Development and Psychometric Evaluation of the Nurse's Perception of the Relationship Based Care Environment Scale

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DEVELOPMENT AND PSYCHOMETRIC EVALUATION OF THE NURSE’S PERCEPTION OF THE RELATIONSHIP BASED CARE ENVIRONMENT SCALE

a dissertation
by
DENISE B. TESTA

submitted in partial fulfillment of the requirements for the degree of Doctor of Philosophy

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Abstract

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Purpose: The purpose of this study was to define, develop, and psychometrically evaluate a scale designed to measure Nurse’s Perception of the Relationship Based Care Environment.

Background: Relationship is a complex multidimensional concept. It is a critical component of professional practice and core to the interaction between nurse and patient. While there are a number of scales available to measure different dimensions of relationships between nurses and other groups there is no one scale that captures multiple dimensions.

Methods: Based on a review of the literature and an earlier qualitative study, a theoretical representation was developed. This representation became the framework for development of elements and items for the NPRBCE scale. The content validity of the NPRBCE scale was determined by an expert panel of Registered Nurses. Four hundred and seventy three Registered Nurse participants completed the survey.

Analysis: Data were subjected to Principal Components Analysis and Cronbach’s alpha was computed to determine reliability of the scale as a whole and each of the components of the scale.

Results: The final solution was a five component 56-item scale. The five components include: nurse/other discipline; nurse/organization; nurse/nurse; nurse/patient-knowing the patient; and nurse/patient-respecting the patient. The scale as a whole and each of the resulting components were found to be reliable. The components were parsimonious and interpretable.

Keywords: relationship based care, relationship centered care, nurse practice environment
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Chapter One

Statement of the Problem

We are at (a) breakpoint. The Nation recognizes that there is something missing in our present health care system. A person hospitalized in the current system may experience the efficient administration of medicine and treatments, but the human factor, the caring, is missing. (Newman, 2008, p. 138).

Today’s health care system is fast paced, complex, and fragmented, with patients often reporting dissatisfaction with their care experience (Flanagan, 2009; IOM, 2010, IOM, 2015). The burden of heightened acuity, staffing challenges, and an enhanced emphasis on decreasing length of stay are but a few of the demands impacting patient care delivery. The current health care delivery system is affected by economic constraints that threaten the delivery of patient centric, high quality, cost effective, safe, and efficient healthcare. Patients and families report feeling abandoned and alone as they navigate a complex healthcare system that limits their being known as a whole person with unique societal, cultural, familial, experiential, and spiritual dimensions of health (McCormack & McCane, 2006; Whittemore, 2000). As one patient described it “there was the fear of being metabolized by a database, never to regain our faces again… the utter void created by the longing – ineradicable, unremitting, pervasive – for warmth of human contact… an outstretched hand (was) valued even above the offerings of modern science, but the latter were far more accessible than the former” (Cousins, 1979, p. 153-154).

The Institute of Medicine suggests that the U.S. health care system is in need of redesign and reform, and notes that the nursing profession is well positioned to lead initiatives that will foster patient centered care (Institute of Medicine, 2010; National Academies of Science, Engineering, and Medicine 2015). The unifying focus of the nursing discipline is humanization,
caring, knowing and respecting patients and families, and understanding the meaning of illness to those persons (Dossey & Keegan, 2013; Newman, Smith, Watson, & Jones, 2008; Willis, Grace, & Roy, 2008). This ideal is essential for effective redesign of the healthcare system. Patient and family centered care is foundational to the discipline of nursing, and this foundational knowledge is critical within interdisciplinary efforts to promote high quality, efficient, safe, and cost effective healthcare. Nurses represent the largest proportion of health care providers, spend the majority of time with patients, and seek to know the patients’ and families’ health experience as a dynamic process in which a partnership is formed and the person is recognized beyond the experience of their illness (Jones, 2006). In the absence of this, healthcare is experienced as cold and impersonal and patients are not satisfied with their care (Cousins, 1979; Flanagan, 2009; Koloroutis, 2004; Somerville, 2009). For effective healthcare system redesign, nursing disciplinary knowledge and core foci to improve the healthcare system and relationship based care must be promulgated. To that end, the aim of this study was to develop and psychometrically evaluate the Nurse’s Perception of the Relationship Based Care Environment (NPRBCE) Scale.

**Background**

Patient centered care has been defined as care that is respectful and responsive to individual patient preferences, needs, and values, and ensures that patient values guide all care decisions (IOM, 2001). Others have described patient centered care as a strategy to improve patient satisfaction, limit the overuse of medical services, and enhance clinical outcomes (Shaller, 2007). The Institute of Medicine (2001) established patient-centered care as one of six key aims of the U.S. health care system. In a landmark report by the Pew-Fetzer Task Force (Tressolini, 1994) patient-centeredness was viewed as essential and the concept of patient-
centeredness was expanded to include all relationships—not only those between healthcare providers and patients but also relationships between the healthcare providers themselves.

Relationships between persons are the focus of nursing. This involves knowing the person, a process which is mutual, dynamic, and transformative for both nurse and patient. As the relationship between nurse and patient evolves, the nurse comes to know the patient as a whole person, with disease as a manifestation of only a part of the individual experience (Jones, 2006; MacLeod, 2011; Smith, 2011). When care is truly person-centered, the nurse and patient are part of a mutual partnership grounded in trust and truth (Jones, 2013). The relationship between the nurse and patient is not focused solely on disease; rather, the disease is considered a mere part of the whole pattern of the person’s life experience (Newman, 2008). Relationship Based Care (RBC) emphasizes the importance of relationship to patient centered care. RBC includes knowing the patient as a whole person; respecting individual needs and preferences; self-awareness; understanding the meaning that illness holds to the person; intentional presence; active listening; and the importance of caring and authenticity in relationships with patients, families, and colleagues (Gordon, 1994; Jones, 2013; Koloroutis, 2004; MacLeod, 2011; Newman, 2008; Smith 2011; Watson & Smith 2004; Willis, et al., 2008).

