. As we noted in our earlier article, [9] Harding [16] had delineated several important and insightful distinctions between these terms. Accordingly, methodology refers to a set of principles for conducting research that evolve from and operationalize paradigm assumptions by guiding decision making in several areas: the relationship between the researcher and research participants; epistemologic assumptions about the nature of knowledge and who are legitimate knowers; the extent to which subjective meanings are valued and incorporated into the research; and how participants are, or are not, incorporated into the process of analysis and dissemination of results. Specific decisions about the design and conduct of a particular study are usually a trade-off between adhering to methodologic principles of the paradigm guiding the study, achieving the specific study purposes, and attending to the many practical considerations of conducting an investigation.

Methodologies for particular critical approaches, such as feminist or participatory research, have been discussed at length and principles guiding these forms of scholarship continue to evolve. [10,13,17-22] Across different critical perspectives, common methodologic themes can be

identified, although the extent to which each theme is emphasized, and hot it is typically enacted, may differ. The following core methodologic characteristics are common to all critical approaches:

• The study addresses an issue that is of concern to a group that is disadvantaged, oppressed, or marginalized in some way.

• The research process or results have the potential to benefit the group, immediately or longer term.

• The researcher's assumptions, motivations, biases, and values are made explicit and their influence on the research process is examined.

• Prior scholarship is critiqued in an attempt to elucidate the ways in which biases, especially those related to gender, race, and class, have distorted existing knowledge.

• Interactions between the researcher and participants convey respect for the expertise of the participants.

In contrast to the array of methodologic decisions researchers confront in designing and conducting critical research, there are fewer choices regarding methods. Methods refer to the ways in which data are collected of which there are only three: posing verbal or written questions to individuals or groups; observing; or reviewing records. [16] Any of these methods may yield qualitative or quantitative data, stories or numbers. Similarly, any method has the potential to be used in exploitive or empowering ways. A paramount issue that critical researchers confront, then, is how to use the chosen methods in a manner that is consistent with the paradigmatic methodological assumptions.

STORIES AND NUMBERS AS PERSUASIVE EVIDENCE

Another fundamental consideration is to select methods that will yield the most persuasive evidence to bring about change. In studies that aim for some degree of both personal empowerment and social or political change, the most compelling evidence arises from a combination of stories and numbers. [9] However, the relative weighting of each method may vary and is determined by the type of change sought. When social or political change is a primary goal, numbers are most appropriately in the foreground, with stories in the background. In contrast, when personal growth or individual or small group empowerment is the central aim, stories may be situated in the foreground, with numbers placed in the background. Alternatively, there may be times when stories and numbers merit an equal place in the study design.

There has been little practical examination of the ways in which stories and numbers can be used together to achieve different purposes in critical research. Methodologic triangulation can be one way that stories and numbers are combined, but generally this terminology is used to describe combining methods in order to enhance the validity or comprehensiveness of findings, rather than enhancing their empowerment potential. [23,24] "Multimethod research" is another phrase used to describe combining methods, but usually refers to the integration of methods without

paradigmatic or methodologic considerations. [25] The following sections elaborate on the three basic approaches in some depth.

Numbers foreground, stories background
Aims of this approach

In this approach researchers use the tools of traditional quantitative science to develop or test explanations or interventions that have the potential to empower disadvantaged groups. A qualitative component is included, but it is less central to the overall project. The emphasis on quantitative approaches is predicated on a belief in the inherent power of numbers and on the familiar and well-accepted model of science by which they are generated. A fundamental aim is to influence those in positions of power, as well as the general public. Thus, when the primary purpose of a study is to document the need for social or political change, to evaluate the effectiveness of particular actions, or to influence and challenge widely held attitudes and social norms, numbers (ie, "hard evidence") may be the most persuasive form of data. As Milio stated, "Constituencies of the poor and powerless must prove their case for change; the rich and powerful do not need hard data to maintain the status quo." [26] (p22)

When designing primarily quantitative studies, critical researchers must ensure that the approaches are congruent with the agenda and methodologic principles of critical scholarship. For example, Reinharz [27] described how both experimental and survey research approaches can be adapted in the service of a feminist research agenda. Examplars include Romkens' [28] feminist survey research of domestic violence in the Netherlands and Allen's [29] critical program evaluation research. Critical researchers are less concerned with objectivity and control than their postpositivist counterparts. Instead, they "push the limits" of traditional quantitative designs by maximizing the involvement of stakeholders to whatever extent possible. Participants and grassroots stakeholders, including community organizers and service agencies, are consulted regarding the relevance of research questions, the interpretation of data, or strategies for dissemination of findings. [13,30-32]

