Dimensional Analysis: Broadening the Conception of Grounded Theory

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Dimensional analysis has been proposed by Schatzman as an alternate method for the generation of grounded theory. The intent of this article is to trace the evolution of dimensional analysis and describe it in relation to traditional grounded theory method. Analytic processes that characterize dimensional analysis will be reviewed, and a research exemplar is presented to illustrate the application of the dimensional analysis method.

Since the introduction of grounded theory by Glaser and Strauss (1967), it has generally been assumed that the methodology represented a unified approach to the generation of theory from data. As students of the methodology at the University of California, San Francisco (UCSF), the authors had the opportunity to study qualitative methods of research with Anselm Strauss and Leonard Schatzman. Strauss is one of the founders of the method known as grounded theory, and Schatzman is known for his contributions to field research (Glaser & Strauss, 1967; Schatzman & Strauss, 1973; Strauss, 1987; Strauss & Corbin, 1990).

The erroneous assumption that grounded theory was being taught and then subsequently performed from a single, unified perspective kindled growing confusion and debate among investigators at UCSF interested in qualitative research. Over time, it became obvious to both students and faculty that an alternate method for the development of theory known as dimensional analysis was being taught by Schatzman. This mirrors the ongoing national discourse among qualitative researchers regarding what constitutes proper versus improper application of the grounded theory method (Glaser, 1992; Strauss & Corbin, 1990).

Although dimensional analysis has been taught and refined by Schatzman over the past two decades, written documentation of this method has lagged until its introduction in 1991 (Schatzman, 1991). As a result, dimensional analysis has received limited visibility in the qualitative research literature, and Schatzman's innovative methodological contributions that enliven the generation of grounded theory have largely gone unrecognized. The intent of this article is to describe the process of dimensional analysis and illustrate its application with a research exemplar. The authors studied dimensional analysis under the direction and scrutiny of Schatzman for over 3 years. During that time, in addition to taking formal courses taught by both Schatzman and Strauss, these authors formed the core of a research group that worked with Schatzman using dimensional analysis to analyze research data. Schatzman served as both research adviser and mentor throughout the dissertation process for each member of this core group.

THE EVOLUTION OF DIMENSIONAL ANALYSIS

Schatzman (1991) criticized the original grounded theory method for its lack of a structural foundation that would allow for the explicit articulation of the analytic process. In his 30 years of teaching qualitative research to graduate students, he identified a gap between the teaching of research mechanics and the specific analytic processes involved in the definition and interpretation of data that lead to theory building. Although Schatzman believed that grounded theory provided a valuable set of operations for analysis, he asserted that the operations involved in discovering theory remained largely mysterious and undisclosed. In addition, he observed students demonstrating wide ranges of understanding and abilities to perform the opera-

tions of grounded theory as described by Glaser and Strauss (1967). He deduced that many were impeded by the absence of an over-arching structure that could be used to guide their analysis. Over a period of years, these observations led Schatzman to conclude that these were problems inherent in the original method, thus leading him to formulate an alternative method, which he called dimensional analysis (Schatzman, 1991).

Dimensional analysis can be described as an alternate method of generating grounded theory conceived for the purpose of improving the articulation and communication of the discovery process in quali-tative research. Although procedures used in dimensional analysis are consistent with those of grounded theory method, dimensional analysis has its own epistemology and unique set of operations.

Dimensional analysis is based on a theory of "natural analysis," which Schatzman conceptualized as a normative cognitive process generally used by people to interpret and understand problematic experiences or phenomena. According to Schatzman, this natural analytic process is learned through early socialization and provides individuals with a schema that they can subsequently use to structure and analyze the intricacies of phenomena of ordinary life as well as in complex scientific problem solving. Scientific thinking is distin-guished by the expanse of dimensions identified in a given problem-atic situation. In contrast, to be understood, phenomena arising from ordinary living typically require smaller, more familiar sets of dimen-sions. From this perspective, analysis in the context of research in-tended to generate theory is linked with the interpretive actions that one naturally and commonly employs everyday (Schatzman, 1991). Thus research is considered to be an exaggerated, intentional, and sustained form of natural analysis.