The focus of nursing is humanizing care and building relationships that are nonjudgmental and authentic. In facilitating humanization, nurses seek to understand the meaning that health and illness holds within that person’s life. This understanding facilitates choice, quality of life, and healing (Willis et al. 2008). Nurses seek to understand the other person’s frame of reference, join in a mutual search for meaning, and create a healing environment (Mason, Jones, Roy, Sullivan, & Wood, 2015; Newman, Smith, Pharris, & Jones, 2008; Willis et al. 2008). Nurse-designed models of care universally promote relationship based
partnerships between nurses and patient (which always includes families). These partnerships, based in mutual trust and respect, allow nurses to tailor care that is responsive to the values and expectations of the patients and families (Mason, et al. 2015; Newman, Smith, Pharris, & Jones, 2008).

An environment of care that fosters RBC places deliberate emphasis on insuring that the health care team knows the patient as a person, participates in care decisions, builds the plan of care around the patient’s goals and expectations, coordinates patient care within and across disciplines, and has the time and information needed to optimally care for the patient (Erickson & Ditomassi, 2012). Organizational promotion of nursing knowledge will strengthen the emphasis on patient and family centered care for all persons for the promotion of health. Nursing knowledge and leadership can bring the environment of care into greater focus such that a healing space is fostered and the relationships between persons within the environment are fortified. The integration of nursing knowledge can influence outcomes and guide interventions designed to improve the relationship based care environment. Scales developed to measure any aspect of relationships within the care environment will be reviewed in the following section.

**Scale development to date.** To date, scale development has focused on the dimension of nurse-patient relationship (Cossette, Cara, Ricard, & Pepin, 2006; DellaMonica, 2008; Nelson, 2006; Somerville, 2009), the nurse-other disciplines relationship (Baggs, 1997; Hojat, 1999; Shortell, 1991; Weiss, 1985), the nurse to nurse relationship (Dougherty & Larson, 2010), and the care environment (Aiken & Patrician, 2000; Erickson & Duffy, 2009; Lake, 2002). These scales are major steps forward in measuring individual aspects of relationships in healthcare but none measure a broad overview of the dynamic, complex nature of relationships within the care
environment. No previous scale development has focused on the multidimensional, dynamic relationship of nurses, patients, other disciplines, and the organization in which care is delivered.

**Theoretical Representation**

The author’s interest in pursuing research focused on the Relationship Based Care Environment (RBCE) evolves from prior qualitative research, an integrated review of the literature, and personal experience. The theoretical representation (denoted in Appendix B) reflects findings that emerged from this study and a review of the literature on relationship based care (Koloroutis, 2004; Testa & Emery, 2014; Tressolini, 1994). The theoretical representation (Appendix B) differs from and expands on previous descriptions of RBC in the following ways:

1. In this model the provider is specifically defined as the nurse. Since nurses represent the majority of healthcare providers and spend the most time with patients, a nurse-centered framework for RBC is essential. Operational definitions have been created for the elements nurse to other disciplines, nurse to nurse, and nurse to patient.

2. A fourth element, nurse to organization, has been included as part of the relationship based care environment. The addition of this fourth element and the operational definitions of all four elements for this theoretical framework were informed by the findings of a literature review and a qualitative study conducted by this author.

The qualitative study, focused on nurse to nurse communication in an acute care setting (Testa & Emery, 2014), provided the conceptual grounding for the theoretical representation. This newly developed representation offers an expanded conceptualization of nurses’ interactions with others in the complex RBCE. The findings of this study, along with extant literature, informed the theoretical representation (Appendix B) utilized to generate items for the NPRBCE scale. In this model, relationships are defined in a broader way and the four
relationships that are considered critical to the RBCE include those between nurse to other disciplines, nurse to organization, nurse to nurse, and nurse to patient.

Figure 1 represents the specific part of the theoretical representation that was utilized for the development of the NPRBCE scale.

![Diagram of Relationship Based Care Environment](image)

**Figure 1. Elements making up the Relationship Based Care Environment.**

**Definition of elements.** Within the context of this model the four elements nurse to patient; nurse to other disciplines; nurse to organization; nurse to nurse (including the self) were considered critical to the RBCE, and were operationalized in the following manner. Nurse was defined as a graduate of an accredited school of nursing who has been registered and licensed by a state authority. Patient was defined as a person who is the recipient of nursing care and part of
the dynamic exchange between nurse and patient. Other Disciplines were defined as any discipline other than nursing involved in the care of patients and families. Organization was defined as any group of professionals dedicated to the systematic promotion of a goal, in this case health care delivery.

**Definition of element one: Nurse to patient.** Nurse to patient is defined as the ability to know the person beyond their disease, share knowledge, and validate the unique experience of illness for the individual and family. This includes coming to know the patient as a whole person through active listening, caring, intentional presence, and the development of authentic, mutually respectful, trusting relationships between nurses and patients/families. Characteristics of the nurse-patient relationship include the nurse knowing the patient by understanding the pattern of their life and the meaning of health and illness to that person; and the nurse being intentionally present, open, and engaged in dialogue with their patient. Intentional presence occurs when genuine dialogue, commitment, full engagement, openness, free-flowing attentiveness, and transcendent oneness occurs between persons (Smith, 2011). The meaning that illness holds for the patient and family is uncovered through nurse-patient dialogue that does not seek to categorize or judge, but instead privileges the patient’s voice (Newman, 2008).

**Definition of element two: Nurse to other disciplines.** Other disciplines are defined as any licensed health care professional other than the nurse. Nurse to other discipline was defined as collaborative decision making with mutual respect for the knowledge, expertise, and values of other disciplines. This relationship occurs within an environment where there is open communication between disciplines and a shared goal of working together towards patient and family centered care. Collaborative decision making empowers nurses and other disciplines to have control over their own practice and to value the contributions that all other disciplines make.
to patient care. When there is effective collaboration, clinical work is recognized, interdisciplinary conflict is managed, and members of nursing and other disciplines feel supported and respected by one another.

