Abstract

Title. Application of a model of social information processing to nursing theory: how nurses respond to patients.

Aim. This paper is a report of a study to assess the applicability of a theoretical model of social information processing in expanding a nursing theory addressing how nurses respond to patients.

Background. Nursing communication affects patient outcomes such as anxiety, adherence to treatments and satisfaction with care. Orlando’s theory of nursing process describes nurses’ reactions to patients’ behaviour as generating a perception, thought and feeling in the nurse and then action by the nurse. A model of social information processing describes the sequential steps in the cognitive processes used to respond to social cues and may be useful in describing the nursing process.

Methods. Cognitive interviews were conducted in 2006 with a convenience sample of 5 nurses in the United States of America. The data were interpreted using the Crick and Dodge model of social information processing.

Findings. Themes arising from cognitive interviews validated concepts of the nursing theory and the constructs of the model of social information processing. The interviews revealed that the support of peers was an additional construct involved in the development of communication skills, creation of a database and enhancement of self-efficacy.

Conclusion. Models of social information processing enhance understanding of the process of how nurses respond to patients and further develop nursing theories further. In combination, the theories are useful in developing research into nurse–patient communication. Future research based on the expansion of nursing theory may identify effective and culturally appropriate nurse response patterns to specific patient interactions with implications for nursing care and patient outcomes.

Keywords: Model, nursing, social information processing, theory
to patient cues is vital. Research in nurse–patient communication has often failed to apply existing theories of communication. Theories of nursing and social information processing contribute constructs that may be useful in exploring nurse–patient communication. In this paper we explore nursing theory and models of social information processing as they expand the understanding of the process of how nurses respond to patients.

Background


Previous research had revealed that provider communication may facilitate patient disclosure of concerns (Maguire et al. 1996) and that disclosure has been associated with decreased patient distress and improved coping (Stiles et al. 1992, Stanton et al. 2000). Unfortunately, only half of patient expressions of concerns are either explored or acknowledged by nurses (Florin et al. 2005), and distancing strategies may be used by nurses to avoid responding to patient cues that express concerns or emotions (Uiterhoeve et al. 2008). Although nurses may use these strategies to minimize their own exposure to challenging conversations containing concerns or emotions, they are not addressing the patients’ needs with effective responses.

Nurse confidence in communication may be most variable during difficult interactions. Wilkinson (1991) found that nurses who were less confident in their ability to communicate openly with patients were less likely to use behaviours that facilitated patient disclosure of concerns. Specific communication skills are needed when distressed patients express sadness and anger, emotions perceived as difficult communication by nurses (Sheldon et al. 2006). Perceived self-efficacy in responding to patient concerns may also decrease distressing feelings in nurses provoked by emotion–laden interactions with patients, decrease the use of ‘distancing’ behaviours and increase the use of facilitating behaviours by nurses.

Research in patient–provider communication has often been exploratory and has failed to apply existing theories of communication and emotional expression (Arora 2003). Increasingly, international leaders in communication are calling for more theoretically based and experimental research (Bensing et al. 2003). In particular, Savage (2007) has called for increasing coherency between theories and research methodologies when studying the role of emotion in psychosocial care in nursing.

Current theories of nursing and social information processing contribute constructs that may be useful in designing research to study nurse–patient communication. In this paper, the Crick and Dodge (1994) model of social information processing was linked with concepts of Orlando’s theory of the deliberative nursing process to create a more comprehensive nursing theory of nurse–patient communication and the nursing process.

Communication in nursing theories

Nursing researchers have employed the constructs from theoretical foundations to study nurse–patient communication. Rather than using expert opinion, communication research benefits from the use of theoretical frameworks to organize knowledge and test empirical indicators. Communication in nursing shares a category of knowledge in common with other disciplines: interaction. The discipline of nursing has given rise to numerous theories to explore aspects of nursing care from a metaparadigm (Fawcett 2005) to middle range theories such as Hildegard Peplau’s theory of interpersonal relations, Bonnie W. Battey’s theory of humanizing nursing communication and Ida Jean Orlando’s theory of the deliberative nursing process.

