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Theories of Communication and Uncertainty as a Foundation for Future Research on Nursing Practice

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Abstract

As we enter the age of "precision medicine," we will need "a greater tolerance of uncertainty and greater facility for calculating and interpreting probabilities than" (Hunter, 2016, p. 711) ever before. Nursing scholarship has produced the most widely known theory of uncertainty in illness (Mishel, 1988, 1990), but it emphasizes the psychological state of and deemphasizes communication. Communication scholars have attempted to overcome this deficit, but two of the most prominent of these perspectives, uncertainty management theory (Brashers, 2001) and the theory of motivated information management (Afifi & Morse, 2004), emphasize processes related to information seeking or avoidance in the service of uncertainty reduction, creation, or maintenance; in so doing, they tend to neglect important variations in the meanings of uncertainty. The article reviews these theories and also problematic integration theory, which centers the task of differentiating forms of uncertainty and other problematic meanings and the importance of form-specific adaptation of communication. The paper concludes with an agenda for collaborations between nursing and communication researchers aimed at advancing theory and practice.

Keywords: uncertainty, ambiguity, uncertainty management, problematic integration

Introduction

We live in a time of miraculous preventive and curative healthcare. In the latter, we have entered an era in which "precision medicine" is increasingly the aim of care providers. The prospects of tailored care are exciting, but commentators such as physician David Hunter (2016) have cautioned that associated medical advances have yet to achieve diagnostic and prognostic certainty. On the contrary, Hunter (2016) argued that "the new tools for tailoring treatment will demand a greater tolerance of uncertainty and greater facility for calculating and interpreting probabilities than we have been used to" heretofore (p. 711). Of course, uncertainties arise not only in diagnosis, treatment, and prognosis, but also in prevention, screening, and throughout the complexes of activity that constitute acute care and ongoing management of chronic illnesses. And, as communication and nursing scholars have long recognized, weaving in and out of efforts to cope with uncertainties about these instrumental aims are often intricate threads of uncertainty about identity and relational meanings and affect management goals.

Although doctors have been attending to uncertainties of illness with increasing energy in recent years, nurses, who have the privilege and great responsibility of providing most patient care, have long recognized the centrality of uncertainty to illness experiences. In 1988 and 1990, Merle Mishel introduced her theory of uncertainty in illness in the nursing literature. Since then, hundreds and more likely thousands of scholars have drawn on her framework to investigate uncertainty as it impacts patients and their families and creates challenges and opportunities in nursing.[1] And while work based on Mishel's perspective has been very productive, other nursing and health communication researchers have advanced inquiry on a wide range of topics. Our aim in this article is to review literature on nursing and relevant communication theory and research in recent years and use the review to suggest an agenda for research on uncertainty and nursing communication in the coming years.

Mishel's Model of Perceived Uncertainty in Illness

In her theory of uncertainty in illness (UIT) contexts, Mishel (1988, 1990) argued that people experience uncertainty when they are unable "to determine the meaning of illness related events" (1988, p. 225). A person's stimulus frame (i.e., perceived

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[1] According to Google Scholar, three of Mishel's works alone have been cited nearly 2,900 times: her 1981 report of a measure of uncertainty in illness (719 cites), and her 1988 and 1990 presentations of the theory (1,348 and 830 cites, respectively).

stimuli relating to symptom patterns, familiarity with events, and congruence between expected and actual experiences) influences the experience of uncertainty. Further, an individual's stimulus frame is impacted by information) and structure providers (i.e., resources, including information).