At the most basic level the critical researcher acknowledges a tension between the need for scientifically sound research on the one hand and the need to minimize the "distance" between the researcher and participants on the other. Methodologic decisions most likely to contribute to the overriding goal of change may simultaneously compromise objectivity and control in the traditional postpositivist sense, but may also actually enhance the quality of the research by more clearly acknowledging all sources of bias, including those that remain hidden from the postpositivist. Such decisions are an important mechanism for validating that participants see the issue as important and for establishing collaborative, respectful, and less hierarchical relationships between researcher and participants. It is possible that some degree of personal empowerment may also ensue, but this level of change is not the primary focus.

The use of stories as an adjunct to the quantitative data may serve several purposes. Most commonly, stories "put a face" on numbers, allowing the reader or listener to consider the meaning of the numbers in new and often more meaningful ways. They add the context that is so often missing in purely empiric research reports. At the same time, stories allow the voices of participants to be heard, contributing to personal as well as broader social change. Stories offer

access to information not readily elicited in numbers, including structural and situational barriers that limit life choices available to participants, as well as individual and collective strengths needed to counteract these forces. These insights can be used to develop alternative explanations that better reflect the experiences of disadvantaged groups.

When critical studies are conducted primarily to test theories, qualitative data can enhance the processes of theory critique and refinement in several ways:

• by providing new or additional explanations for relationships between concepts in the theory;

• by identifying problems in the fit of the theory with the experiences of a particular group;

• by identifying exemplars or illustrations of particular concepts within a specific context; and

• by examining the validity of existing measures of theory concepts by considering the consistency between items on these measures and participants' descriptions of their experiences.

Sandelowski [33] has provided a thoughtful analysis of the uses of qualitative approaches in interventions studies, three of which are most relevant to the aims of critical research. First, qualitative data may provide in-depth descriptions of the process of change, with emphasis on how variations reflect cultural, racial, social, economic, or gender issues. Second, participants' experiences are essential for understanding the extent to which an intervention may burden or further oppress, rather than empower, participants. Information about the relevance and helpfulness of particular aspects of an intervention may be used to critique and revise the approach used. Finally, participants' reflections may help to identify positive outcomes that were either nonsignificant in quantitative analyses due to insensitivity of measures or not anticipated and therefore not measured. These efforts and crucial aspects of designing programs and interventions that are relevant to participants, facilitate empowerment, and have the potential to influence both practice and policy development.

Because sample sizes for quantitative studies may be large, it is neither feasible nor practical to collect substantial amounts of qualitative data from all study participants. Hence, two general approaches tend to be used to collect qualitative data. In the first approach in-depth interviews are conducted with a small subsample of participants, who are most often purposively selected so that the voices of people who experience differing cultural, social, economic or gender realities are heard. Although the scope of this strategy is typically limited, it affords the researcher and participants an opportunity to engage in dialogue, to critically reflect on their experiences, and ultimately, to achieve at least some degree of personal empowerment. This strategy contrasts with the tendency among postpositivist scientists to interview a randomly selected subsample of participants in order to enhance generalizability of findings.

The second strategy used to integrate stories with numbers involves asking a limited number of open-ended questions to all study participants, using written questionnaires or interviews. Although in general this approach may be more feasible and less costly, it is often more structured, with limited opportunities for dialogue and reflection, and thus, less likely to contribute to the aims of critical research. A variation of this approach is Romkens' [28] survey

on wife abuse in which all participants (n = 1,016) were asked open-ended questions. The data were submitted to manifest content analysis and interviews were conducted with a small subsample in order to determine motives for survey refusals and to obtain more information on abused women.

