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Advancing Uncertainty: Untangling and Discerning Related Concepts

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Abstract

Methods of advancing concepts within the qualitative paradigm have been developed and articulated. In this section, I describe methodological perspectives of a project designed to advance the concept of uncertainty using multiple qualitative methods. Through a series of earlier studies, the concept of uncertainty arose repeatedly in varied contexts, working its way into prominence, and warranting further investigation. Processes of advanced concept analysis were used to initiate the formal investigation into the meaning of the concept. Through concept analysis, the concept was deconstructed to identify conceptual components and gaps in understanding.

Using this skeletal framework of the concept identified through concept analysis, subsequent studies were carried out to add 'flesh' to the concept. First, a concept refinement using the literature as data was completed. Findings revealed that the current state of the concept of uncertainty failed to incorporate what was known of the lived experience. Therefore, using interview techniques as the primary data source, a phenomenological study of uncertainty among caregivers was conducted. Incorporating the findings of the phenomenology, the skeletal framework of the concept was further fleshed out using techniques of concept correction to produce a more mature conceptualization of uncertainty.

In this section, I describe the flow of this qualitative project investigating the concept of uncertainty, with special emphasis on a particular threat to validity (called conceptual tunnel vision) that was identified and addressed during the phases of concept correction. Though in this article I employ a study of uncertainty for illustration, limited substantive findings regarding uncertainty are presented to retain a clear focus on the methodological issues.

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Identification of the concept: Uncertainty

In an early study of caregivers' perspectives of placement (Penrod & Dellasega, 1998), uncertainty arose as a major theme of the experience. This grounded theory examined informal caregivers of older adults who were being cared for at home, then suffered a health crisis that resulted in hospitalization with impending discharge to nursing home care. Caregivers expressed uncertainty regarding the older adults' medical conditions and treatment plans, their prognosis for recovery to the pre-morbid status, nursing home selection/admission processes, and the anticipated length of stay in nursing home care. Through this study, it was concluded that, uncertainty refers to the gaps in information used in processing the decision to place the older adult charge. Uncertainty was universal among the caregivers, despite a range in the suddenness of the onset of the disabling incident and the length of time since the professional recommendation for placement was made (Penrod, 1996, p. 219). Within a decision-making framework, uncertainty was posited to be a knowledge deficit, marked by the linguistic pattern, "I don't know if…"

Later, while working with Dr. Janice Morse on the Comfort Project (NIH NINR 2 RO1 NR 02130-08), the concept of uncertainty again emerged. In this complex project studying comfort during significant threats to health, three primary concepts emerged: enduring, suffering, and hoping. Then, methods for linking concepts toward theory development were articulated and demonstrated using these three inter-related concepts (Morse & Penrod, 1999). In the process of disentangling, delineating, and then linking the concepts, a distinct state of uncertainty emerged.

Uncertainty occurred when a person could see a future, but had no idea of how they could ever get there, and was described as a state in which the person "just exists, but he or she exists in an emotional state suffering her or his inability to move, to select an option, or to act" (Morse & Penrod, 1999, p. 148). A model of suffering, devised to demonstrate the cyclic relationship among the concepts of enduring, emotional suffering, and hoping, clearly delineated the state of uncertainty occurring between the present-oriented state of enduring and the more future-oriented state of suffering. In this study, we discovered that the person's level of knowing was a significant factor in transitioning from state to state. Uncertainty was prompted by recognition of the significance of the experienced threat to health without full acknowledgement of the breadth and depth of the altered course of health and life that they now faced.

These primary studies, supplemented by other studies and insights, began to focus a line of inquiry into the concept of uncertainty. Rather than being *selected* for study, the identification of uncertainty as a

concept of interest *emerged* from preliminary work. This was an important lesson for a junior researcher: listen to data, and allow studies to prompt nagging questions rather than closing the door upon completion of the study.