Researchers using Mishel's UIT have examined a wide variety of topics. A brief and incomplete listing includes critical illness (e.g., Adelstein, Anderson, & Taylor., 2014; Carroll & Arthur, 2010; Eastwood, Doering, Roper, & Hays, 2008; Mauor, 2008), chronic conditions (e.g., Anema, Johsnon, Zeller, Fogg, & Zetterlund, 2009; Farren, 2010; Sammarco & Konecny, 2010; Santacroce, Asmus, Kadan-Lottick, & Grey, 2010), watchful waiting or active surveillance (e.g., Bailey et al., 2010; Bailey, Wallace, & Mishel, 2007; Kazer et al., 2011; Wallace & Hegerty, 2007), end of life care (e.g., Artsanthia, Mawn, Chaiphibalsarisdi, Nityasuddhi, & Triamchaisri, 2011), and screening (e.g., Harding, 2014).[2] Further, nursing researchers use Mishel's model in myriad ways. These researchers often cite Mishel's work as part of the rationale of a study with minimal elaboration (e.g., Eastwood et al., 2008; Farren, 2010; Harding, 2014). For example, Thomas, Crisp, and Campbell (2012) cited Mishel's (1988) definition of uncertainty ("inability to determine the meaning of illness-related events," p. 50) as a point of departure for their study of people coping with myelodysplastic syndrome (MDS), a disorder "characterized by a wide variation in illness trajectory and potential treatment(s)" (p. 47). Without further reference to the theory, the authors discussed specific uncertainties, noting that "throughout the course of illness, inadequate understanding of the disease process, inability to anticipate its probable trajectory, and difficulty choosing the most appropriate therapy all contribute to heightened uncertainty" (Thomas et al., 2012, p. 50). Moreover, the authors recognized the potential value of a wide range of functional, physical, social, emotional, and spiritual interventions, including "acknowledging uncertainty and living with MDS" (Thomas et al., p. 53), as well as referrals to social work, social support group participation, and psychological or palliative care consults; encouraging flexibility in living; helping patients with emotional work (ventilating, directing anger, validating emotions); educating patients on a wide variety of topics; recognizing when patients are overwhelmed by information/educational efforts; and helping patients with values clarification and reframing (including celebrating small victories).

Other researchers used UIT to underwrite details of the project (e.g., DiBiase & Rice, 2007; Wolfe-Christensen, Isenberg, Mullins, Carpentier, &

Almstrom, 2008). For example, Cahill, BoBiondo-Wood, Bergstrom, and Armstrong's (2012) integrative review of literature used the theory to study uncertainties of brain tumor symptoms (especially related to symptom instability through time). Also guided by UIT, Wolfe-Christensen et al. (2008) examined the relationship between uncertainty and psychological distress and children's objective versus subjective ratings of asthma severity. And DiBiase and Rice (2008) reported a quasi-experiment which found that a structured chemotherapy class increased participants' knowledge and decreased uncertainty as conceptualized and measured in UIT.

As DiBiase and Rice's (2007) study suggested, Mishel's theory has also influenced measures of uncertainty. Studies have tested the psychometric properties of Mishel's uncertainty in illness scale (MUIS) among other scales (e.g., Bailey et al., 2011). The MUIS has also been used to study complexes of variables (e.g., spiritual well-being) associated with fibromyalgia syndrome (Anema et al., 2009; Arstanthia et al., 2011), implantable defibrillator (Carroll & Arthur, 2010), adolescents and young adults with cancer (Decker, Haase, & Bell, 2007), atrial fibrillation (Kang, 2009), as well as to study the trajectory of illness uncertainty (e.g., Bailey et al., 2010; Bailey et al., 2014).

Finally, Mishel's model has been used as general inspiration for grounded theory-like explorations of uncertainty. In particular, the model has provided sensitizing concepts in phenomenological analyses of illness. For example, Bailey et al. (2007) used Mishel's reconceptualized uncertainty in illness theory to analyze the data obtained through open-ended interviews of older men undergoing watchful waiting after diagnosis of localized prostate cancer. In the reconceptualization, "the theory was expanded to include the idea that uncertainty may not be resolved but may possibly become part of the individual's reality (Mishel 1990)" (Bailey et al., 2007, p. 735). The qualitative data analysis did, indeed, find that watchful waiting was viewed as an opportunity to manage uncertainty by "generat(ing) options, creating opportunity and helping patients remain hopeful" (Bailey et al., p. 740). Cypress (2016) also used UIT in a phenomenological study of patients, family members, and nurses in an ICU, where they found that patients experienced considerable uncertainty in this context, and that "nurses were the instrument in managing uncertainty among these patients" (Bailey et al., p. 47).