An illustration

A previous study conducted by Ford-Gilboe [34,35] illustrates some of the principles and challenges in conducting a primarily quantitative study with a critical perspective. Conducted within a feminist perspective, the investigator sought to move beyond a problem-oriented view of single-parent families (SPFs) to examine the health promotion efforts of SPFs and the strengths, motivations, and resources that influence these processes. A critique of nursing literature revealed that SPFs were most often viewed from a problem-oriented or deficit perspective, and that research had failed to consider the strengths and diversity of this group, contributing to their marginalization. [36] The study tested hypotheses derived from the Developmental Health Model (DHM) [37,38] a nursing model grounded within a family "strengths" perspective, respecting diversity in individuals and families and emphasizing abilities as well as needs and issues in the quest for healthy living. Thus, use of the model as a guide for practice has the potential to facilitate empowerment of disenfranchised groups, such as SPFs. The decision to include both SPFs and two-parent families in the study was a conscious effort to dispel negative stereo-types about SPFs by comparing them to the two-parent family "gold standard."

Two data collection approaches were used. Mailed surveys consisting of established measures of study variables that were critiqued for bias were completed by 138 families (68 single-parent, 70 two-parent). Using information provided on the demographic questionnaire, in-depth home interviews were conducted with a purposive subsample (n = 16) of families, selected to represent diversity in socioeconomic status, ethnicity, and other relevant factors. A semi-structured interview guide was used with flexibility to facilitate dialogue as the interviewer and family explored family capabilities and health promotion behavior, as well as topics that families considered to be relevant to the discussion. Interview data were transcribed, submitted to content analysis, and used to confirm quantitative findings and to enrich these by providing illustrations of study findings, revealing unique strengths of SPFs, and serving as a basis for further critique and refinement of the DHM. Study findings provided the basis for an interview published in a local newspaper and were used to obtain funding for a larger extension study, the first in a program of research addressing health promotion in SPFs.

Stories foreground, numbers background
Aims of this approach

The second broad approach entails the use of stories as the primary source of data. Numbers, or quantitative data, are also incorporated into the study design, but they are accorded a peripheral place in the project. Both sources of data, however, contribute to the overall strength of this design. This combination of stories and numbers is less prevalent in the literature and is presumably less widely endorsed than the approach previously discussed. The reasons for this are not entirely clear. However, it has been suggested by some qualitative researchers that the

use of numbers in qualitative studies violates the assumptions of the interpretive paradigm; thus, the numbers are considered to be incompatible with the aims of the research. [39] This viewpoint would seem to account for at least part of the reason that few studies using this approach could be located. Despite the lack of widespread support for the approach, it remains one with considerable potential merit.

It was stated that a primary purpose of placing "numbers foreground and stories background" in the critical paradigm is to shed light on sources of injustice, to challenge taken-for-granted attitudes and behaviors, and to further the agenda of social and political change. A secondary purpose is to foster personal growth and empowerment. The approach described in this section, using stories and numbers as the primary and secondary sources of data respectively, shares similar aims with the first approach. The emphasis, however, is different.

When stories comprise the primary source of data in critical research, their purpose is to provide a basis for researcher and research participants to engage in dialogue, reflection, and critique related to the phenomenon under investigation. These activities are the cornerstones of research grounded in a critical, theoretical and methodological perspective. According to Freire, [15] the process of facilitating empowerment begins with helping individuals gain a critical awareness of their situation. This process is akin to consciousness raising, or conscientizacao.

In essence the telling of the story enables the research participants to "name their reality" and to examine strategies for changing that reality. The researcher in this context is not a passive listener but is actively engaged with the research participants in a dialogic exchange. Thus, in this approach the emphasis is on personal change, growth, and empowerment. However, the critical researcher recognizes that individual consciousness and reality are the result of socially and historically created conditions. Individual problems and concerns do not occur in isolation and are often beyond one's individual control. Substantial and lasting change must occur on many levels, not only the individual.

The use of narrative storytelling is a methodologic approach used both in the interpretive paradigm and the critical paradigm. However, the use of stories in each paradigm differs in the purpose of the telling, the process by which stories are elicited, and the way in which the analysis is carried out. Within the interpretive paradigm the purpose of the story is to describe and understand the phenomenon under investigation. As the story unfolds the researcher may ask probing questions to gather additional information about the phenomenon, but the purpose is solely to gain additional descriptive insights. In contrast, the elicitation of stories in the critical paradigm is explicitly related to a desire to reveal hidden power imbalances and, thus, for researcher and research participants to achieve new understandings about the topic of interest, and to use those new understandings to bring about growth and change. Where researchers grounded in the interpretive paradigm claim to have no preconceptions about the particular phenomenon, critical researchers state their biases, and use these in the coconstruction of meaning with participants.