**Definition of element three: Nurse to organization.** For the purpose of this study, organization is defined as any group of professionals dedicated to the systematic promotion of health care. Nurse to organization, the third element, is defined as the nurse’s ability to participate in an environment that allows nurses to lead policy and practice initiatives, attain adequate resources for patient care, and be respected by the organization as leaders in care. In such an environment, nurses are motivated to improve care interventions and outcomes, nursing input is valued at both the organizational level and at the bedside, and nursing knowledge is promoted by the organization.

**Definition of element four: Nurse to nurse: including the self.** Nurse to nurse is defined as the ability of nurses to care for, understand, and respect other nurses and the self, and to work seamlessly with other nurses towards a mutual goal of providing holistic care for patients. The nurse to nurse relationship involves both the nurse’s relationship with self and the relationships among and between nurses. The nurse’s relationship with self includes aspects of self-care such as being well rested, recognizing stress in the self, and coping with stress effectively.

The RBCE is made up of the four elements of Nurse to patient; Nurse to other disciplines; Nurse to organization; and Nurse to nurse including the self. There is no existing scale that measures the Relationship Based Care Environment from the nursing perspective. These four elements are the foundation for the development of the Nurse’s Perception of the Relationship Based Care Environment Scale.
Purpose of the Study

The two-fold purpose of this methodological study was as follows:

1. to develop a scale to measure the nurse’s perception of the relationship based care environment and
2. to conduct a psychometric evaluation of this scale

Research Questions

The following research questions were asked.

1) To what extent does the scale developed, the Nurse’s Perception of Relationship Based Care Environment (NPRBCE) Scale, demonstrate internal consistency reliability?
2) To what extent can the elements (components) of the NPRBCE scale be demonstrated in principal components analysis?
3) To what extent are the resultant component scales derived from the principal components analysis internally consistent?

Study Assumptions

The following assumptions of the NPRBCE underlie this study. Relationships are an integral component of the health care of hospitalized patients; the nurse-patient relationship is at the heart of health care; and nurse-colleague relationships that are collaborative and authentic are fundamental to high quality care. Self-knowing is an essential prerequisite to establishing effective relationships with others. The environment of care, including organizational policies, must support RBCE if high quality patient centered care is to be delivered. It is assumed that participants have the nurse’s perspective, understand the questions, and answer the survey in an honest and authentic manner.
**Study Limitations**

The NPRBCE Scale is a new measure of the nurse’s perception of relationships within the care environment. The scale was normed utilizing a single population of Registered Nurses working within a specific location in the United States. The scale needs further testing and refinement with a larger and more diverse sample.

**Significance of the Problem**

Relationship Based Care is an integral component of nursing knowledge and is essential to healthcare redesign. Nursing knowledge regarding some relationships, such as the dynamic and interactive nurse-patient relationship, is steadily growing, but missing from the overall body of knowledge is a comprehensive measure of a broadened conceptualization of the Relationship Based Care Environment (RBCE). The NPRBCE scale provides a way of evaluating a broadened conceptualization of the nurse’s relationships with others in the complex healthcare environment. In future research, data resultant from this scale will enhance knowledge about RBC and its impact on patient, nurse, and organizational outcomes. The NPRBCE scale offers a comprehensive measure of how RBC and each of its components influence the patient experience. Relationships between and among patients/families and healthcare providers impact patient satisfaction, nurse satisfaction and ultimately patient outcome (Aiken, et al., 2008; Cropley, 2012; Jones, 2013; Koloroutis, 2004). The ability to measure relationships within this new conceptualization will advance the state of the science, enhance knowing the patient, improve the care environment, and ultimately enhance patient care quality and safety.

Once this scale has been psychometrically evaluated and found to be reliable and valid it can be utilized across settings and populations to evaluate the effects of interventions and models
of care implemented to improve the RBCE. The NPRBCE scale will add to nursing knowledge and will promote safe, efficient, cost effective, high quality patient centered care across units, hospital, and healthcare systems.

**Summary**

The NPRBCE scale provides another measure of workforce evaluation and enhances an environment promoting health and healing for both nurse and patient. The scale expands the understanding of the RBCE to include the relationships between nurse to other discipline; nurse to organization; nurse to nurse including the self; and nurse to patient. The NPRBCE scale will advance the state of the science by allowing for valid and reliable measurement of the impact of interventions, policies, practices, and models of care designed to improve the RBCE.

Once the psychometric properties of the NPRBCE scale are established with a broader population of nurses, the scale can be utilized as part of a battery of tests to evaluate the quality of the healthcare environment. Ultimately, researchers will be able to investigate correlations between the RBCE and outcomes such as patient and nurse satisfaction, medication errors, length of stay, incidence of readmission, morbidity, and mortality across health care units, systems, and populations.
Chapter Two

Review of the Literature

All health care occurs in relationships and many voices are calling for a paradigm shift in health care such that relationships are considered to be as important as cost and efficiency (Tressolini, 1994). Relationship Based Care includes patient-centeredness and expands this concept to include not only the healthcare providers’ relationships with their patient/families but also with one other. For nursing, the relationships between and among nurses, patients/families, colleagues, and communities are considered the central core of the discipline (Newman, 2008; Roy & Jones, 2007). Nursing knowledge and ethos greatly value caring relationships and nurses make up the vast majority of the health care workforce, so it stands to reason that nurses have been called upon to lead the redesign of healthcare for the 21st century.