Hildegard Peplau’s theory of interpersonal relations

One of the earliest nursing theorists to explore the nurse–patient relationship and nursing communication was Hildegard Peplau (1952). She developed a landmark theory, the theory of interpersonal relations, emphasizing reciprocity in interpersonal relationships between nurses and patients. Peplau’s theory moved thinking about nursing from what nurses do to patients to what nurses do with patients, making nursing an interactive and collaborative process between the nurse and the patient.

Bonnie Battey’s humanizing nursing communication theory

Bonnie W. Battey (a.k.a. Bonnie Duldt) (Duldt & Giffin 1985, Duldt 2008) developed the humanizing nursing communication theory to integrate the disciplines of communication and human relations into nursing communication. In her theory, humanizing and dehumanizing attitudes intersect with the identified interaction patterns in nursing (listening, communing trust, asserting, confronting, conflicting and separating), thereby influencing communication with patients. Battey’s theory does not articulate the relationship
between the interaction patterns in sufficient detail to allow prediction of nurse behaviours that influence patient outcomes.

Ida Jean Orlando’s theory of the deliberative nursing process
Most relevant to the process of nurse–patient communication is Ida Jean Orlando’s theory of the deliberative nursing process (Orlando 1961, 1972). In her theory communication between nurses and patients is described using three concepts: the ‘Patient’s Behaviour’, the ‘Nurse’s Reaction’ and the ‘Nurse’s Activity’. The patient sends a cue in the form of behaviour, i.e. ‘Patient’s Behaviour’. The ‘Nurse’s Reaction’ is the nurse’s response to the ‘Patient’s Behaviour’. Two types of nurse response are defined in Orlando’s theory: a ‘non-observable response’ comprised of a thought, perception and feeling, and an observable ‘Nurse’s Activity’ as the final action/response to the ‘Patient’s Behaviour’. Orlando further described the ‘Nurse’s Activity’ as being ‘automatic’ or ‘deliberative nursing process’. The ‘deliberative nursing process’ allows nurses to identify the patient’s needs and help the patient; e.g. to be of help (Orlando 1972). Orlando’s theory emphasized that effective nursing practice is the result of the nurse’s non-observable reaction (perception, thought and/or feeling) and then observable actions (activity) to the ‘Patient’s Behaviour’ (Fawcett 2005).

In Orlando’s theory, nurse–patient interaction involves reciprocity; making the relationship dynamic and collaborative. According to Orlando, nurses confirm their perceptions, thoughts and/or feelings with patients for validation prior to selecting the activity. Deliberative actions are seen as more effective but the process of self-reflection, assessment of self-efficacy and the role of peer evaluation/support are not clearly identified in the theory. Separating the perception from the thought and feeling arising in the ‘Nurse’s Reaction’ was not described and Orlando (1961) acknowledged the problems inherent in this cloudy relationship and identified the need for further introspection by the nurse as desirable in understanding the ‘Nurse’s Reaction’. Nurses’ non-observable reactions may influence subsequent behavioural choices and nursing care, but the constructs are not sufficiently articulated in Orlando’s theory to structure further study of nurse responsiveness.

Models of social information processing
Although important to the understanding of nursing, theories of nursing do not provide sufficient detail about the components of the process of responding to patients. Villarreul et al. (2001) advocate a process of evaluating theories borrowed from other disciplines as to their applicability to nursing phenomena. Theories of interaction, with roots in symbolic interactionism, may provide further descriptions of the cognitive and emotional processes involved in response creation by nurses. Symbolic interactionism describes the creation of meaning and how one chooses ways of acting (Blumer 1969, Benoliel 1977). One type of interaction theory, social information processing, arises from developmental and social psychology. Social information processing theories include concepts that may be applied to how nurses respond to social cues from patients, e.g. ‘response generation’. While arising from the need to understand the development of social skills in children, these theories have applicability to how nurses learn ways to act in their professional roles.

Crick and Dodge model
One theory of social information processing, the Crick and Dodge (1994) model, includes sequential steps and constructs the internal processing of social cues to compose a response (Crick & Dodge 1994). Although the model was developed to describe social development in children, the major model constructs have application to communication between nurses and patients. Nurses develop a new social role when they enter the profession, including new social scripts, rules and schemata. Acquisition of this social knowledge is related to job performance and effective communication that may affect patient outcomes.