Alongside work more or less explicitly tied to the UIT, other nursing researchers have approached uncertainty from a variety of other perspectives. However, perhaps because of the comprehensiveness of the UIT, much of this work arrives at insights that fit comfortably alongside (and sometimes within) Mishel's theoretical framework. For example, McCormick (2002) offered a concept analysis that differentiated

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[2] Neville (2003) published an excellent review in the orthopedic nursing context.

uncertainty (following Mishel, a "neutral cognitive") from what she termed "situations" giving rise to uncertainty: situations characterized by ambiguity, inconsistency, vagueness, unpredictability, lack of information, unfamiliarity (also see Hilton, 1988, and the discussion of problematic integration theory, below). This work, as well as research tied explicitly to the UIT, also extends beyond patient experiences to those of caregivers. For example, Petruzzo, Paturzo, Naletto, Cohen, Alvaro, and Vellone (2017) studied the experiences of informal caregivers of people with heart failure. Their thematic analysis highlighted experiences of uncertainty about illness management that may usefully guide interventions for familial caregivers. The authors argued that education about various aspects of the illness, including experiences of uncertainty, may better equip caregivers to cope with burdens associated with caregiving.

Professional caregivers, including nurses and emergency department staff, are also the focus of research that highlights the role of uncertainty in the experience of illness (e.g., Pinkert, Faul, Saxer, Burgstaller, Kamleitner, & Mayer, 2017; Wright, Lowton, Robert, Grudzen, & Grocott, 2017). This work connects to previous research that focused on the environment in which uncertainty is experienced. French (2006), for example, noted that uncertainty "was more common in areas where there was high practice variation" (French et al., p. 248). Attributions of uncertainty or different "factors contributing to uncertainty" included "lack of available evidence, differences in interpretation, or disagreement with the evidence" (French et al., p. 248). French pointed out that more than one factor might be attributed to a single issue and would influence the experience of uncertainty. As another example, Mayor, Bangerter, and Aribot (2012) explored whether task uncertainty affects the naturally occurring communication of nurses during shift handovers. They reported that shift changes can be fraught with individual and social elements of uncertainty.

A largely untapped approach to research in this area is to draw explicitly on communication theories. For example, Matusitz, Breen, Zhang, & Seblega (2013) aimed to extend the relatively new incorporation of communication theory to nursing home care. Specifically, the authors recognized the potential relevance of interpersonal communication theory to nursing staff's efforts to maintain residents' "integrity," or ability to live according to their beliefs and values. The authors briefly discussed the potential value of three specific theories and one general area of communication research: uncertainty reduction theory (Berger & Calabrese, 1975), social penetration theory (Altman & Taylor, 1973), reinforcement expectancy theory (Klingle, 1993), and team building, respectively. In what follows, we aim to show how explicit attention to communication theories centrally

concerned with uncertainty can provide alternative agendas that are more distinguishable from work based on UIT and other works centered in the nursing literature.

Uncertainty Management Theory

Research in the field of communication has examined the pervasiveness of uncertainty in a number of health contexts. Much early work emphasized the common motivation to reduce uncertainty (Berger & Calabrese, 1975; Albrecht & Adelman, 1984). However, starting in the mid-1990s, Dale Brashers and Austin Babrow (1996) extended uncertainty research by recognizing that "uncertainty management" involved a wider variety of motivations than just uncertainty reduction. In the articulation of these ideas that became known as uncertainty management theory, Brashers (2001, 2007; Brashers, Neidig, Haas, Dobbs, Cardillo, & Russell, 2000) argued that people may want to reduce, maintain, or even increase their uncertainty, depending on their appraisals of and emotional responses to experiences characterized by uncertainty (e.g., chronic illness).

Brashers and colleagues drew propositions from Mishel's theory to assert that an individual who experiences uncertainty that causes distress might try to reduce that uncertainty, whereas an individual who experiences uncertainty appraised as an opportunity might try to maintain or even increase that uncertainty. For example, a person who is nervous about a particular course of treatment related to a cancer diagnosis could seek information about the range of alternative available treatments, thus increasing uncertainty by expanding perceived options. Moreover, to sustain a desired level of uncertainty or certainty, as Brashers et al. (2000) have shown, people might engage in information avoidance, including social withdrawal. That is, in order to avoid information, a person may have to avoid contact with members of her or his social network. These ideas buttress Ford, Babrow, and Stohl's (1996) findings in the domain of social support related to breast cancer, where women patients judged support messages to be effective if they increased uncertainty in an otherwise hopeless (certain, negative) outlook.