An important aim of critical researchers who use stories as a primary source of data is to create a collective awareness of one's situation. Therefore, one strategy that is often used is to conduct interviews in groups. Stevens [40] used this approach in her research about the health of lesbian

women. As the women in her research came together to tell their stories, they began to see that many of the challenges they faced were not the result of individual deficiencies or weaknesses, but were due to inherent barriers and inequities in the existing structures and system. Thus, the group provided a context for collectivizing their individual experiences, for drawing strength from one another, and for examining strategies for change. This approach bears some similarity to focus group research, but the methodology and aims are different.

The use of numbers as a secondary source of data in critical studies may serve several functions. First, numbers can be persuasively used to document the significance of a particular issue or event. Because critical researchers often study the experiences of traditionally understudied or overlooked groups, numbers can draw attention to the magnitude of important issues. For example, a very brief population-based survey could be used to establish prevalence of a problem. This survey could also be used to identify which subsample of participants should be approached for more in-depth interviews.

Numbers can also be used to provide additional descriptive data. Because sample sizes are typically small, it may not be possible to generalize from the statistical findings. However, it may be possible to examine differences between subgroups of participants. Elucidation of such differences, and important associations, may then be further explored in larger survey studies. In addition, the use of numbers in this sense may yield insights into the ways in which diverse subgroups experience the same phenomenon. Underlying causes for noted differences may then be considered. Finally, this approach may also provide an opportunity to critique existing measures for completeness or relevance.

An illustration

Berman's [41] work with children who had witnessed violence is an example of how this approach may be used. In this critical narrative study, children of war and children of battered women were asked questions designed to elicit stories about the violence in their lives. The overall purposes of the study were to examine how children who have grown up amid violence "make sense" of their experiences and to understand the meaning of health when violence has been a part of the child's everyday reality. The study design was primarily qualitative; the children's stories comprised the main source of data. A secondary quantitative component of the study consisted of the administration of a standardized instrument to evaluate the degree of posttraumatic stress disorder (PTSD) among the study sample.

Although the term "interview" is used here, the encounters with the children were more dialogic than is customary in more traditional narrative approaches, and included the processes of reflection, listening, collaboration, and critique. Throughout, the participants were encouraged to reflect on parts of their lives that they might not have previously paid attention to, often in new and unfamiliar ways. As they contemplated the reasons for violence in their own lives, and for violence in society more generally, and the relationship between violence and health, they began to see their own realities differently, that is, more critically.

Recognizing that children express themselves in many ways, they were also given an opportunity to draw pictures or to write poems to help tell their stories. During a second interview 2 weeks

later, emerging themes were shared, discussed, and modified, thereby involving the children actively in the construction and validation of meaning. Further discussion occurred about the meaning of violence in their lives. Thus, while subjective experiences were valued, they were examined within the context of broader social and political structures that allow and perpetuate the use of violence.

All participants were given the choice of meeting alone with the researcher, or in a small group with about two other children. The group interviews fostered a sense of solidarity and connection that would not have been possible through individual interviews. Thus, the group provided a context in which participants were able to analyze the struggles they had encountered, simultaneously begin to collectivize their experiences, and develop a sense of empowerment as they began to see the possibilities for change.

The quantitative findings in this study at times seemed inconsistent with the qualitative findings. Many of the children who appeared to be doing quite well and who revealed remarkable insights into the violence they had witnessed had high scores on the posttraumatic stress reaction index. The collection of both types of data provided a basis from which to critique the instrument and the conceptualization of PTSD. The findings lent support to the notion that posttraumatic stress responses are "normal" expected responses to abnormal situations.

The contributions that stories and numbers bring to the goal of change in this study are clear. If we wish to convince policy makers that children who witness violence are at risk for adverse sequelae, we can document that a high percentage of children demonstrated moderate to severe levels of posttraumatic stress symptomatology. Similarly, we can put forth a persuasive argument that such instruments only yield a partial picture of the way children make sense of their lives amid violence.

Stories and numbers with equal emphasis

A single research endeavor or an overall program of research can give equal attention to quantitative and qualitative data. In an enterprise that is attempting to foster empowerment of individual participants in equal measure to system change, a full range of methods and types of data can be incorporated. Quantitative data are typically generated using standardized instruments, while any combination of structured, semistructured, or open-ended interview techniques may be used to tap different qualitative aspects of the study.