The Crick and Dodge model (see Figure 1) is a circular depiction of the emotional and cognitive processes involved in responding to social cues, e.g. ‘response generation’. At the core of the model is a database of memories, acquired social rules, social knowledge and schemata. When used to explore communication in nursing, the database may include previous social experiences in the personal and professional realms, formal education in nursing and communication skills, role expectations, ethical and legal ramifications, societal expectations and professional mandates of nursing.

The six steps of the theory may be applied directly to the processes nurses use to respond to patients. The steps are derived from the original linear models of social information processing but are more interactive with the database and with other steps when creating responses to social cues.

The steps of the Crick and Dodge model are:
1. Encoding of cues – internal and external.
2. Interpretation of cues – causal attributions, intent attributions, other interpretive processes.
4. Response access or construction.
The Crick and Dodge model has utility when further defining the processes involved in response generation in nurses. For example, if a patient expresses a concern, the nurse performs a rapid assessment of the behaviour (step 1 – encoding of cues and step 2 – interpretation of cues), sets goals for the interaction while acknowledging and controlling her arousal or reaction (step 3 – clarification of goals) and decides on the best response for the interaction based on the goals (step 4 – response access and step 5 – response decision) before acting out the chosen response (step 6 – behavioural enactment). The actual steps of response generation flow in a circular pattern, with information shared between steps and with the database during the process.

Self-efficacy is an important underlying component of step 5, response decision, in the Crick and Dodge model. Self-efficacy or confidence has been described extensively by Bandura (1977, 1986, 1997) and may affect a nurse’s ability to choose and enact a response. Self-efficacy beliefs represent a person’s estimate of their ability to perform a specific task to achieve a desired outcome. According to Bandura, people with a stronger belief in their abilities are more apt to be successful in enacting a behaviour and less likely to avoid situations and interactions that are perceived as difficult. In the model, self-efficacy is a component of the response decision step (step 5) and precedes the actual enactment of the chosen response (step 6).

Two feedback loops are included in the model. The first feedback loop, between interpretation and encoding of cues, links the interpretive processes in step 2 (interpretation of cues) back to the appraisal and integration of the patient cues in step 1 (encoding of cues). For example, if a patient expresses anger to a nurse about their prescribed therapeutic regimen, the nurse may interpret the patient’s concerns based on previous experiences with patients receiving this regimen and other interactions in which patients expressed anger. The second feedback loop, between response decision and response access or construction, links the response decision and evaluation of self-efficacy in step 5 back to the potential responses in step 4 (response access and construction), so that a nurse lacking the confidence to act out one response might select or construct another. The model also includes an optional step incorporating peer evaluation and response between behavioural enactment and encoding of cues. In this optional step, peer evaluation of the enacted response (step 6) is incorporated into the next assessment of social cues in step 1. While peer evaluation in the original model relates to response generation in children, it may also be applicable to adults, as peer/colleague feedback may be used to interpret cues from interactions, contribute to a database of potential responses and play a role in the selection and enactment of a chosen response. In addition, peers and colleagues may provide guidance and support during difficult interactions and enhance self-efficacy.
The study

Aim

The aim of the study was to assess the applicability of a theoretical model of social information processing in expanding a nursing theory addressing how nurses respond to patients.

Design

A pilot study was conducted using cognitive interviews for data collection.

Participants

A convenience sample of five experienced nurses (mean = 18.2 years of experience) were enlisted by the PI (LKS) to participate in cognitive interviews during 2006.

Data collection

Cognitive interviews were conducted to explore nurse perceptions of the process of response generation during nurse–patient interactions. Using the techniques of cognitive interviewing described by Willis (1999), both scripted and spontaneous probes were used during the interviews (Table 1). Scripted probes, as defined by Willis, were consistent with the premises of the Crick and Dodge model and Orlando’s theory, and were used to explore the cognitive and developmental processes nurses use to communicate with patients.