Given the foregoing, UMT has often been conceptualized in terms of information seeking and avoiding (Brashers & Hogan, 2013; Hogan & Brashers, 2009; Mishel, 1988, 1990). Indeed, a number of scholars have described information seeking and avoiding as a communicative means of managing uncertainty (Afifi & Weiner, 2002; Brashers, Goldsmith, & Hsieh, 2002; Hogan & Brashers, 2009; Knobloch & Solomon, 2002; Morrison, 2002; Rosen & Knauper, 2009; Sweeny & Miller, 2012; Sweeny, Melnyk, Miller, & Shepperd, 2010). In an early, powerful demonstration set in the context of HIV/AIDS, Brashers et al. (2000) found that people seek

information that decreases negatively evaluated uncertainty about the meaning of their illness; alternatively, they maintain uncertainty when they appraise it positively. People also try to avoid information as a way to manage uncertainty when it conflicts with information they already have (Sweeny et al., 2010).

In addition to valuable research about information seeking and avoiding, other UMT research has focused on how people assess and utilize particular sources of information or the challenges that can arise in managing uncertainty through information management (e.g., internet use; Rains, 2014). Individuals may assess and utilize multiple sources of information over the course of an illness. For instance, people coping with illness may turn to healthcare providers (e.g., nurses and physicians), friends, family, the Internet, or health-related pamphlets for information (Brashers, Haas, Neidig, & Rintamaki, 2002). Furthermore, although seeking out or avoiding information sources is one way that people manage their illness-related uncertainty, there may be challenges and dilemmas associated with these information management behaviors (Hogan & Brashers, 2009). Brashers, Goldsmith, and Hsieh (2002), for example, suggested that the collaborative nature of information management (i.e., goals must be coordinated among individuals) and contextual features of information management (e.g., varying cultures and channels of communication) can present significant challenges.

Like UIT, one of the major contributions of UMT has been that it encourages research across many illness contexts (e.g., HIV: Brashers, Goldsmith, & Hsieh, 2002; cancer: Miller, 2015; transplantation: Martin, Stone, Scott, & Brashers, 2010). This research thus encourages researchers to confront the challenge of identifying generalizations across contexts while also remaining sensitive to the dilemmas associated with uncertainty management that are context-specific (Donovan, Brown, LeFebvre, Tardif, & Love, 2015; Miller, 2014; Scott, Martin, Stone, & Brashers, 2011; Stone, 2013).

Theory of Motivated Information Management

Walid Afifi and colleagues (Afifi & Weiner, 2004; Afifi & Morse, 2009) forwarded a model focused on the bounded rationality of decisions related to information management that arise in response to uncertainty. A useful way to understand this theory of motivated information management (TMIM) is as an extension of uncertainty management theory through a finer-grained analysis of the phases of cognitive processing that shape information management, a principle form of uncertainty management.[3]

The TMIM conceptualizes information management in three potentially recursive phases: interpretation, evaluation, and decision. The interpretation phase begins when we appraise our level of uncertainty in a given situation. If actual and desired levels of uncertainty are discrepant, ancillary desired levels of uncertainty are discrepant, ancillary appraisals of accountability and future expectations, including ability to cope, give rise to a specific emotional response.[4] For example, depending on these more specific interpretations of the context, one might experience anxiety, anger, fear, jealousy or other particular emotional reactions.

In the following evaluation phase of information management, the specific emotion aroused in the preceding phase shapes expectancies about the likely outcomes of an information search. More specifically, one's emotional response to the interpretation of the situation will influence judgments of the likelihood of costs and benefits of information-seeking and of their value or utility. Moreover, the particular emotion arising out of one's interpretation of the situation will influence efficacy expectancies: evaluations of one's ability to manage effectively whatever is learned from the information search.

Decision, the model's third phase, follows directly from evaluations of outcomes and efficacy. Based on these evaluations, we might decide to seek or avoid information. Alternatively, we might return to the interpretation or evaluation phase and revise earlier judgments.

Although the patterns of results vary across applications, tests of the TMIM in both relational and health information management contexts have been generally supportive. For example, the model has been applied with some success to organ donation (Afifi, Morgan, Stephenson, Morse, Harrison, Reichert, & Long, 2006), sexual health (Afifi & Weiner, 2006), and caring for elderly parents (Fowler & Afifi, 2011). In 2014, Afifi and Robbins published a more general review of the theory.