As is true for grounded theory, the philosophical foundation of dimensional analysis arises from symbolic interactionism (Blumer, 1969; Dewey, 1938; Mead, 1934). Blumer (1969) posited symbolic interactionism as "an approach designed to yield verifiable knowl-edge of human group life and human conduct" (p. 21). Traditionally, grounded theory method emphasized interactionist ideology by pre-scribing that theory be inductively derived from data and repre-sentative of the reality of the persons studied (Strauss & Corbin, 1990). However, since its inception, grounded theory has undergone many major transformations that have distanced it from its interactionist roots. Strauss and Corbin (1990) exemplified this with their presenta-tion of multiple coding procedures (e.g., open, axial, selective) and

techniques of comparison that are now used to advance analysis by the intentional manipulation of data in a variety of ways. This focus on the application of technique has introduced a level of complexity into the analytic process that may have the potential to divert the researcher from generating theory directly from data. Although these analytic procedures were designed to promote rigor in the method, in actuality, an overemphasis on research mechanics may risk the reduction of theoretical sensitivity (Glaser, 1992; Robrecht, 1995).

Schatzman addressed the complexity associated with analytic procedures by embedding dimensional analysis in symbolic interactionism and developing a parsimonious application of its principles in the method. A key assumption of symbolic interactionism is that "human beings act toward things on the basis of the meanings that things have for them" (Blumer, 1969, p. 2). Schatzman elaborated on this premise by conceptualizing the construct of dimensionality. Through the learning of language and the ability to engage in social interaction, human beings refine their talent to perform natural analysis and develop the cognitive attribute of dimensionality. Dimensionality refers to an individual's ability to address the complexity of a phenomenon by noting its attributes, context, processes, and meaning (Schatzman, 1991). Dimensionality is the specific process of natural analysis that allows one to derive meaning via interpretation or analysis of the component parts of a phenomenon or situation.

In companion with the construct of dimensionality, natural analysis also draws on past experience and knowledge as a cumulative and integral part of the individual's thinking process. For example, although grounded theory method generally rejects the use of received theory as a basis for analysis (Glaser & Strauss, 1967), in reality, rarely do researchers totally abandon prior substantive or methodological knowledge in the pursuit of understanding a complex social phenomenon. Natural analysis and dimensionality are among the important tenets of the dimensional analysis method.

THE PROCESS OF DIMENSIONAL ANALYSIS

As is consistent with other qualitative approaches, one of the dilemmas in explicating the process of grounded theory method is the intrinsic difficulty in describing the constant, dynamic interactional relationship between the researcher and the data. Analysis does not usually proceed according to a prescribed process with distinctive

phases or stages. Data collection and analytic activities often occur simultaneously or in a circular fashion. Linearity in the analytic process can only be described for the sake of illustration. The process of dimensional analysis is more clearly explicated than grounded theory, as will be seen.

The key process in dimensional analysis is the construction or novel reconstruction of the multiple components of a complex social phenomenon. The operation of dimensionalizing, an early analytic process, entails the designation or naming of data bits and the expansion of those data into their various attributes including dimensions and their properties. A dimension is an abstract concept with associated properties that provide quantitative or qualitative parameters or modifiers for the purpose of description. Each dimension is a component of the phenomenon under study as identified by the researcher. For example, age is a dimension with a wide range of properties from youngest to oldest. Gender is another dimension with the properties of female and male.