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<td>How did your education prepare you for communicating with patients?</td>
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<td>How confident do you feel to handle most patient interactions?</td>
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<tr>
<td>How do you respond to what people and patients say at work?</td>
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<td>How do you interpret what patients say: for example, what caused this patient to be angry?</td>
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<tr>
<td>How do you decide what your goals are during an interaction with a patient expressing emotion?</td>
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<td>How do you regulate your own emotions when patients are expressing sadness or anger?</td>
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<td>How do you decide on possible responses?</td>
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<td>How do you select your best or usual response?</td>
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<td>How confident do you feel to say this response?</td>
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<tr>
<td>What do you expect to be the result of this response?</td>
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<tr>
<td>What role do other nurses play in your decision about possible responses?</td>
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The principal investigator (LKS) conducted the interviews with the nurses individually, using the interview script and spontaneous probes as they arose during the interview to explore related topics. The interviews lasted between 60 and 90 minutes, and were audio-taped and transcribed.

Ethical considerations

The study was approved by the appropriate institutional review board. Participants were informed of the nature of the study and were given assurances of confidentiality about the shared information.

Data analysis

The cognitive interviews were analysed in two steps. In the first step, notes were taken during by the investigator during the interview to capture themes regarding response generation. In the second step, the investigator reviewed the audiotapes and transcripts of the cognitive interviews to uncover salient themes and shared meanings across the interviews.

Findings

The interviews revealed a general theme regarding the development of confidence in communication skills, confirming the steps of the Crick and Dodge model as they apply to self-efficacy and nurse-patient communication. In response to general questions about how nurses learn to communicate with patients, participants indicated it takes many years of work experience to develop confidence in communicating with patients, with one nurse estimating that it may require ten years of nursing experience to be comfortable communicating with most patients. Four of five nurses interviewed stated that they felt confident in their communication skills and that they could handle almost any patient interaction. The themes arising from the interviews are presented according to the six steps of the Crick and Dodge model. Quotes from our data are used below in presenting our findings.

Step 1 – encoding of cues

Participants described performing rapid and complex assessments prior to responding to patients and people at work. They interpreted patient statements, nonverbal communication such as body language and eye contact, and environmental cues, while incorporating clinical knowledge and previous experience, prior to generating potential responses. This reflects Orlando’s concept of ‘Nurse’s
Reaction and also the non-observable generation of a perception, thought and feeling in relation to a ‘Patient’s Behaviour’. Previous experiences arose from nurses’ memories of similar situations, consistent with the database described in the Crick and Dodge model. Although memories of previous experiences provided some information about the patient interactions, most exchanges were described as context-specific, and nurses rapidly assessed the clinical, social and personal context of each situation.

Step 2 – interpretation of cues
According to the nurses, interpreting social cues overlapped with the assessment in step 1 and occurred quickly. They integrated previous experiences in general, and experiences with a patient specifically to arrive at an assessment (Orlando’s thought and perception). Information from a patient’s verbal and nonverbal communication and the broader context was used to arrive at an initial assessment of the situation. One nurse said:

You don’t always know what’s going on…Sometimes patients are just frustrated. You can’t take it personally. Usually something else is going on and you have to take time to find out.

This reflected a personal evaluation of potential responses within the nurse (‘Nurse’s Reaction’), interpretation of the social cues based on previous experiences and knowledge (as described in Crick and Dodge’s database) and a resetting of the goals of the interaction to be patient-centred. It reflected a more deliberative and less automatic process, in line with nursing goals (Orlando’s deliberative nursing process).

Step 3 – clarification of goals
Participants described how the expected goal(s) of an interaction depended on many factors, including patient personality, clinical circumstances, time constraints, and previous nurse experiences with this patient and other patients. All participants indicated that further understanding of the patient’s experience was their primary goal. They described a rapid process of further questioning, and targeted responses to further assess the patient’s experience. However, three described the need for ‘thoughtful pauses’ to allow the patient to expand or clarify, show ‘presence’ or allow the nurse to ‘collect myself’. Nurses described pausing before responding in order to control emotional arousal and to refocus on patient outcomes for the interaction, as described by Crick and Dodge as ‘arousal regulation’ in this step. One participant described how knowing herself was necessary to help her patients during emotional times and to adjust her communication to help the patient. This self-reflection is what Orlando alluded to as an important component, the generation of a ‘feeling’ in the ‘Nurse’s Reaction’ and perhaps it contributed to the deliberative process although it was never fully explicited as a concept within the theory:

I don’t know if it’s maturity or what, but, you know, when I’m thinking, ‘Well that’s not helping them’ you have to be a little bit stronger within yourself to be able to help them, to give them some strength and courage. It’s the way I look at it.