Problematic Integration Theory

Babrow's problematic integration (PI) theory contextualizes uncertainty within a broader complex of problematic meanings than do the theories reviewed above. The heart of the theory, and hence its main potential contributions to research and practice, spring from the idea that communication will be most effective

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[3] Afifi (2015) characterized the model as an attempt to extend Brashers's model as well as problematic integration theory (see below).

[4] This account represents Afifi and Morse's (2009) reformulation of TMIM. Whereas the original account (Afifi & Weiner, 2004) specified anxiety as the principle affective response to a discrepancy between desired and actual levels of uncertainty, the revised model draws on appraisal theory to broaden the conception of emotional reactions.

when it is adapted to fit specific, distinct problematic meanings (cf. McCormick, 2002, who drew on Babrow, Kasch, & Ford, 1998). The theory develops these distinctions from its most basic claim, that meaning is problematic when it is difficult to synthesize or integrate values or desires with beliefs or expectations. Distinctive problematic meanings arise out of particular constellations of desires and beliefs/expectation: when what one wants is (a) out of reach (the "impossible"), (b) unlikely ("diverging expectation and desire"), (c) uncertain (beliefs or expectations are hazy or otherwise hard to formulate), or (d) associated with substantial costs (ambivalence) (Babrow, 1992, 2007). Threats to health are, of course, archetypical sources of troubling meanings or problematic integration.

Problematic integration is thus broadly similar to UIT's characterization of uncertainty as inability to determine meaning (Mishel, 1988). However, the theories differ in five significant ways. First, unlike the very general idea of inability to determine meaning, PI theory understands the essence of uncertainty more specifically as difficulty in forming a belief or cognitive association (see Babrow & Matthias, 2009). Second, PI researchers insist on the importance of carefully differentiating specific forms or types of uncertainty (see Table 1). Third, PI theory posits three other distinct forms of problematic meaning (diverging expectation and desire, ambivalence, and impossibility) in addition to uncertainty.[5] Fourth, PI theory asserts problematic meanings are communicative constructions (i.e., communication is a major source of—and resource in coping with—uncertainty and other forms of problematic meaning). And finally, PI theory suggests that communication will be most effective when it is carefully adapted to the specific forms of problematic meaning that people experience in dealing with illness (Babrow, 2001, 2016; Babrow & Matthias, 2009; Babrow & Striley, 2014).

In short, these and many other distinctions are vitally important. They have been recognized sporadically in countless studies, but with the exception of work based on PI theory, they are neglected, and never are they taken to be the central organizing idea in theorizing, research, and development of practice. This is unfortunate because emphasizing the differentiation of forms of uncertainty and other problematic meanings *makes meaning itself and its relationship to communication the focal points of inquiry*. Very different communicative and other actions are warranted

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[5] Just as many useful distinctions in forms of uncertainty have been identified, Babrow (2016; Babrow & Striley, 2014) argued that distinctions in forms of ambivalence, and perhaps different meanings of impossibility and diverging expectation and desire, should be developed in future research.

Table 1
Forms (or Meanings) of Uncertainty (adapted from Babrow, 2001, 2007)

I.   Ontological uncertainty: uncertainty rooted in the nature of the world*
  A. Causal indeterminacy (e.g., multicausality, contingency, reciprocity, underdeterminacy)
  B. Typological indeterminacy: Are there distinct types or classes, how distinct are the types or classes, or is every object essentially unique?
II. Epistemological uncertainty: uncertainty rooted in the nature of human knowledge*
  A. Qualities and uses of information
    1. sufficiency (e.g., clarity, completeness, and volume—too little or too much to manage)
    2. reliability and validity (e.g., freedom from error, source expertise or trustworthiness, ambiguity [multiple meanings], applicability, consistency).
    3. consistency
  B. The nature of associations (quantitative probabilities and qualitative senses of uncertainty)
  C. Processing information
    1. ordering information (e.g., relative weights of pieces, logical precedence)
    2. deriving inferences
  D. The nature of knowing: lay epistemologies, or every day, non-scholarly assumptions about what it means to know (and hence, what it means to be uncertain)

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*Ontological and epistemological uncertainties are interdependent in the sense that conceptions of the nature of the world and the nature of human knowing are interdependent.

depending on the specific form of problematic meaning confronting the ill, their loved ones, and care providers. *These variations in the meaning of uncertainty are simply invisible when we conceive of uncertainty and information management in terms of increasing or decreasing uncertainty or information seeking/provision or avoidance* (also see Babrow, 2001). The more carefully we listen for the form of problematic meanings in our interactions, the greater our chances of constructing appropriate *form-specific messages* (Babrow, 2016, in press; Babrow & Striley, 2014).