As originally conceived, the objective of grounded theory method was to answer the conceptual question, "What is the *basic social process* that underlies the phenomenon of interest?" (Glaser & Strauss, 1967). In contrast, dimensional analysis does not attempt to arrive at a theory by identifying a basic social process. Instead, when dimensionalizing a phenomenon, one attempts to address the question, "What *all* is involved here?" (Schatzman, 1980, 1986, 1991). This question stems directly from the symbolic interactionist perspective and reflects the researcher's interaction with the data. It encourages the researcher to expand the realm of conceptual possibilities. The aim of dimensional analysis is to discover the meanings of interactions observed in situations. According to Schatzman, this approach to data guides the researcher to construct the situation or problem under scrutiny. This construction is achieved by initially identifying the parts of the whole, providing a broader view of its complexity. Likewise, it minimizes the chance of overlooking salient dimensions that may underlie explanation of a phenomenon.
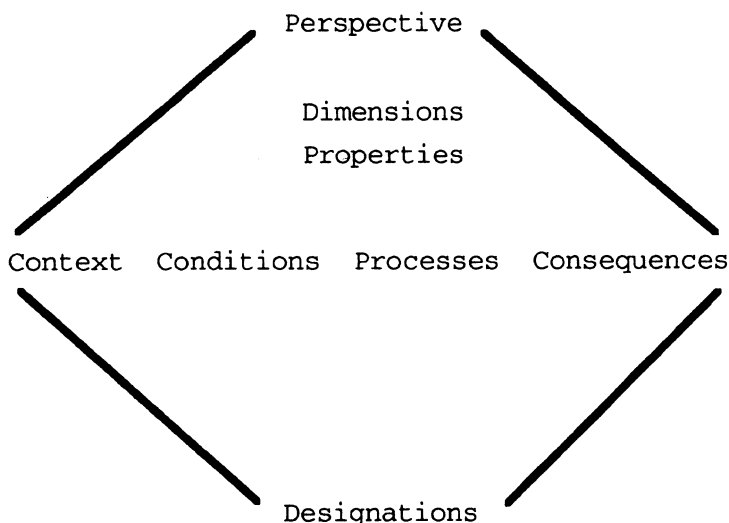
As data are analyzed and described according to their dimensions and properties, the operation referred to as designation simultaneously occurs. Designation is simply the naming or labeling of dimensions and properties observed in data. Through designation, the investigator develops a vocabulary with which to continue analysis. The act of designation moves a particular observation toward a more abstract representation of an event or situation. This provisional

coding serves to identify and name multiple dimensions involved in the phenomenon without consideration of the relative importance, relationship, or meaning of specific concepts. The designation of dimensions allows for both specificity and comparisons of concepts within the data (Schatzman, 1986). To chart the analytic process from this early phase of analysis through the final integration of the theory, theoretical memos are written as formulations develop.

As a methodological strategy, this data expansion serves to illuminate the plethora of dimensions and corresponding sets of properties unique to any phenomenon. In the dimensional analysis method, data are collected and scrutinized until a "critical mass" of dimensions is assembled, which represent emerging pathways that possess some explanatory power. When the researcher perceives that major aspects of the phenomenon appear to be reflected in the analysis, it can be determined that a critical mass of dimensions has been derived. Through the operational strategy of dimensionalizing, the researcher unravels and uncovers what *all* is involved in the phenomenon. Upon deriving this critical mass of dimensions and their properties, the analyst moves to the use of an explanatory matrix (see Figure 1).

As subsequent data are collected and analyzed, a sense for the relative importance of each dimension begins to emerge and direction for continued analysis is revealed. At this point, data are no longer expanded because the scope of the complexity of the phenomenon has already been appreciated. Instead, further differentiation is now needed to limit the data by determining the salience of dimensions and by organizing them within the explanatory matrix into a logical configuration that would provide meaning.

In the traditional grounded theory method, the explanatory matrix or paradigm model is used merely as a means for coding data. It is used as a procedure in axial coding and is only one of many techniques in grounded theory method employed to develop and relate categories (e.g., word-by-word/line-by-line analysis; techniques of comparison: flip-flop technique, systematic and far-out comparisons, waving the red flag; conditional matrix). However, in dimensional analysis, the explanatory matrix is considered to be the *cornerstone* of the analytic process. It provides a framework that helps to move analysis beyond description and into the realm of explanation. In dimensional analysis method, the explanatory matrix *is* the overarching framework for the analysis of the complexity of a problematic situation (Schatzman, 1991). As such, it furnishes the researcher with both a structure and a context for explanation.