The equal emphasis approach may be used to accomplish a variety of study aims:

• simultaneously or sequentially testing, adding to, or further specifying a theory through quantitative (eg, structural Equation modeling or qualitative (eg, grounded theory) analysis of data;

• establishing the prevalence of a phenomenon;

• fully exploring and contrasting the context of a particular phenomenon, including implicit or explicit power imbalances based on gender, ethnicity, ability, or sexual orientation; and

• using participatory experimental methods to plan and then test a nursing intervention or community program.

Separate sets of in-depth interviews and observations could be used to explore the impact of the intervention on the system, intervenors, and clients.

A frequent criticism of purely quantitative data is that it lacks or strips the findings of context, which is germane to a holistic perspective. [23] Qualitative data, including observational data, can provide the context for quantitative findings, but the opposite is also true. Quantitative findings can help establish the status of those whose perceptions and realities are being analyzed qualitatively. For instance, participants' scores on a history of victimization instrument or the relative violence of their neighborhoods can help establish if their perceptions of increased risk for victimization are at least partly a reflection of internal or external realities.

Sample size is usually large enough to provide adequate power and cell sizes for multivariate analytic techniques. With sufficient sample sizes, apparent differences in ethnic, sexual orientation, or gender group responses, suggested by qualitative or quantitative analysis, and their underlying causes, can be examined to determine the relative influence of other structural factors (eg, income or neighborhood housing differences) on variables of interest. Throughout data collection, attention is paid to quantitative measurement of variables to establish aspects of oppression that could not be captured by qualitative findings alone. For instance, variables reflecting relative in-equality of income between groups, rather than absolute income, measures of neighborhood structural disintegration from governmental neglect, or combinations of variables representing community strengths can quantitatively represent important aspects of context that policy makers may see as more "objective" than individual perceptions alone. In combination with narratives, these quantitative contextual data are particularly persuasive.

In studies employing a more balanced mix of stories and numbers, at least some qualitative data are typically collected from all participants. In addition, a smaller subsample of participants may be invited to provide in-depth data on specific issues. Such research endeavors result in large, complicated datasets and must often be published in separate articles or book form in order to fully present the results. They often require diverse data analytic and methodologic expertise and are best undertaken by a research team that brings an understanding of the community interests, as well as the academic skills needed to carry out the project.

An illustration

An illustration of an equal emphasis approach can be found in Campbell and associates' investigation of women's responses to battering over time. [42-44] A volunteer sample of 164 battered women from the community were interviewed three times over 4 years. Normed instruments were used as well as an interview protocol that was administered in a dialogic manner. It was made clear at the onset that both participants and researchers were to ask questions of each other. The first and last questions of the interview schedule were open ended. Responses to these two questions formed the primary base for the qualitative analysis augmented by other semistructured interview responses. There were several opportunities for participant

commentary within the interview process and additional open-ended questions within the interview protocol.

The interview ended with a participant-administered "danger assessment" [45,46] and advocacy protocol that included safety planning and referral. If desired, the interviewer initiated phone calls to other resources. The women were given an opportunity to choose the ethnic background of the interviewer and their preferences were honored whenever possible. An effort was made to conduct all three interviews with the same interviewer. However, because some women were late or came for appointments on unscheduled days, they often chose to complete the interview with an alternate interviewer rather than return at another time. Other emancipatory strategies included sharing the interpretation of their current and prior instrument scores with the women and asking for their perceptions of or validation of these results. Preliminary analysis of quantitative and qualitative data was also shared with study participants.

Analysis so far has consisted of (1) structural Equation modelingand multiple regression analysis, both augmented by qualitative data to help interpret results; (2) an analysis of participant change over time, which uses both quantitative instrument data and content analysis of semistructured questions responses; and (3) a primarily qualitative thematic analysis of a randomly selected subsample, which is augmented by some of the quantitative data to establish context for the qualitative findings (eg, the relative severity of abuse experienced by women expressing similar themes). The findings have been used in many policy-level meetings and forums to help establish the strengths of battered women and to improve health care system responses to their issues.