Deconstruction of the concept: Concept analysis

These primary studies were significant in prompting further investigation of the concept of uncertainty. In the first phase of the study of uncertainty, a concept analysis was conducted to identify the state of the science surrounding the concept. Concept analysis is a form of deconstruction; that is, through an analytic examination of the literature, the concept is taken apart to identify what is known of its essential components.

When considering techniques for concept analysis, it is critical to recognize that the selection of analytic method is critical to the product of deconstruction. While many methods for concept analysis produce interesting (and, perhaps, significant) results, deconstruction requires an analytic method that systematically explicates the critical conceptual attributes as they are currently understood in the scientific literature. For this reason, criteria based analysis is superior to other analytic techniques that encourage imaginative thinking or created hypothetical cases to develop conceptual components.

In this study, the methods described and developed by Morse, Hupcey, Mitcham and their colleagues (Morse, 1995; Hupcey, Morse, Lenz, & Tason, 1996; Morse, Hupcey, Mitcham, & Lenz, 1996; Morse, Mitcham, Hupcey, & Tason, 1996; Penrod, Hupcey, Mitcham, & Morse, 2000) were utilized to deconstruct the concept of uncertainty. This method of advanced concept analysis enables a criteria based analysis of the multidisciplinary literature according to four integrated principles: epistemological, pragmatical, linguistical, and logical. The analytic process comprehensively addresses how the concept has developed with respect to these major perspectives of knowledge found in the philosophy of science. The analysis is then summarized as the concept's maturity, a summary indicator reflecting the degree to which the concept fulfills the analytic criteria.

In the study of uncertainty, the multidisciplinary literature was analyzed to provide the most comprehensive view of the concept. Literature from nursing, anthropology, sociology, psychology, and medicine was included. Analysis detailed each of the parameters (epistemological, pragmatical, linguistical, and logical) and was summarized as the concept's maturity (Penrod, 2001a). In this case, the concept of uncertainty was determined to be partially mature, tending towards immaturity.

Through deconstruction of the concept through advanced concept analysis, the initial form of the concept (or skeleton) emerged. Yet, significant gaps in understanding persisted. For example, the conceptual components (or attributes) were not well defined, the strategies for managing or reducing the state of discomfort produced during times of uncertainty were not well addressed, and measurement issues abounded. Thus, while concept analysis is an important step in the process of building concepts, it is typically the preliminary investigation that opens research questions for further study. This is the function of deconstruction: to identify the conceptual skeleton in preparation for subsequent studies that add flesh (or deeper meaning) to the conceptual frame.

Fleshing out the skeletal framework: Concept refinement

Using the literature as data, concept refinement provides a method of extending the conceptual attributes through an inductive analysis of the literature. This analysis is guided by critical inquiries posed by the researcher. In essence, one 'asks questions of the literature' to further expose the components of the concept of interest. In contrast to the previous analysis, this phase of analysis centers on inquiries guided

by the researcher rather than the four analytic criteria described earlier. The product of this type of investigation is a theoretical definition that is extended, or refined, according to insights reported in the literature.

In the case of uncertainty, the refinement was conducted as a form of content analysis guided by a series of questions surrounding the gaps identified through analysis: conceptual components, strategies for managing or reducing the state of discomfort associated with uncertainty, and measurement issues. It is important to note that the data for this analysis are insights presented in the multidisciplinary literature (not conjecture); therefore it is crucial that an *appropriate* and *adequate* data set is available for the study. (See Morse & Field, 1996, for further discussion of appropriate and adequate data sets.) Through the process of concept refinement, the following theoretical definition of uncertainty was derived:

> Uncertainty is a dynamic state in which there is a perception of being unable to assign probabilities for outcomes that prompts a dis-comforting, uneasy sensation that may be affected (reduced or escalated) through cognitive, emotive, or behavioral reactions, or simply by the passage of time and changes in the perception of circumstances. The experience of uncertainty is pervasive in human existence and is mediated by feelings of confidence and control that may be highly specific (event-focused) or more global (a world-view). (Penrod, 2001a, p.241)

Though the refined conceptualization made the skeletal components more distinct, the framework of understanding this complex behavioral concept remained incomplete. The scientific definition of uncertainty in the multidisciplinary literatures was narrowly probabilistic. The role of information in the dynamic state of uncertainty was unclear. The paradoxical nature of the experience (that is, both opportunity and threat) was not well delineated. Finally, the scientific concept and the ordinary concept (represented in anecdotal data in the literature and from personal experience) were not well integrated. Thus, subsequent study to continue to add 'flesh' to the conceptual skeleton was required.