Development of the Relationship Based Care Philosophy

In the 19th century, Florence Nightingale emphasized the importance of the nurse-patient relationship and the impact that the environment has on the nurse-patient relationships (McDonald, 2001). Leading nurse scholars today propose that nursing has a central role in promoting a caring environment and that caring relationships between nurses and their patients are the central focus of the discipline of nursing (Newman, 2008; Roy & Jones, 2007; Selanders & Crane, 2012; Watson, 2008). This focus is essential to the effective redesign of healthcare. The Theory of Interpersonal Relations in Nursing (Peplau, 1952), an early and pivotal nursing theory, centered on the importance of interpersonal relationships between nurses and their patients. Over the years, many nurse scholars expanded upon the disciplinary mandate of fostering authentic, trusting nurse–patient relationships and caring in healthcare (Dossey & Keegan, 2013; Jones, 2013; Leininger 2002; Newman, 2008; Paterson & Zderad 1976; Smith
1999; Swanson 1991; Watson 1989, 2006; Willis, et al., 2008). Recently, in a study conducted by the American Academy of Nursing to evaluate the impact of nurse-driven models of care, the findings stressed the importance of relationship based care (Mason et al., 2015). The effective application of nurse-designed models of care requires a system focused on knowing the patient and building relationships between and among providers and patients (Mason, et al., 2015).

Late in the 20th century major innovations in medical science and technology continued to grow, yet the focus on patient-centered and relationship-based care did not. As emphasis on technical aspects of care increased, less emphasis was placed on relational aspects and the overall quality of care suffered (Malloch, 2000; Tressolini, 1994). This has resulted in an increase in fragmented and uncoordinated care, and the experience of the patient/family receiving the care is often not satisfactory (Flanagan, 2009; IOM, 2001; Koloroutis, 2004; Malloch, 2000). In a landmark report, The Institute of Medicine (IOM) identified patient centered care as one of the six pillars on which to build a high quality health care system and called upon nursing to lead care redesign (IOM, 2001; IOM, 2010; IOM, 2015).

The current health care environment leaves much room for improvement. In a survey of patients hospitalized in the US, only half of the patients who responded felt that their health providers listened carefully, explained things clearly, respected what they had to say, and spent enough time with them (Tressolini, 1994).

**Nursing and Relationship Based Care.** The nurse-patient relationship is characterized by mutual respect, intentional presence, and caring (Bright, 1997, Jones, O’Neil, Waterman & Webb, 1997; Jones, 2013; McCormack, 2006; Smith, 2011). Relationship based care facilitates health and healing and improves clinical outcome (Koloroutis, 2004; Newman, 2008; Shaller, 2007). Patient-centered care from the nursing perspective is grounded in the value of person and
brings a much needed dimension to the current health care system. The previously discussed American Academy of Nursing study identified nursing models of care that demonstrate significant and sustained clinical and financial positive outcomes and termed these the “Edge Runners”. When the thirty-nine “Edge Runner” models of care were compared, patient-centeredness, relationships between and among patients and providers, and the environmental context of care were found to be a common focus across all successful nurse-designed models (Mason, et al., 2015).

Pew Fetzer Task Force definition of Relationship Centered Care. The Pew Fetzer Task Force (Tressolini, 1994) explored the evidence base for patient centered care and asserted a new and more inclusive framework in which not only the clinician-patient relationship but also relationships between the healthcare providers themselves are essential and has termed this Relationship Centered Care. According to the Pew Fetzer Task Force report, the phrase Relationship Centered Care (RCC) “captures the importance of the interactions among people as the foundation of any therapeutic or healing activity” (Tressolini, 1994, p, 10). In RCC, interactions within a person (self-reflection) are considered equally as important as interactions with others, and being genuinely present for self and others goes beyond patient centered care. In Relationship Centered (based) Care, not only is the clinician-patient relationship considered central, but also the clinician-self, clinician-clinician, and clinician-community relationships are considered equally important (Beach & Inui, 2006).

Koloroutis definition of Relationship Based Care. Koloroutis (2004) has described Relationship Based (centered) Care as being comprised of three relationships – care provider with patient; care provider with self; and care provider with colleagues. This description of RBC differs slightly from that of the Pew Fetzer Task Force in that it does not include the relationship
between clinician and community; however, the basic assumptions of the two definitions are identical. These assumptions are that RBC is the key to the delivery of high quality health care; the central focus of relationship is the clinician – patient relationship but equally important is the clinician’s relationship with self and relationships between all the members of the health care team (Koloroutis, 2004).

**Holistic definition of Relationship Based Care.** Dossey & Keegan (2013) describe RBC as a holistic caring process in which the whole unique person is known and respected. The nurse forms a healing relationship with patients and through collaboration with patients, families, and colleagues attempt to identify patterns/ problems/ needs/ plan of care implementation and evaluation. Relationship based care is viewed as integral to holistic nursing and the nurse-patient relationship involves respecting the patient’s dignity, uniqueness, and integrity. A trusting and patient-centered relationship between nurse and patient facilitates healing in the patient (Dossey & Keegan, 2013).

**The Relationship Based Environment of Care.** RBC occurs in environments where all members of the organization respect and affirm the knowledge and contribution of other disciplines and work collaboratively together (Koloroutis, 2004). Nurse researchers have explored the effects of the environment of care (including the culture of the organization in which care delivery occurs) on the quality of care delivery. The Institute of Medicine has asserted that the hospital work environment has a critical effect on the safety and quality of healthcare delivery (Page, 2004). The environment of care, also called the practice environment, is a complex concept that is difficult to evaluate. It has been measured in varied ways, often including single relationships such as the nurse-physician relationship without examining the
practice environment. Those scales that do measure the practice environment most often focus on Magnet hospital characteristics.

**Qualitative research on the Relationship Based Care Environment**

In a qualitative descriptive study of nurses caring for patients in the acute hospital setting, the environment and organizational support for nurses was found to play a key role in the quality of care delivered (Testa & Emery, 2014). Nurses perceived that the relationships between nurse and patient and those between the nurses themselves were important for the delivery of high-quality care (Testa & Emery, 2014). For example, a greater knowledge of the patient as a person, and a greater level of trust between nurses improved the quality and efficacy of the nursing care (Testa & Emery, 2014). This supports nursing knowledge of the importance of relationships to health and healing. To date, however, the relationship-based care environment is poorly defined and there is no existing scale that measures the multidimensional nature of relationships that occur within the practice environment.