Perspective

Dimensions
Properties

Context   Conditions   Processes   Consequences

Designations

FIGURE 1: Explanatory Matrix

The explanatory matrix represents an organizational prototype that further differentiates the innate characteristics of identified dimensions into various conceptual components such as context, conditions, process (actions and interactions), or consequences. Context indicates the boundaries for inquiry—that is, the situation or environment in which dimensions are embedded. Conditions are the most salient of dimensions. Conditions, by nature of their relative importance to a given phenomenon, have an impact on actions and interactions. Conditions are dimensions of a phenomenon that facilitate, block, or in some other way shape actions and/or interactions—the processes of a given phenomenon. Processes include intended or unintended actions or interactions that are impelled by specified conditions. Finally, consequences are the outcomes of these specific actions/interactions (Schatzman, 1986, 1991).
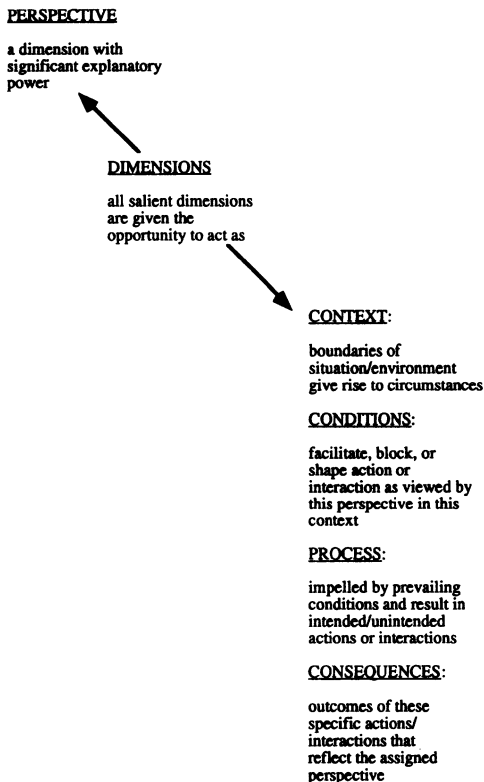
In configuring the explanatory matrix, the researcher seeks to select from among the dimensions assembled the central dimension that provides the most fruitful explanation of the phenomenon under consideration. This central dimension is referred to as the perspective and assumes a key position within the matrix because of its explanatory power. The researcher strives for objectivity in the determination

of the central perspective by giving dimensions a conceptual opportunity to be elevated to the status of perspective. Each potential perspective provides a different configuration to the data and results in a different interpretation of meaning. The dimension that provides the greatest explanation for the relationship among dimensions is ultimately selected as the central or key perspective from which to organize or "choreograph" the data (Schatzman, 1991). When one dimension is conceptually raised to the level of perspective, remaining dimensions are accordingly relegated as either salient, relevant, marginal, or irrelevant. Once selected, this perspective is then used to organize the placement of all but the irrelevant dimensions within the explanatory matrix as either context, conditions, processes, or consequences (see Figure 2). Dimensions that are assessed to be more peripheral to the perspective are designated as context for the developing theory. Others are configured according to the perspective as those conditions that have an impact on, or contribute to, actions/interactions that ultimately lead to specific consequences or outcomes. Thus the perspective stimulates integration and conceptual development within the developing theory by directing subsequent inquiry and logic (Schatzman, 1986).

Following the selection of the organizing perspective, theoretical sampling continues, allowing the researcher to clarify, to test, and to solidify the conceptual linkages of the theory. Once a consistent level of repetition regarding concepts and their relationships becomes evident, the analyst can assume that the collection and analysis of additional data would most probably be redundant and unproductive. At this point, theoretical saturation has been achieved. The researcher can now specify the full scope and meaning of the developing theory.

Integration or novel reintegration of dimensions within the explanatory matrix represents the final operation of dimensional analysis. The researcher integrates dimensions and their components according to the central, organizing perspective. In this configuration, patterns and relationships between the dimensions are described and explained (Schatzman, 1986). The final product of this synthesis is a grounded theory "which gives theoretical and explanatory form to a story that would otherwise be regarded, at best, as fine description" (Schatzman, 1991, p. 313). The final composition of the explanatory matrix is used as a pragmatic device to translate the theory into a clear, narrative version.