Finally, PI researchers have also used the theory to illuminate communication strategies for dealing with paralyzing, destructive hopelessness or sharply divergent expectations and desires. This insight builds on the widely recognized idea that, when a people are

certain that their situation is bad, communication can foster hopefulness by introducing uncertainty. PI theory goes further than the other theories by suggesting that each of the many forms of uncertainty it identifies (recall Table 1) can be used as *topoi* or potential lines of argument to challenge certainty or overwhelmingly discrepant expectation and desire. "For example, one can undermine (a hopeless) certainty by casting doubt on the extensiveness, credibility, consistency, and/or relevance of available information" (Babrow & Striley, 2014, p. 108). Thus, by insisting on the importance of close attention to the particular form of problematic meaning, PI theory equips us to construct communicative strategies and messages tailored to the particularities of troubled understandings. *Seeking and avoiding information, and reducing or increasing uncertainty, may very well be appropriate, but many other communicative choices are possible*. Often these alternatives are far more appropriate that merely seeking or avoiding information in coping with the great variety of troubled/troublesome meanings.

Setting the Agenda for Future Research

Nurse-communication scholar collaboration. Nurse-communication scholar collaboration is likely to improve nursing practice in the realm of communication about uncertainty and other problematic meanings. Basic research, practice recommendations, and evaluation research must be founded on nurses' knowledge of both the physiological and psychosocial dimensions of illness and patient care. Just as certainly, this work should be guided by expert knowledge of communication processes and structures. However, even though nurses and other health professionals have come to recognize the importance of communication in recent years, an unfortunately persistent tendency has been to approach communication from the most rudimentary viewpoint; communication is most often assumed to be a linear transfer of information (thoughts and feelings in the mind of the source) to the receiver (Babrow, in press). The linear model underwrites the information deficit approach to uncertainty, which is surely the most common framework for thinking about the topic in the nursing, medical, and health literatures; according to this view, uncertainty results from insufficient information, so the principal goal of communication about uncertainty is to inform or educate.

The closing section of this paper is an inappropriate context for an extended discussion of the nature and challenges of communication. However, three basic observations can efficiently challenge the assumption that communication is merely the transfer of information from source to receiver and underline the importance of expert understanding of communication to studying and improving nursing in relation to patient uncertainty (also see Babrow, in press). First, as cybernetic theorists have emphasized, the meaning of a message is not contained in its symbols and thus effectively transferred when symbols make the circuit from source to a receiver capable of interpreting the message as intended by source. Rather, meaning arises in the interaction of message and response, response to response, and so on. This is easily illustrated: A message is informative only if the receiver takes its content as novel and accurate; a care providers "order" is only a directive if it is heard and responded to as a directive; a comment is encouragement only if it is heard as such, and not, alternatively, as patronizing or controlling. In each case, the meaning intended by a source is not necessarily the meaning for the receiver or the joint understanding that arises as the communicators interact through time. Communication is not simply   the linear transfer of intended meaning.

A second critical observation about communication is that it invariably involves multiple, usually interacting or interdependent meanings. Every utterance has semantic, syntactic, and pragmatic meanings, as well as signifying the identity of parties to the interaction and their relationship to one another (see Babrow, 1992; Bateson, 1972; Pearce, 1989). Moreover, as PI theory emphasizes, meaning-making requires not only that we work out what to believe (about past, present, and future) but also that we work out the evaluative meaning of our belief, and it recognizes that these dimensions of meaning are dynamically interrelated, often problematically so (as when we anticipate some grave threat or construct the altered reality of great loss). Communication is not simply the transfer of a narrowly instrumental meaning a source happens to have in mind at the moment of an utterance.