Controlling and containing personal issues (arousal regulation) allowed a nurse to achieve the goal of fully understanding patient concerns and responding more effectively (deliberative nursing process). One participant described being ‘really there for your patients because it’s not about you’. Leaving personal stressors behind when coming to work was viewed as essential to responding to patients and effectively managing nurses’ personal emotional reactions in order to put the patient first:

It’s tough sometimes; it depends on what’s going on in your life as well. You know, you try to leave it at the door, but you can’t always. So, if you’ve had a rough weekend or if you’ve had a good weekend, you’re much more open to dealing with things, if you don’t have stressors…most of us have stressors of one way or another in your life.

Step 4 – response access or construction
The nurses described a cognitive process of weighing multiple factors to inform their final response construction and selection. The following factors were noted as relevant for response construction and selection: clinical indications, perceptions based on patient behaviours (e.g. personality, verbal and nonverbal communication), previous professional experiences with patients, and practical factors such as time and workload. These factors encompassed concepts from both models, including Crick and Dodge’s database and Orlando’s ‘Nurse’s Reaction’ to ‘Patient’s Behaviour’.

Nurse–patient relationships were discussed by all participants as important contributors to deciding how to respond to a patient. Long-term relationships with patients provided fuller databases for creating possible responses. These relationship factors also ‘made the job’ and ‘made it all worthwhile’. While relationships are not described in Orlando’s theory as a component of nursing process, Peplau’s theory of Interpersonal relations certainly describes interpersonal relationships between nurse and patient as the basis for effective, therapeutic responses and nursing care delivery.

Step 5 – response decision
According to the participants, selecting the best response depended on all the factors listed in step 4 of the Crick and
Dodge model, as well as personal confidence in responding to this particular situation. They indicated that they have increased confidence in their responses if they have successfully intervened with patients in similar situations previously. In their actual response selection, some noted that they were mindful of how patients might interpret temporal factors in response generation, a factor not described in either the Crick and Dodge model or in Orlando's Theory. For example, when a nurse responds too quickly, the response might be interpreted by the patient as being a rote or superficial response. Participants described becoming increasingly confident in communicating with a wide variety of patients and situations because of their previous clinical experiences. Responses that required a great deal of processing at the beginning of their careers became easier with over time and increased their confidence to handle more challenging interactions.

**Step 6 – behavioural enactment**

Participants shared the expectation that their chosen responses would serve to explore more fully a patient’s experience through eliciting further information. Additionally, they intended their response to provide information and/or offer support, depending on the situation. Both these responses are consistent with Orlando’s theory of the deliberative nursing process. Most noted feeling stressed during some interactions with patients, especially those with emotional concerns, because often their busy schedule was in conflict with the process of response generation and curtailed further elicitation of concerns from patients. The nurses noted that a busy work environment and time constraints often limited full assessment of patient concerns and compromised their ability to respond effectively. The ability to respond fully to patients’ concerns was seen as an added stressor when other medical procedures, interventions, or measurements were required in a timely manner. Participants described some remorse at not being able to respond fully to all patient concerns, and they tried to balance the demands for medical interventions with the need to address patients’ emotional concerns fully:

"You have to get the work done, the blood work, chemotherapy, testing and all. If my patient has a lot of problems, it slows down everything and I feel bad that I can’t talk with him more about these things. What can you do?"

**Peer evaluation and response**

Participants said that supportive work relationships were very important in selecting a response, especially when processing more difficult interactions. Three of the five described watching other nurses working with patients and wanting to use their particular strategy or approach with their patients. Peer evaluation of a nurse’s communication style was less important than the perception of peer support in the clinical setting. All agreed that newer nurses need support and guidance while learning to communicate with patients. According to interviewees, education alone cannot prepare nurses for the variety of situations that arise in the actual clinical setting. When nurses did not feel competent in their communication skills, they often discussed situations with peers for feedback, support and/or alternative strategies. The construct of peer evaluation in the Crick and Dodge model did not sufficiently describe the role of peers in the development of nursing communication skills or the ongoing supportive function of peers in the workplace during clinical practice. We therefore added the construct of ‘Peer Support’ to the Crick and Dodge model as having an impact on self-efficacy, the database, and the response decision process (See Figure 2.).