PERSPECTIVE

a dimension with
significant explanatory
power

DIMENSIONS

all salient dimensions
are given the
opportunity to act as

CONTEXT:

boundaries of
situation/environment
give rise to circumstances

CONDITIONS:

facilitate, block, or
shape action or
interaction as viewed by
this perspective in this
context

PROCESS:

impelled by prevailing
conditions and result in
intended/unintended
actions or interactions

CONSEQUENCES:

outcomes of these
specific actions/
interactions that
reflect the assigned
perspective

FIGURE 2: Selecting the Perceptive

ILLUSTRATION OF THE ANALYTIC PROCESS

The application of the dimensional analysis method will be illustrated through the presentation of a research exemplar. In this particular study that explored clinical reasoning among nurses, dimensional analysis provided a methodological framework for the interpretation of data. The intent of the study had been to discover why nurses generally fail to distinguish between acute confusional states (ACS) and dementia among older adults who demonstrate confusion behavior during hospitalization (McCarthy, 1992).

For the purposes of this study, it had been assumed that analysis and interpretation were integral to the process of clinical reasoning.

Moreover, failure to differentiate between ACS and dementia was perceived as a consequence of faulty clinical judgment. On the basis of these assumptions, and from the conceptual perspectives of dimensional analysis, it became the investigator's task to analyze or "figure out" how nurses interpreted specific patient care situations; how they "figured out" or constructed their own story lines in the context of caring for older patients who experience confusion. By using the dimensional analysis method, variations and limitations in nursing judgment became evident and a grounded theory of clinical reasoning was developed.

This grounded theory explains differences in nurses' ability to appreciate the importance of confusion in the aged. It specifically illuminates how a nurse's perspective toward health in aging affects the way he or she regards older people and ultimately deals with them in clinical situations. In the following discussion, the process of inquiry used in the development of this theory will be presented to illustrate utilization of the dimensional analysis method.

Data Collection and Management

Two data collection strategies were used in this study: participant observation and semistructured interviewing. Preliminary participant observation fieldwork was undertaken to explore generally the area of acute confusional states among the elderly. Observations were focused on nurse-patient interactions in an acute care setting. Fieldwork was conducted over a 4-month period on several nursing units of a 300-bed community teaching hospital in Northern California.

Analysis of data from the preliminary field experience yielded provisional hypotheses that served to provide conceptual entrée into an otherwise more complicated area of study. Two of these hypotheses were ultimately found to be related to the generated theory: (a) The expectation of confusion behavior among elderly patients contributes to the failure to detect acute confusion by nurses, and (b) confusion cues are attended to and interpreted according to their consequences or their effect on nurses' work.

Semistructured Interviews

Following preliminary fieldwork, remaining data were collected through focused or semistructured interviews. In addition to demo-

graphic information, questions were posed to obtain data regarding clinical reasoning related to the identification and care of confused older patients. Several areas initially explored included the following: (a) knowledge of acute and chronic disorders, (b) clinical parameters used to assess these disorders, (c) interpretation of the meanings of different cues, (d) goals and actions established and taken in response to those interpretations, and (e) factors that either blocked or facilitated assessment, interpretation, and action. Later themes focused on the distinctions between different styles of clinical reasoning and on nurses' basic perceptions regarding older patients.

Sampling

Initially, a purposive sample or focal group was selected to begin interviewing. This group served to provide the investigator with a pool of participants who in some general way reflected the phenomenon being explored. Criteria for selection of participants were determined after analyzing data collected during participant observation experiences.

The focal group was composed of registered nurses with at least 2 years of acute care experience. Initially, the focal group was drawn from the original 300-bed community teaching hospital in Northern California. As the investigation progressed, data sources were expanded to promote maximum variation and meaningfulness. The expansion of sources was theoretically based on emerging dimensions and relationships among those dimensions as observed in the data. The final number of participants that comprised the sample size was 28.

Management and Analysis

Data consisted of field notes, verbatim transcriptions of taped interviews, and theoretical memos. All data were analyzed according to the techniques of dimensional analysis. For the purposes of reporting the process of inquiry, three stages of analysis will be addressed as an organizing schema. These stages include (a) dimensionalizing/ designation, (b) differentiation, and (c) integration/reintegration. Although deliberately presented as a linear process for the purpose of illustration, analysis in these stages generally occurs simultaneously and interactively.