Third, as we have argued above, effective communication requires not merely transferring content from source to receiver but careful attention to the outlook or meanings that concern the message receiver. In the context of communicating about uncertainty, this means ascertaining just what form(s) of uncertainty are of concern to the message receiver. While a patient or family member might be burdened by ignorance, they are quite possibly beset by a wide variety of other forms of uncertainty. Effective communicators will listen carefully to understand the form(s) of uncertainty or other problematic meaning that is at issue and will adapt messages to deal with the specific, troubling form(s).

In short, we believe that research on communication and uncertainty in the nursing context will be most effective and efficient when it marries both nursing and communication expertise. Given relevant expertise in both nursing and communication, we envision two lines of work in future collaborations: theory-guided research

and theory-generating/grounded theory work.

Theory-guided research based on PI theory. Research based on PI theory should provide useful insights into communication about uncertainty in the nursing context. Although the earliest applications of PI theory to the health communication context treated uncertainty as a homogenous, straightforwardly meaningful phenomenon (e.g., Brashers & Babrow, 1996; Ford et al., 1996), these projects very quickly shifted to emphasize the importance of differentiating specific forms of uncertainty and other forms of PI, as well as the potential value of *form-specific adaptation of messages* (Babrow, 2001; Babrow et al., 1998; Babrow et al., 2000). That emerging work called for continuing efforts to identify and differentiate additional forms of problematic meaning, and the classification system has thus been evolving (contrast, for example, Babrow, 2007, with Babrow et al., 1998), and other scholars have offered somewhat different classification systems (e.g., see Han, Klein, & Arora, 2011). Thus, we would hope to see a continuation of efforts to differentiate forms of uncertainty. We would also like to see efforts to differentiate particular forms of ambivalence (see Gill & Morgan, 2011) as well as perhaps varying meanings of certainty, impossibility, and diverging expectations and desires.

The value of further refining and extending our understanding of varied forms of uncertainty and other forms of PI is rooted in the idea of form-specific adaptation of messages. In other words, the more subtle our ability to hear the details and nuances of patients' and loved ones' specific concerns, the more likely we will construct messages that are well suited to their struggles. This, in turn, suggests a second line of theory-directed research. Through depth-interviews and consultation with corresponding literatures, researchers should work toward developing potential strategies or lines of response to deal with particular forms of uncertainty, ambivalence, and the like. For example, if patients or loved ones are grappling with trust issues, researchers might use a combination of open-ended interviews and forays into the interpersonal and perhaps counseling literatures to develop potential trust-building or other coping strategies. In effect, what we propose here is that nursing communication researchers develop something like Aristotle's analysis of *topoi* or commonplaces for rhetorical argument noted in his *Rhetoric* and *Topics*. Although nurses would be unlikely to recall all the varieties of uncertainty and other problematic meanings, as well as all the potential lines of responses that are eventually catalogued, a combination of continuing education and ongoing nursing experience should soon familiarize these health care professionals with a much richer array of response alternatives than those suggested by uncertainty reduction or maintenance, information seeking, or information avoidance.

Finally, as these lines of response are clarified, training programs and evaluation research should be pursued. Ultimately, the most powerful evidence in this area will be work that either demonstrates the most effective ways of teaching nurses to listen with greater subtlety and adapt messages with greater care as they come to more and more refined understandings of patient concerns, or evidence that points to even more powerful frameworks for understanding and responding to patient uncertainty.

Theory-guided research based on UMT. Future research might also be usefully guided by principles of UMT. As Mishel (1988, 1990) first noted, a patient's confidence in the source of information influences the experience of uncertainty such that a credible authority, or person with perceived expertise, will be more likely to support uncertainty management efforts. Some research has focused on this important construct (e.g., Brashers, Hsieh, Neidig, & Reynolds, 2006; Sodowsky, 2012). And, although research has provided evidence that uncertainty can also be experienced by health care providers, and that this uncertainty may impact the experiences of the patients and families they work with (Cranley, Doran, Tourangeau, Kushniruk, & Nagle, 2009), research that investigates the ways in which health care providers identify as a credible authority, and the impact that this plays on experiences of uncertainty management for the multiple stakeholders involved in the health care context, is warranted for a number of reasons. Most significantly, perhaps, health care providers' experiences of uncertainty may contribute to their perception of being a credible authority which may, in turn, impact communication with patients, family members, and coworkers. Second, health care providers, particularly nurses, develop their credibility both by completing the appropriate training and by gaining clinical experience (Stone, 2013). Finally, understanding how nurses cope with the uncertainties and related communication challenges is important because nursing is known to be a stressful profession, susceptible to burnout, and the demands on nursing care are increasing as the population ages (Iacovides, Fountoulakis, Moysidou, & Ierodiakonou, 1999).