Fleshing out the skeletal framework: Phenomenology

In order to fill in these conceptual gaps, the next study of uncertainty explored the lived experience of uncertainty using methods of hermeneutic phenomenology described by Van Manen (1990). The decision to conduct a phenomenological investigation was based on the nature of the gaps identified during concept refinement; these were questions of the lived experience of uncertainty.

Since informal caregivers had previously been identified as having profound experiences of uncertainty over a wide range of contexts, caregivers were once again studied to reveal the essences of the experience. Of particular interest, it was known that caregivers experienced many situations in which no decision for immediate action was required and in which the uncertainty was based on life events over which the caregiver had no control. Multiple individual interviews and one group interview were conducted with ten informal caregivers to gather data reflecting experiential descriptions of uncertainty. In addition to this primary data source, personal insights, etymological sources, idiomatic phrases, protocol writing, and phenomenological and philosophical texts were used as data sources in this exploration of uncertainty.

Through this study (reported in Penrod, 2001b), five essences of the lived experience of uncertainty were identified: Sensing control, Sensing confidence, Reading the situation, Regaining a sense of normal, and Shifting temporality. It is beyond the scope of this paper to discuss the phenomenological findings in detail; however, a brief overview of the findings will be provided for clarity.

Those bound in a state of uncertainty are in a condition of doubt regarding the outcome or meaning of a situation. Sensing control and Sensing confidence are the primary essences of experiencing uncertainty. Control is related to sensing an ability to influence the outcome of the situation, while confidence is related to sensing an ability to read a situation. Control and confidence are intertwined perceptions that fluctuate dynamically in response to situational cues and clues. Feeling a loss of control or confidence escalates feelings of uncertainty. Being in doubt about the meaning or course of a situation is a discomforting time. Reading the situation is the process by which caregivers began to assign meaning by processing evidence within their analytic frame. They 'read' the care recipient and they 'read' the self to collect varied forms of evidence, processed this information within a very individualized frame of reference, and then drew some conclusion (often of continued doubt).

Especially in times of great uncertainty, the caregivers identified reliable routines or patterns of behavior as a 'new normal.' Establishing a new normal is essential to the experiences of uncertainty. Patterned behaviors bolstered feelings of confidence, and, at times, control over an uncertainty. Caregivers learned and changed through each iteration of their 'new normal'–later, looking back and wondering how they ever made it through such tough times. This ability to establish a new normal in the face of uncertainty that produced personal growth, or change way of being in the world, for these caregivers.

States of uncertainty are temporally bound and are focused on the evidence ascertained at that time. As a result, the behavioral state induced during uncertainty is most often present focused, centered on whatever evidence emerges during that time frame. Temporality shifts with the intensity of the uncertainty experienced. For example, during overwhelming uncertainty, time collapsed into the experience. There was no future, no past, just a seemingly unbearable present in which time seemed to halt.

Following the writing of the phenomenological text, a more analytic stance was assumed and an interpretive framework for understanding uncertainty was derived. Types of uncertainty (based on the interactive effect of sensing confidence and sensing control), modes of uncertainty (situational versus existential), goals (specific to the mode), and strategies used during times of uncertainty were defined. This exhaustive investigation of the lived experience of uncertainty revealed the essences of the experience and provided the basis of an analytic framework for understanding times of uncertainty.