BEYOND METHODS

Kuhn [47] wrote that scientific revolutions occur and new paradigmatic perspectives evolve as new types of knowledge are needed, and as gaps or limitations in dominant perspectives become evident. The growth of interest in a critical nursing science may be viewed as a logical evolution in the development of nursing science. As nursing knowledge has grown exponentially in the last 20 years, we have become increasingly attuned to the ways in which social, cultural, and political realities influence health and illness experiences. As Meleis [48] has so often and eloquently insisted, issues and concerns related to health cannot be adequately understood or addressed as individual problems, apart from the broader social and political world. Similarly, researchers now recognize that constructs such as race, gender, age, or ability are not simply neutral variables to be isolated and controlled, but are influenced by conditions that are socially and historically produced, by the larger context in which they are situated. In essence, we have become increasingly critical.

Still, as often occurs with new ideas or approaches, there is caution and skepticism. While the idea of combining stories and numbers is by no means revolutionary, using them to further the agenda of action and change, within the framework of a critical nursing science, is quite new. Just 10 years ago, knowledge generated in the constructivist, or interpretive, paradigm was viewed as "cutting edge." There were many who questioned the scientific merits of interpretive methods. Today, qualitative methods are widely accepted and integral to the development of

humanistic nursing science. We envision that this will be the case for critical methods in the not-too-distant future.

The approaches described in this article differ in their use of methods, but the broad aims are similar and congruent with the critical paradigm. This delineation of approaches is not intended to be the definitive word on critical research; many combinations and designs are possible. Decisions regarding choice of methods and how those methods are used stem from the type of change or action desired.

OVERCOMING CHALLENGES

Beyond decisions regarding research design, nursing scholars who choose to place their work within the rubric of a critical paradigm are likely to encounter many challenges. The first challenge pertains to the formation of research teams. Bringing about change necessitates active involvement of those toward whom change is directed. Participatory or action research is appropriate. However, this type of research requires the inclusion of community representatives in the development, implementation, and evaluation of a particular project. Unfortunately, the many strengths and insights community leaders bring to the project are often neither valued nor recognized by potential funding agencies. A compromise that has worked for us is to form teams comprising both individuals with the academic credentials and track record for research, and community members with an in-depth understanding of the phenomena under investigation. [32]

A related challenge concerns funding for critical research. Because reviewers are typically unfamiliar with the aims or assumptions of the critical paradigm, descriptions must be explicit, with sufficient methodologic explanations to enable reviewers to fairly evaluate the scientific merits of this approach. Many aspects of a proposal may differ from more traditional research grants, and the rationales for methodologic decisions must be clearly articulated. The benefits of combining stories and numbers may not be evident to reviewers. Thus, researchers must clearly describe the contribution of each type of data. Criteria for evaluating critical research are different from those used in the postpositivist or interpretive paradigm. [9] Lather [49] has put forth the notion of "catalytic validity" to refer to the extent to which the project has resulted in change. Although Lather's discussion of this concept pertains to individual change, we prefer to think of it more broadly to include the idea of systemic change as well. Similarly, the criterion of "cultural competence" has been suggested by Meleis [50] and Fontes. [51] How a particular study attends to these hallmarks of "good science" needs to be fully explained in proposals for funding. In addition, dissemination of research findings in the critical paradigm is not limited to presentations to academic conferences or publications in scholarly journals. One aspect of the agenda of change is to return research findings to the community. Thus, dissemination may include presentations or workshops in the community, or development of literature in a format that is readily accessible to the public. Costs of these less traditional dissemination strategies should be included in grant applications and justified using methodologic principles. At all stages, it is incumbent upon the researcher to assist reviewers to understand the essence of critical research, to appreciate its scientific merits, and to see its importance.

The merits implicit in a critical paradigm for nursing are many and varied. Endowed with diverse sources of information, it is possible to use this information in multiple ways. In essence,

critically grounded researchers are pragmatists. Decisions regarding what type of data to collect and how to use it are determined by the researchers' central goals related to action, change, and empowerment. Opportunities to pursue and test novel approaches require that we remain open to new ways of looking at old issues. As new paradigms gain credibility and acceptance, the boundaries of our knowledge broaden. Nursing scholars who are interested in pursuing the possibilities of a critical nursing science face many challenges, but these are by no means insurmountable. In fact, because of its roots in praxis and activism and its acceptance of both quantitative and qualitative methods, nursing is well positioned to provide leadership in the development of new ways of combining stories and numbers to foster the agenda of empowerment and change.

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