Dimensionalization/designation. The process of designating things and events (dimensions) in the data regardless of position on the explanatory matrix began early in analysis. During this stage, the investigator developed a vocabulary that allowed her to perform the necessary cognitive work of analysis. A number of dimensions were generated from this initial analysis. These dimensions were subdimensionalized or subcategorized in a most general way. This was done to expand data by asking the question, "What *all* is involved here?" The issue of salience and placement along the explanatory matrix was intentionally not yet considered. Instead, the density of the experience was explored as a preliminary means of revealing the complexity of the phenomenon.

By dimensionalizing the data, a number of provisional concepts were revealed. A partial list of these included the following: demographic characteristics of respondents, patient characteristics, patterns of reasoning, degrees of confusion, confusion cues, age-related assumptions, interactive styles, experience in elder care, response to cues, meaning of confusion, tolerance for confusion behavior, knowledge of confusion conditions, nurse-patient connectedness, "missed cues," assessment strategies, defining the confusion situation, action strategies, the age myth, and situational/structural facilitators and impediments.

These dimensions were subdimensionalized to identify the range of properties that could be attributed to each. For example, "confusion cues" was subdimensionalized by properties such as types of cues, frequency of cues, strength of cues, noxious nature of cues, duration of cues, associative features of cues, and meaning attributed to cues. Each identified subdimension was then further characterized by its respective set of properties. For instance, "types of cues" was characterized according to a scheme adapted from Gordon (1982). These properties were identified as either current state cues, current context cues, historical state cues, or historical context cues. Each of these properties was then conceptually converted into subdimensions and each was subsequently characterized by respective properties.

Exploring the data in this way served to further expand them in order to reveal the full realm of conceptual possibilities that they reflected. It was understood that not all of the dimensions and subdimensions that had been identified would be *fully* explored in this research study. However, it was further understood that each would be regarded at least to some degree. Moreover, the determination of

saliency was necessarily postponed until a "critical mass" of dimensions was assembled and assessed.

This "critical mass" represented a conceptual point in the analysis at which time the investigator was able to begin to formulate a clearer theoretical path or story line detailing the emerging theory. In this study, a critical mass was reached after the participant observation experience had been completed and the fifth semistructured interview had been obtained and analyzed. It was at this point in the collection and analysis of data that a provisional but verifiable explanation for the phenomenon of failed clinical reasoning was revealed. At this stage, dimensions together with assigned properties helped to direct inquiry by organizing questions around both newly derived concepts and those reinforced concepts that had been identified in the earlier phase of the investigation. Interviewing near the close of this stage became focused on the exploration of the range and depth of the identified dimensions and related subdimensions.

Differentiation. Following the expansion of data that occurred during the dimensionalization/designation stage of analysis, an attempt was made to limit data in the differentiation stage that followed. By limiting data, analysis became more directed and focused. This was accomplished through the process of selecting a perspective or central dimension that then served to provide purposeful orientation for subsequent inquiry.

In selecting a perspective from the critical mass of assembled dimensions, the investigator is methodologically obligated to audition many competing dimensions (Schatzman, 1991). In this research project, the investigator became "stuck" during the differentiation phase as a result of premature closure or acceptance of a perspective wrongly believed to be central to the emerging theory.

The researcher had entered the research field somewhat committed to a notion that explained the failure to differentiate ACS from dementia among older adults from an age discrimination perspective. Essentially, the investigator had hypothesized that nurses failed to detect acute confusion among the elderly because they regarded older people as characteristically unhealthy and routinely confused. Analytically, this categorical understanding was viewed as a condition that blocked accurate clinical reasoning. A nurse's expectation, "if old, then confused," logically precluded the detection of an acute condition.

Premature acceptance of a central perspective biased the ways in which data were being collected and analyzed. Expecting to find "something," the researcher set out to do just that. The researcher was surprised to discover that explanation from this perspective could not be consistently observed and verified. Although some supportive evidence was found, it was limited. There were a great deal more data to dispute the claim that negative or ageist attitudes were largely responsible for distorting nurses' reasoning.