**Discussion**

This study demonstrates the utility of a model of social information processing to further describe a nursing theory. The Crick and Dodge model (the model) of social information processing is a valuable theoretical tool for exploring how nurses respond to patients, e.g. the process of response generation. The model describes in greater detail the perceptions, thoughts and feelings arising in nurses that help them arrive at therapeutic and effective responses to their patients’ needs, as described in Orlando’s theory of the deliberative nursing process. The model also expands Orlando’s theory into sequential steps that further define the deliberative nursing process (see Figure 3). Orlando (1961) described nurses as learning ‘how to understand what is happening between herself and the patient is the central core of nursing practice’. In particular, the ‘Nurse’s Reaction’ and the deliberative nursing process as described by Orlando are expanded in the Crick and Dodge model. The perception, thought and feeling arising in a nurse as a response to a ‘Patient’s Behaviour’ is further explicated by Crick and Dodge as cognitive and emotional processes in the nurse, affecting response selection and enactment.

Understanding interactions and response generation as a cognitive process is in line with current theories from other disciplines such as social psychology. The findings of our cognitive interviews with experienced nurses gave insights into the process of nurse communication with patients and the strategies nurses use when responding to patient concerns.
Figure 2 Modified Crick and Dodge model of social information processing [based on the Crick and Dodge (1994) model].

Figure 3 Orlando’s theory of the deliberative nursing process and the Crick and Dodge model of social information processing.
The constructs of the Crick and Dodge model were useful in describing the steps of response generation and may have utility in quantitative research into nurse–patient communication. Understanding the factors that may impact conscious and deliberative activities by nurses for patients has implications for patient outcomes. In addition, studies are needed to collect experiential wisdom about effective communication strategies used by nurses for specific patient behaviours, linking the behaviours with the desired patient outcomes. The results of these studies may have implications for nursing research to evaluate the complexity of nurse–patient communication. Response generation in nurses is a flexible skill that develops with experience and support after formal education and continually adapts to many clinical and individual factors. Participants described the conscious and deliberate steps they follow to assess patient social cues and situations rapidly from several viewpoints, including patient factors, clinical environment, previous interactions, emotional arousal, relationships and differences in communication styles (see Table 2). The creation of an effective response requires decoding of social information, using a cognitive process of weighing multiple factors, emotional regulation and thoughtful response construction to arrive at an appropriate, beneficial and achievable response. It is likely that nurses with less experience learn to process new social information in the context of the clinical interactions, adjusting to a new role as they develop a professional communication style. In this study, the perception of a supportive work environment was important to the nurses when regulating their emotional arousal both during and after interactions. These findings suggest that professional development in supportive environments may enhance nurse responsiveness to patient expressions and increase nurse confidence to engage in more challenging interactions with patients.

**Study limitations**

Social-information processing models have limitations, including the temporal linearity of the steps. Nonverbal communication as a form of social communication is also missing from the models. The cognitive interviews were conducted with a small, convenience sample of nurses in the

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United States of America, limiting the generalizability of the findings.

Conclusion

Models of social information processing enhance the understanding of the process of how nurses respond to patients and help to develop nursing theories further. In combination, the theories are useful in developing research into nurse–patient communication. Future research based on the expansion of nursing theory may identify effective and culturally appropriate nurse response patterns to specific patient interactions with implications for nursing care and patient outcomes. The results of such studies may guide communication skills training, establish the need for supportive work environments, and identify additional patient outcomes that are directly influenced by nursing communication. Further studies are also needed to test the applicability of models of social information processing on nurse–patient communication in a variety of cultural settings.

Acknowledgements

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Author contributions

LKS was responsible for the study conception and design. LKS performed the data collection. LKS and LE performed the data analysis. LKS was responsible for the drafting of the manuscript. LKS made critical revisions to the paper for important intellectual content. LKS obtained funding. LKS supervised the study.

References


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