**Quantitative measures of the care environment**

Multiple scales have been developed to measure varying aspects of the care (practice) environment and the organization in which care is delivered. Several scales have been designed to measure the degree of Magnet hospital characteristics that exist within organizations. Others are designed to measure the job satisfaction of nurses, nurse manager ability, nurse-physician relationships, degree of nurse control over practice, and others. The next section describes scales measuring any aspect of the nurse practice environment/organization.

**Practice environment/organization scales.**

Scales that measure the care (practice) environment, in the order in which they will be described, include the: Nursing Work Index (NWI) Scale (Kramer & Hafner, 1989); Nursing
Work Index Scale-Revised (NWI-R) Scale (Aiken & Patrician, 2000); Practice Environment of the Nursing Work Index (PE-NWI) Scale (Lake, 2002); Work Quality Index (WQI) Scale (Whitley & Putzier, 1994); Ward Organizational Features (WOF) Scale (Adams, Bond & Arber, 1995); Assessment of Work Environment Schedule (AWES) Scale (Nolan, Grant, Brown & Nolan, 1998); Professional Practice Environment (PPE) Scale (Erickson, Duffy, Gibbons, Fitzmaurice & Jones, 2004); Revised Professional Practice Environment (RPPE) Scale (Erickson, et al., 2009). All of these scales represent a major step forward in integrating relationships, care delivery, and the care environment. The practice environment is known to impact outcomes such as nurse satisfaction, patient satisfaction, hospital length of stay, medication errors, and patient mortality (Aiken, et al., 2008; Rathert & May, 2007). These scales are designed to measure aspects of the practice environment but often exclude the multidimensional relationships developed in this new model (Figure 1). The specific design and purpose of each of these scales along with all scales measuring any aspect of the relationships within the practice environment follow, and are summarized in Appendix A.

**Nursing Work Index Scale.** The first scale developed to measure the professional nursing environment was the Nursing Work Index Scale by Kramer and Hafner (1989). The theoretical framework was a qualitative research study describing nurse perception of positive organizational traits in their work in Magnet hospitals. The scale contains 65 items in total across four dimensions (work values; perceived productivity; job satisfaction; and perceived environment conducive to quality nursing care). Of these four dimensions, shared work values and perceived environment conducive to quality nursing care are considered important to RBC; the remaining two dimensions (perceived productivity and job satisfaction) are not considered constructs of RBC but rather potential outcomes of RBC. Reliability of the tool was not
The next two scales (Nurse Work Index Scale – Revised and Practice Environment Scale – Nursing Work Index) are based on the Nursing Work Index Scale.

**Nursing Work Index Revised Scale.** The Nursing Work Index was revised by Aiken and Patrician to better measure the nurse’s professional practice environment (2000). The revision differed from the NWI in that subscales were inserted to better measure how well the environment supports professional nursing. The three additional subscales included in the Nursing Work Index Revised (NWI-R) scale included: nursing autonomy, control over the work environment, and relationships with physicians (Aiken & Patrician, 2000). The scale contains 55 total items across four dimensions (autonomy; control over practice setting; nurse-patient relationships; and organizational support). Psychometric evaluation of this scale indicated a reliable measure with a total scale Cronbach alpha of 0.96 and a range of Cronbach alpha from 0.84 to 0.91 across the four dimensions.

**Practice Environment of the Nursing Work Index.** In 2002, Lake analyzed the original NWI data via factor analysis and derived five subscales, which were called the Practice Environment Scale of the Nursing Work Index (Lake, 2002). This scale, similar to all scales derived from the NWI data, measures characteristics of Magnet hospitals such as nurse satisfaction, autonomy, and control over practice. Construct validity was established by a significant difference in scale score between Magnet hospital nurses and non-Magnet hospital nurses. The measure contains 31 total items across the following five dimensions: nurse participation in hospital affairs; nursing foundations for quality of care; nurse manager ability and leadership; support of nursing (including staffing and resource adequacy; and collegial nurse-physician relationships (Lake, 2002). The internal consistency reliability of the scale overall was Cronbach alpha equal to .82 and the Cronbach’s alpha for the five scale dimensions
ranged from .71 to .83 (Lake, 2002). This scale is more specific to relationships and it reliably measures what it was designed to measure, which are Magnet hospital characteristics. The scale is psychometrically sound at both the individual unit and hospital level. The ability to measure the Magnet characteristics of the practice environment was an important step forward in evaluating practice.

**Work Quality Index Scale.** The Work Quality Index, developed by Whitley and Putzier (1994), was the first scale developed to measure Nurse-organization indices that was not based on Magnet hospital characteristics. This scale was based on a review of the literature and designed to measure the nurse satisfaction with their work and with their work environment. The scale has 96 items in total across the following six subscales: professional work environment; autonomy; work worth; professional relationships; role enactment; and benefits. Factor analysis was utilized to establish construct validity of the subscales. The internal consistency of the total scale is alpha Cronbach’s of .94 with subscales ranging from .72 to .87. The scale reliably measures nurse satisfaction with their work environment and the relationships involving nurses were one of many sub-constructs of nurse satisfaction.

**Ward Organizational Features Scale.** The Ward Organizational Scale was developed by Adams, et al., (1995). The scale was based on a qualitative research study with direct care nurses and a literature review. The scale consists of a total of 105 items across six scales including: physical environment of the ward; professional nursing practice; ward leadership; professional working relationships; nurses’ influence; and job satisfaction. Other scales had measured job satisfaction but had failed to combine the social (relational) with the physical (structural) characteristics of hospital wards. Construct validity was established via factor
analysis to determine subscales. The scale was found to be reliable, with a Cronbach’s alpha of .94 for the scale as a whole and alpha Cronbach’s range .66 to .90 across subscales.