Instead, three distinct patterns of clinical reasoning were being observed in the data. Only one of these could be linked to an "ageist perspective." Clearly, there were more instances in which nurses demonstrated a positive attitude and a fair understanding of the potential for a physiologically based confusion, but they were still unable to make an accurate assessment. In addition, situations were observed in which nurses made rapid determinations that acute conditions were occurring in select populations of older patients.

In attempting to tease out dimensions that could provide an explanation for the failure to detect acute confusion, various other factors were auditioned as the central perspective. Clinician variables analyzed included such dimensions as typical demographic information such as age, gender, educational background, and work experience. In addition, geriatric and gerontological educational and work experiences were explored for their explanatory value. Furthermore, as a theoretical sampling strategy, observations and interviewing were expanded to include additional nursing units in the original research setting as well as in other acute care hospitals.

Additional participants represented a range of educational and professional backgrounds. As analysis progressed, it became evident that the three observed patterns of clinical reasoning did not appear to be linked to any of the above-mentioned factors. For example, a master's-prepared intensive care unit (ICU) nurse was as likely to disregard confusion cues as a graduate with an associate's degree working on a general medical unit.

As data collection and analysis continued, one dimension did begin to emerge as conceptually important. It pertained to the meaning that nurses attached to confusion among older patients. Some participants perceived confusion as a behavioral problem that interfered with patient safety or nursing work. Others viewed confusion as a sign of underlying physical illness. Many other nurses were too uncertain to give clear indication of their interpretations.

Analytically, the dimension of "meaning of confusion" was auditioned as the perspective central to explanation of the phenomenon. The investigator asked, "Could the three patterns of clinical reasoning be explained by the corresponding ways in which nurses generally interpret confusion behavior among elderly?" This position seemed to get "closer to the truth" of the phenomenon but was eventually discovered to be too rudimentary to serve as central perspective. The inadequacy of this dimension was realized only after attempts were made to examine data accordingly. In so doing, the logic of the emerging theory was challenged and again not verified.

Further analysis revealed that there was another dimension or set of dimensions directing the interpretation of confusion. In other words, there appeared to be something antecedent to the attribution of meaning by nurses. Moreover, other aspects of clinical reasoning, as reported within the context of the detection of acute confusion, appeared to be likewise directed.

A new concept, *overarching philosophy*, was conjured to more completely describe noted observations. After many permutations, this concept was subdimensionalized into three distinct categories of philosophies that were then conceptually related to the three clinical reasoning paths already observed and identified. These philosophies related to nurses' ideas about health in aging; if you will, their individual models or philosophies of aging. These philosophies were perceived to represent personal postures of nurses and could explain how and why they "figured out" clinical situations and consequently acted in particular ways.

The philosophies were believed to direct the various dimensions of clinical reasoning. Included among these dimensions were the cues that were noticed, the vocabulary chosen to describe what was noticed, the priorities set, the decisions made, the ways in which care was delivered, and the criteria set for evaluation. Each philosophical orientation could be perceived as orchestrating a different clinical reasoning path for nurses.

In this research project, the three philosophies were assigned specific designations that reflected corresponding views regarding health in aging. These designations were the Decline Model, the Vulnerable Model, and the Healthful Model. These three philosophies of health in aging illuminated a perspective that appears to provide explanation for the failure to differentiate between ACS and dementia among older patients. A theoretical memo reflecting a description of individual models is presented here as illustration:

The Decline Model and the Healthful Model can be perceived to represent two polar extremes regarding views about baseline health in aging. In the Decline Model, deterioration is anticipated and so is considered to be ordinary for aged persons. In this model, confusion would be naturally associated with this expected decline and ill health. Episodes of confusion would be casually regarded unless problematic to patient safety or nursing work. The Decline Model depicts the original perspective initially thought of as the central dimension. From the perspective of overarching philosophy, this model represents only one piece of the puzzle.

The Healthful Model can be positioned at the other end of the continuum. According to this model, aging is regarded as an ordinary extension of adult development. Disease among the aged is not considered inevitable from this perspective. Therefore, confusion is regarded as deviant, signifying underlying pathology that must be further explored.