Interventions have also been designed with UMT as the foundation. Most recently, colleagues of Dale Brashers published an important article describing a peer-led uncertainty management intervention for people recently diagnosed with HIV. As Brashers and colleagues have described in numerous articles, some of which have already been reviewed here, the experience of HIV is characterized by uncertainty both for those infected and for their social network (e.g., friends, family, co-workers). This study evaluated the efficacy of the intervention using a pretest–posttest control group design and found evidence that, over time, participants who received the intervention were better

able to manage illness-related uncertainty, had lower levels of depression, and were more satisfied with their social support than the control group. Further, this study provided evidence that interventions using UMT are not only useful but are also cost effective. Brashers, Basinger, Rintamaki, Caughlin, and Para (2017) suggested that future work attempt to expand this program to other illness and perhaps to focus on other issues such as treatment adherence.

Although this intervention focused on peer-to-peer support, nurses were an integral part of the data collection process. Health communication researchers often experience challenges collecting longitudinal, patient-focused data. However, nurses are in a unique position to have greater access to and rapport with patients. Nurse-communication researcher collaborations in data collection and analysis, such as the one reported by Brashers et al. (2017), have great great potential to improve patient experience and quality of life.

Theory-generating/grounded theory research. A significant alternative to theory-based study is to engage in theory-generating research. A major option here is to build grounded theory, such as we have seen from time to time in the nursing literature (e.g., Hilton, 1988). A precis of this methodological approach is considerably beyond the scope of this chapter, but excellent guidance is available in texts such as Charmaz's (2014) *Constructing grounded theory* (also see Lindlof & Taylor, 2011). Charmaz argued persuasively that the most satisfying grounded theory research is that which does not deny the meaning and value of past research but that uses extant theory as a source of sensitizing concepts (Blumer, 1954/1969). The central idea here is that abstract theoretical concepts are inescapably incomplete; such concepts take on considerable meaning when illuminated within concrete contexts of research. In other words, thick engagement with a concrete nursing context fleshes out the meaning of theoretical abstractions in ways that simply cannot be anticipated or encapsulated within theoretical writings. So, too, theoretical concepts illuminate concrete circumstances in ways that might otherwise be unnoticed. Given these considerations, past research based on PI theory has often used its concepts in open-ended interpretive studies of uncertainty in health and illness contexts (e.g., Matthias, 2009; Gill & Babrow, 2007, respectively). Similarly, Brashers has encouraged the use of UMT in grounded theoretic applications (Kosenko, Hurley, & Harvey, 2012; Martin, Stone, Scott, & Brashers, 2010; Miller, 2015; Stone & Jones, 2009). A key challenge in theory-generating/grounded theory research, however, will be balancing the virtues of context-sensitive illumination with those of cross-contextual knowledge. The challenges of this balance should be especially apparent when it comes to developing ideas

for improving practice. This challenge is most likely to be managed well through the collaboration of those with deep communication theory knowledge with nurses grounded in profound knowledge of the meanings and challenges of nursing practice.

Conclusion

Nursing scholarship has contributed some of the most well developed theory on uncertainty in the experience of illness, the most influential example being Mishel's uncertainty in illness theory. While the uses of this framework are legion and still expanding, attention to communication within this work is typically of secondary importance. Several potentially relevant theories have emerged in health communication research, but these perspectives have rarely been applied by nursing scholars. The present article is an attempt to clarify the distinctive insights provided by these communication-focused theories: the centrality of appraisal of uncertainty and uncertainty discrepancy as determinants of communication behavior, appraisals of potential information-management responses to uncertainty, the variety of substantively distinguishable forms of uncertainty (and other forms of problematic meaning, such as ambivalence and certainty/impossibility), and the importance of adapting communicative responses to the specific forms of uncertainty or otherwise problematic meaning. In our view, the most productive pathways from these insights to further developments in theory and practice will involve close collaboration between experts in nursing practice and experts in communication theory. These collaborations will inhibit over-simplification and facilitate work focused on dynamics involving truly important features of nursing and communicating about uncertainty.

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