**Assessment of Work Environment Schedule Scale.** The framework of this scale was generated from a review of the literature (Nolan, et al., 1998). Factor analysis indicated the existence of six subscales: recognition and regard, workload, professional development, quality of care, working relationships, and autonomy/decision making. The scale contains 43 items in total and the scale overall is reliable with a Cronbach’s alpha equal to .93 (Nolan, et al., 1998). Internal consistency reliability ranges from .74-.92 across subscales.

**Professional Practice Environment Scale.** The original Professional Practice Environment Scale was based on a professional practice model of nursing utilized in at an urban medical center in the northeast. The scale contains 35 items across the following eight dimensions: handling disagreement and conflict; internal work motivation; control over practice; leadership and autonomy; relationships with physicians; teamwork; cultural sensitivity; and communication about patients (Erickson, et al., 2004). The eight dimensions were established via principal component analysis and the scale demonstrates excellent reliability of .93 overall and alpha Cronbach’s range of .78 to .88 across the subscales (Erickson, et al., 2004).

**Revised Professional Practice Environment Scale.** The Professional Practice Environment Scale was revised in 2005 to improve clarity and an increased reliability of subscales. Additional items were added to the subscale entitled handling disagreement and conflict (Erickson, et al., 2005). Psychometric evaluation of the now 39 item scale, with the same 8 original subscales, and the overall scale reliability (Cronbach’s alpha .92) and all eight subscales reliability were excellent, ranging from .80 to .88. The RPPE scale is a valid and reliable scale to measure the professional practice environment.
In summary, all of the scales reviewed above are valid and reliable measures of the nurse practice environment however none provide a comprehensive view of the complexity of relationships within that environment. Many of these scales measure a sub-construct of collaborative relationships between nurses and physicians in addition to features of the environment. These include the Nurse Quality Index scale; Nurse Work Index- Revised; and the Ward Organizational Features Scale. One scale, the Ward Organizational Features Scale, additionally measures one isolated aspect of relationships among nurses (cohesiveness). These scales measure varying aspects of the organization, including such indices as nurses’ control over practice, participation in hospital affairs, staffing and resources adequacy. Each scale represents an important contribution to nursing knowledge but none measure the multifaceted elements of RBCE taken together, i.e. relationships between and among nurses, patients, all other disciplines, and the practice environment in which these relationships occur.

In the following sections, scales measuring the relationships between nurses and patients; nurses and other disciplines; and nurses and nurses will be reviewed.

**Scales Measuring Relationships between Nurses and Patients**

The nurse-patient relationship is considered the foundation of RBC and there are four known scales designed to measure this relationship. The four scales are summarized in Appendix A and are described below.

**Caring Nurse Patient Interaction Scale.** The first scale to measure the nurse-patient relationship was developed by Cossette, et al., (2005). The theoretical framework underlying the scale is Watson Caring Theory (1989). This scale, named the Caring Nurse Patient Interaction (CNPI) Scale, contains 70 total items across ten subscales as follows: human-altruistic values; faith-hope; sensitivity; human caring relationship; acceptance of feelings; problem solving;
teaching-learning; supportive environment; gratification of needs; and existential forces. These factors were generated from the literature on caring, and factor analysis was not reported. The overall reliability of the scale was Cronbach’s alpha of .98 and each of the subscales were reliable at a range of 0.73-.91 (Cossette, et al., 2005). Cossette and colleagues abridged this scale for greater ease of administration. The revised scale, named the Caring Nurse Patient Interaction (CNPI)-Short Scale, contains 23 items across the following four subscales: humanistic care; relational care; clinical care; and comforting care (Cossette, et al., 2006). Exploratory factor analysis was utilized to determine scale dimensions and each of the four subscales was found to be reliable with Cronbach alpha internal consistency ranging from 0.61 – 0.94. Total scale internal consistency reliability was not reported (Cosette, et al., 2006).

**Nurse Patient Caring Scale.** An additional scale was developed to measure the nurse-patient relationship was the Nurse Patient Caring (NPC) Scale (Della Monica, 2008, thesis). The theoretical framework used to guide instrument development was generated through a metasynthesis of qualitative studies on nurse caring and the resultant Nurse Caring Theory (Della Monica, 2008, thesis). The scale consists of 50 questions across the following three dimensions: presence and concern for others; knowledgeable competent care; and respect for the person. Principal components analysis was utilized to determine factor structure. The scale as a whole was found to be reliable (Cronbach’s alpha .91) and each of the three components was found to be reliable as independent scales (Cronbach’s alpha range from .73 to .89).

**Caring Factor Survey and Revised Caring Factor Survey.** The Caring Factor Survey (Nelson, 2006) was designed to measure the concept of caring as defined by Watson’s Theory of Human Caring. Initially the survey was designed as a 20 item scale with two items utilized to measure each of the ten carative processes described by Watson (1979, 2008). Caritas, or caring,
is considered an integral part of the nurse patient relationship. Through caring the nurse comes to know the patient. The Revised Caring Factor Survey was shortened to ten items for ease of use, and includes one item for each of the ten caritas processes, for a total of ten items (DiNapoli, Nelson, Turkel, & Watson, 2010). Principal components analysis was undertaken to explore the underlying structure of the original scale and to reduce the total number of scale items. Factor loadings for one of each of the 10 paired items for the caritas processes ranged from .83 to .89, thus one of each of the paired items was retained (DiNapoli, et al., 2010). The revised ten item scale was found to be reliable, with Cronbach’s alpha equal to .89.