Now, returning to the larger study of the concept of uncertainty, the completed phenomenology revealed the nature of the lived experience of uncertainty, the *wholeness* of the experience. But, at the same time, an important question was raised: Were all of the *attributes of the lived experience* of uncertainty components of the *concept of uncertainty*? This question reveals a significant threat to the validity of building concepts using interview data; the threat of over-attribution or conceptual tunnel vision (J. M. Morse, personal communication, December 2000).

Addressing conceptual tunnel vision: Unraveling concepts

Let us step back momentarily to review the flow of this inquiry on uncertainty. First, the concept emerged through a series of unrelated studies. The concept of uncertainty reappeared in varied contexts, and warranted further investigation to more fully understand the concept. Next, a concept analysis was conducted to explore the state of science surrounding the concept. Since there was adequate and appropriate literature, a concept refinement using the literature as data was completed to more fully understand the concept of uncertainty through a refined conceptual definition culled through questions asked of the literature and reorganized into a more coherent whole. But, questions regarding the experience of uncertainty persisted and led the researcher toward a phenomenological investigation of the lived experience of uncertainty. Now, returning to the original goal of advancing of the concept of

uncertainty, the threat of conceptual tunnel vision emerged as the researcher was faced with the wholeness of the phenomenological findings.

Conceptual tunnel vision means seeing the concept of interest in all aspects of the whole experience. It is a process of over-attribution. or of attributing all elements of the experience to the concept of interest. Stop for a minute to consider this threat. Human experience is a *complex interplay* of identifiable concepts. All of the elements of an experience *are not necessarily components of the concept of interest.* Understanding the *nature of an experience* does not *directly* reveal the *'flesh' of the conceptual 'skeleton' of the concept of interest.* Acknowledging these facts helps the researcher to recognize the threat of conceptual tunnel vision to the validity of the research.

Prior to using the phenomenological findings to advance the concept of uncertainty toward greater maturity, it was critical to unravel these co-occurring or interrelated concepts from the complex tapestry of the experience of uncertainty in order to isolate the concept of interest. If one were to proceed without disentangling co-occurring concepts, a significant threat to validity (or truthfulness) of the conceptualization would arise. Thus, *the first step in addressing conceptual tunnel vision is recognizing the threat*. When immersed in a study of an experience, the concept of interest appears to encompass everything.

Once recognized, the threat of over-attribution or *conceptual tunnel vision can be addressed by returning to the data, examining behavioral manifestations, and exploring constructed meaning.* A careful analysis of interview data of the lived experience of uncertainty revealed multiple co-occurring concepts. As the interview data were reanalyzed (now attuned to the threat of conceptual tunnel vision), it became apparent that within the caregivers' experiences, there was evidence of the concepts of enduring, suffering (or emotional releases), trust, and normalization. Using techniques described by Morse and Penrod (1999) for linking concepts, these co-occurring concepts were disentangled from within the caregivers' experiences of uncertainty, and a new conceptual understanding came forth.

Yet, the process is incomplete without *validating the interpretation.* Once the inter-related concepts are disentangled from within the complex human experience, interpretation must be verified using techniques of theoretical integration with the literature. Use the literature to identify evidence of co-occurring concepts (i.e., attributes and/or behavioral manifestations) reported in the interview data and the fit of this evidence with existing literature on these related concepts. Return to the literature on the concept of interest to determine if other researchers have revealed similar evidence or conclusions regarding the theoretical interplay among identified concepts. Reexamine published accounts of experiences of the concept of interest to determine if the interrelated concepts are evident in these accounts as well.

These procedures are critical for fully explicating the nature of a *concept* rather than the *nature of an experience.* In the case of uncertainty, the above recommendations were employed to reexamine the lived experience, now from the perspective of verifying evidence of co-occurring concepts. Once this process was begun, it became apparent that while the lived experience of uncertainty revealed significant insights regarding the concept of uncertainty, this experience was truly interwoven with other concepts. As the evidence (in the form of attributes and behavioral manifestations) characterizing other concepts emerged, they were verified in the literature on uncertainty and on the related concepts. For example, through this re-examination it became clear that:

- Varied types of uncertainty induce a range of behavioral states, centered primarily on enduring behavior;
- During times of uncertainty, processes of normalization are used to bridge the changed world with the everyday world; and

- Trust of another person influences how the uncertain person weighs the evidence, and may affect the conclusion or certainty versus doubt.