The Vulnerable Model assumes a more central position along this theoretical continuum. Those who embrace this philosophy allow for the possibility of health in aging but operate from the standpoint that the aged are more inclined towards declining physical and cognitive health. Confusion is regarded with uncertainty in this model and the process of clinical reasoning is approached with ambivalence. Nurses who operate from this model are more sensitive to influence from situational and structural conditions.

At this point in the analysis, the dimension "overarching philosophy" was raised to the central position of perspective. After analyzing data according to this "angle of vision," it was theoretically deemed to be the most fruitful perspective from which to explain the failure to differentiate ACS from dementia among older adults. From this point on, the remaining analysis was guided by the perspective, "overarching philosophy." Salience of dimensions could now be determined and dimensional assignment on the explanatory matrix directed by this research perspective.

Gradually, the context of the emerging theory takes form as linkages between categories of dimensions and properties, actions, and their consequences become more defined. As categories were described and analyzed according to the format of the explanatory matrix, they were further expanded and then clarified. Analyzing data and placing them within the matrix as context, condition, and process (action/interaction), or consequence moved the research process along to capture a greater world of meaning within each of the developing structures of the theory.

Integration/reintegration. At this stage, the analyst must reconstitute the various pieces of the explanatory matrix that have now been identified through some grounded perspective (Schatzman, 1991). As the theoretical story was being integrated, limited data were being collected and analyzed as a means of challenging and verifying the validity of the emerging theory. In addition, as continued from earlier stages of analysis, a good amount of self-talk and negotiation were occurring in conjunction with a number of peer rehearsals that took place for the same purpose of theory verification.

At the point where sufficiency of both category saturation and depth of conceptual linkage had been reached and described, the theory generation process had been completed. The story, representing the outcome of this process, had been reconstituted. This reconstitution culminated in providing a grounded theory that explains nurses' reasoning in the context of a particular clinical situation.

SUMMARY

Dimensional analysis has been presented by Schatzman as an alternative method to be used for the purpose of generating grounded theory. An attempt has been made in this article to support Schatzman's assertion. Although the authors agree that the dimensional analysis method is aligned with the traditional grounded theory method, they are convinced that it is indeed separate and distinct from the approach originally developed by Glaser and Strauss (1967).

Through illustration using a dimensional analysis research exemplar focused on the exploration of clinical reasoning among nurses, the application of this method has been demonstrated. For years, qualitative researchers have endured criticism regarding a perceived inability to clearly articulate the analytic process of theory generation. This has raised questions related to the validity and confirmability of research findings. Dimensional analysis is responsive to these methodological concerns and rigorously delineates the processes involved in deriving theory from data. The set of operations entailed in dimensional analysis is consistent with its philosophical foundation of symbolic interactionism and theoretical underpinnings of natural analysis. Moreover, dimensional analysis method provides researchers with the analytic tools necessary to conduct analysis systematically and to communicate about the analytic process with clarity.

APPENDIX

1. *Dimensionality*: an individual's cognitive ability to address the complexity of a phenomenon by noting its attributes, context, processes, and meaning.
2. *Attribute*: an inherent characteristic of a phenomenon; includes dimensions and their properties.
3. *Dimension*: an abstract concept; a component of a phenomenon.
4. *Property*: the quantitative or qualitative parameters or descriptors of a dimension.
5. *Designation*: the naming or labeling of concepts; the development of a vocabulary to conduct the cognitive work of analysis.
6. *Differentiation*: the limiting of data by determining the salience of dimensions and organizing them into a logical configuration that provides them with meaning.
7. *Explanatory matrix*: an organizational prototype that further differentiates the innate characteristics of identified dimensions into various conceptual components such as context, conditions, processes, or consequences.
8. *Context*: the boundaries for inquiry; the situation or environment in which dimensions are embedded.
9. *Condition*: a salient dimension that has an impact on actions and interactions by facilitating, blocking, or in some other way shaping them.
10. *Process*: an intended or unintended action or interaction that is impelled by specified conditions.
11. *Consequence*: the outcome of specific actions or interactions.
12. *Perspective*: the dimension that is most central to the developing theory; one that provides the researcher with the most fruitful explanation of a phenomenon. Used to configure the explanatory matrix.
13. *Integration*: the final synthesis of dimensions within the explanatory matrix into a theory.

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