**Patient Perception of Feeling Known by their Nurses Scale.** This scale was developed by Somerville (2009) and designed to measure the nurse-patient relationship. The scale was based on a qualitative study focused on patient perception of feeling known by their nurses (Somerville, 2003). It contains 43 items in total; four components were identified based on principal components analysis, and all were found to be reliable as independent scales. The scale overall has a Cronbach’s alpha internal consistency reliability of .98, and the Cronbach’s alpha for the 4 components of the scale ranged from .90 to .96. The components were as follows: the patients had “a meaningful connection to their nurse, felt safe, experienced being recognized as a unique human being, (and) felt empowered by their nurses to participate in their care” (Somerville, 2009 p. 40). This scale was an important step forward in measuring the nurse-patient relationship from the perspective of the patient. It is currently being translated into Spanish and tested linguistically and culturally.

In summary, the nurse to patient relationship is an important part of RBC yet is relatively understudied in the current literature. The three published scales are valid and reliable for measuring nurse – patient relationships, which are foundational to RBC.
Scales measuring nurse’s relationships with other disciplines

Nurses’ relationships with other nurses, with the self, and with other disciplines are essential for a Relationship Based Care Environment and scales designed to measure each of these relationships are summarized in Appendix A and are described below.

**Collaborative Practice Scale.** The Collaborative Practice Scale consists of two separate scales, one for nurses and the other for physicians (Weiss, 1985). The nurse Collaborative practice Scale consisted of 9 items and the physician Collaborative Practice Scale consisted of 10 items. The scale is grounded in interaction theory and each scale is designed to measure different components of collaboration as defined within interaction theory. Dimensions of the scales were determined through factor analysis. The two factors in the nurse scale are nurse perception of nurse assertiveness and ability to clarify expectations. The two factors in the physician scale are the physician’s acknowledgement of the nurse’s contribution and consensus development with nurses. For the nurse scale, the scale reliability was demonstrated by Cronbach’s alpha coefficient of .80 with subscale range of .75-.77. For the physician scale, the scale reliability overall was .84 with subscale range from .72-.77. One area of weakness in this scale is the disparate definition of relationship, with the nurse and physician’s scales measuring differing aspects of relationship.

**ICU Nurse-Physician Questionnaire.** The ICU Nurse-Physician Questionnaire was designed to measure the nurse-physician relationship within the context of problem solving, conflict management, cohesiveness, perceived effectiveness, coordination, communication, leadership and culture (Shortell, et al., 1991). The scale contains 48 items which were derived from the literature. Scale dimensions, determined by principal components analysis, included the following three factors: team orientation; people security; and task security. The scale was
psychometrically evaluated and the subscales were found to be reliable (Cronbach’s alpha .62-.88), the reliability of the entire scale was not reported.

**Collaboration and Satisfaction about Care Decisions Scale.** Baggs and colleagues developed a scale designed to measure relationships between nurses and physicians in the Intensive Care Unit (Baggs, et al., 1997). This scale consists of nine items in total across two dimensions (collaboration and satisfaction with decision making). The theoretical framework for this scale is conflict resolution theory and a review of the literature. The internal consistency reliability of the collaboration subscale was excellent at Cronbach’s alpha .93; the satisfaction with decision making scale contained only two items and was not tested for reliability.

**Jefferson Survey of Attitudes towards Physician-Nurse Collaboration.** The fourth scale measuring nurse-physician relationships was developed in 1999 (Hojat, et al.). It was psychometrically evaluated with a population of medical and nursing students and found to be valid and reliable. Factor analysis revealed four subscales (shared education and collaborative relationships; caring as opposed to curing; nurse autonomy; physician autonomy). Internal consistency reliability was .84 for the medical students and .85 for the nursing students (Hojat, et al 1999).

The three scales that follow were developed to measure nurse-colleague relationships more globally, these scales are not limited to nurse-physicians but instead measure relationships between nurses and multiple other disciplines.

**Relational Coordination Scale.** The Relational Coordination Scale includes both a patient scale and a health provider scale (Gittell, et al., 2000). The goals for the development of this scale included measuring relationship coordination and its effects on patient outcome. The survey population included patients and providers from five core disciplines who were involved
in the care of patients undergoing total joint arthroplasty procedures. The five core disciplines studied included nurses, physicians, social workers, physical therapists and case managers. The patient questionnaire was adapted from a previously validated scale that measured the patient’s perception of service quality in the health care setting. The provider questionnaire was adapted from a scale with prior validation in the population of commercial airline flight departures (Gittell 2000). The scale consists of seven items as follows: 1. frequent communication; 2. timely communication; 3. accurate communication; 4. problem solving; 5. shared goals; 6. shared knowledge; 7. mutual respect. The authors adapted an existing measure validated on another population without establishing content and construct validity indices on the measure.

**Assessment of Interprofessional Team Collaboration Scale.** A second scale measuring relationships between multiple disciplines was developed by Orchard and colleagues in the context of Canadian health care (Orchard, et al., 2012). The scale contains 37 items across three factors including partnership/ shared decision making; cooperation; and coordination. Principal components analysis was utilized to determine factors. The overall scale is reliable with Cronbach’s alpha equal to .98 and the reliability of all subscales range from .80 to .97 (Orchard, et al., 2012). Advantages of this scale include ease of use (as reported by participants), psychometric soundness, and the inclusion of multiple disciplines. One potential limitation of the study is the disproportionate sampling of the various provider types with nurses representing 58% of the sample, physicians representing 2.5% of the sample, and social workers representing 5.9% of the sample (Orchard, et al., 2012).

**Communication Sharing Information Scale.** A third scale developed to measure interprofessional relationships involving multiple disciplines contains 13 items across three subscales (Athione, et al., 2014). The three subscales are: sharing of medical information by health care
professionals; effectiveness of communication between physicians; and effective communication between nurses and nurse assistants. The subscales were determined by principal component analysis and were found to have adequate internal consistency reliability with Cronbach’s alpha ranging from .80 -.87. Internal reliability for the scale as a whole was not reported.

In summary, the majority of scales measuring the nurse’s relationship with other disciplines measure only the nurse-physician relationship (Baggs, et al., 1997; Hojat, et al., 1999; Shortell, et al., 1991; Weiss, & Davis, 1985). Of these, two have been validated only in the Intensive Care Unit setting (Baggs, 1994; Hojat, 1999).