Disentangling co-occurring concepts and verifying their interrelationships minimized the threat to validity posed by conceptual tunnel vision. The insights gained through the process of addressing conceptual tunnel vision in the phenomenological study of uncertainty greatly enhanced the theoretical contribution of this work in subsequent concept advancement.

In concept advancement work, conceptual tunnel vision threatens the validity of subsequent projects, so demands the researcher's careful attention. Only after *recognition* of this threat to validity, followed by a careful *analysis* of interrelated concepts, and*verification* of the interpretation through theoretical integration with the literature can the flesh of the conceptual skeleton be isolated form the "noise" of the experience.

Fleshing out the skeletal framework: Concept correction

Only now, set with the theoretical conceptual definition derived though concept refinement and the clearly disentangled concepts within the *experience* of uncertainty, could the process of correcting the concept of uncertainty toward advanced maturity be undertaken. In this phase of the research, a form of visual mapping was used to lay out the conceptual components derived through each phase of the research. In this analysis of conceptual components, a comparative analysis of antecedents, attributes, strategies, goals of intervention, and worldview was conducted to further integrate findings toward concept advancement. Working through this analysis of the conceptual components permitted the correction of the concept of uncertainty to expand the theoretical definition in a manner that encompasses varied types and modes of uncertainty that are perceived in different life experiences. Key theoretical insights include:

- Uncertainty is a perception of doubt or not knowing that is brought about by cognitive and pre-cognitive ways of knowing.
- States of uncertainty are uniquely determined by an individual's perception of being in the world–while opportunities for uncertainty may abound, the state is highly individualized.
- Highly individualized perceptions of confidence and control create a dynamic flow of varied <u>types</u> of uncertainty and <u>modes</u> of uncertainty, varying in the intensity of discomfort.
- Strategies taken during an uncertain life event influence underlying sense of confidence and/or control and influence shifts in the types of uncertainty experienced.
- Techniques to enhance the sense of confidence and/or control perceived in a situation can influence the type of uncertainty experienced.
- The theoretical definition of the corrected concept moves toward a higher pragmatic utility because it takes a greater range of experiences into account and more closely captures the phenomenon of uncertainty observed and reported.

Thus, this project of advancing the concept of uncertainty produced a more coherent concept of broader scope in a manner that addressed a significant threat to validity: conceptual tunnel vision.

Summary

Using this discussion of the advancement of the concept of uncertainty, several points regarding techniques for building concepts using interview data become apparent. First, *deconstruction* of the concept begins the process of identifying the skeletal form of that concept. All methods of concept analysis are not equally effective in revealing the skeletal form of the concept. Since the skeletal form enables subsequent studies to flesh out conceptual attributes, it is critical to select a method that systematically analyzes the literature without conjecture or hypothetical creation of data.

When methods of concept advancement include qualitative studies of human experience that center on interview data, it is crucial that the researcher addresses the significant threat to validity posed by *conceptual tunnel vision*. Immersion in an experience or phenomenon of interest tends to blind the researcher to co-occurring or inter-related concepts within the complex human experience–the concept of interest appears to encompass the whole of the experience.

In order to minimize this threat to conceptual validity, researcher must first, *recognize* it by understanding that the nature of an experience does not directly reveal the flesh of the conceptual skeleton. Then, *address* it by returning to the data, examining attributes and behavioral manifestations, and exploring constructed meaning without conceptual blinders. Finally, *validate the interpretation* of inter-relationships using techniques of theoretical integration with the literature. Since conceptual tunnel vision poses such a significant threat to the validity of subsequent work in concept advancement, it is crucial that researchers take steps to minimize this threat.