**Scales Measuring Nurses’ Relationships with other Nurses and the Self**

To date, there have been a very limited number of scales developed to measure the nurse to nurse relationship or nurse’s caring for the self. The following two scales measured nurse to nurse collaboration.

**Nurse to Nurse Collaboration Scale.** The Nurse to Nurse Collaboration Scale contains 33 items across the following five subscales: problem solving; communication; coordination; shared process; and professionalism (Dougherty & Larson, 2010). The nurse’s relationship with self was not included in this scale. The subscales showed minimal shared variance, meaning that the scale did not measure a single construct (nurse to nurse collaboration), but rather individual elements of that construct. The subscales were established a priori from a literature review, factor analysis was not conducted. The five individual subscales were found to be internally consistent with Cronbach’s alpha internal consistency reliability from .66 to .91 (Dougherty & Larson, 2010). This scale is an important step towards measuring nurse to nurse collaboration and further testing with psychometric evaluation with larger samples and populations other than critical care nurses is indicated.
Caring Factors Survey-Caring for Self; Caring Factors Survey-Caring for Coworkers. The Caring Factor Survey – Caring for Self (2011) and the Caring Factor Survey – Caring for Co-workers (2011) were developed by Nelson and Watson (2011) to measure caring for self / caring for co-workers within hospitals utilizing the Watson Caring Model. Both of these 10 item scales measure the 10 caritas processes proposed by Watson (Watson & Foster, 2003). Each item corresponds to one caritas process. Further testing with psychometric evaluation is needed.

Summary

The literature review supports the presence of a gap in understanding a broad, multidimensional and dynamic measure of nurse’s relationships within the practice environment. There is a steadily growing body of research on certain aspects of the practice environment and singular relationships occurring within it. These research efforts have furthered our understanding of RBCE and have given rise to one model of RBC (Koloroutis, 2004) which, when applied within one rural hospital, was found to improve patient satisfaction with care delivery (Cropley, 2012). There is, however, no measure of the multidimensional relationships occurring within the environment of care. The gap in currently available scales is that a valid and reliable measure of the relationship based care environment has not yet existed. There is an urgent need for the development of a scale designed to measure an overarching construct of the nurse’s perception of relationships within the care environment. A scale such as this will advance nursing knowledge and support nurse-driven interventions to improve patient centered, relationship based, safe, efficient, effective, high quality care.
Chapter Three

Developing the Nurse’s Perception of Relationship Based Care Environment Scale

Design

A methodologic design was utilized to develop and psychometrically evaluate a scale to measure the Nurse’s Perception of the Relationship Based Care Environment (NPRBCE). To develop this scale, a theoretical representation was created and utilized as the framework for development of items for the NPRBCE scale. Research questions to be answered in this study were as follows:

1) To what extent does the scale developed, the Nurse’s Perception of the Relationship Based Care Environment (NPRBCE) Scale, demonstrate internal consistency reliability?

2) To what extent can the elements (components) of the NPRBCE scale be demonstrated in principal components analysis?

3) To what extent are the resultant component scales derived from the principal components analysis internally consistent?

To answer these questions, the NPRBCE scale was developed and psychometrically evaluated. This chapter is a review of the study procedure including human rights protection, item development, establishment of content validity, setting, sample, sample recruitment, sample characteristics, data collection, data management, and data analysis.

Human rights protection. Institutional Review Board approval was obtained from both Boston College and the medical center sponsoring the study in accordance with the policies and procedures of those review boards. A recruitment letter (Appendix G) outlined the purpose, risks, and benefits of the study. Participants’ responses were anonymous and no participant identifiers appeared on any data. Participants’ completion of the survey indicated consent. Study
data will be destroyed within ten years of completion of the study. Since the academic medical center and the community hospital share an Institutional Review Board, a single (IRB) approval was sufficient for conducting the study at two hospitals. Appendix H is the letter of approval from the Boston College IRB and Appendix I is the letter of approval from the hospital IRB. After the initial approvals from the IRBs the principal investigator recognized the need to recruit more subjects. At that point an addendum to recruit additional subjects for the study was requested from both the medical center IRB and the Boston College IRB. The Boston College IRB addendum permitting recruitment of additional subjects, including members of the Boston College School of Nursing Graduate Nurses Association, was granted on February 22, 2015 and can be found in Appendix H1. The medical center Institutional Review Board stated that the recruitment of additional subjects from an associated community hospital was permitted. Since the associated community hospital was covered by the same IRB as the academic medical center, and study methods had not changed, the expansion of the sample did not require an amendment. The study was conducted in accordance with the plan and protocol submitted by the Principal Investigator to the Institutional Review Boards.

**Item development.** A six step process for scale development was utilized in this research, the first three of these steps relate to item development. These include clarification of the concept, definition of elements, and generation of items. The steps taken to develop items for the NPRBCE scale are consistent with expert recommendations (Devellis, 2012; Netemeyer, Bearden, & Sharma, 2003) and are described below.

**Step one, clarification of the concept.** The concept of Nurse’s Perception of the Relationship Based Care Environment was developed from a review of the literature and a prior qualitative study by this author (Testa & Emery, 2014). Both concept analysis and concept
synthesis (as defined by Mishel, 1998) were utilized. For content analysis, a literature review on RBC and the practice environment was undertaken. The findings from a qualitative study exploring nurse’s perceptions of relationships within the practice environment were utilized for concept synthesis (Testa & Emery, 2014). The concept RBCE was clarified, a theoretical representation of the NP RBCE was generated (Appendix B) and elements for this scale were defined. A flow chart of this development process can be found in Appendix D. The four elements of nurse to patient; nurse to other discipline; nurse to organization; and nurse to nurse exist within the environment of care and are illustrated below. Figure 1 illustrates the elements for the NPRBCE scale; items were generated from these elements.

Figure 1. Elements making up the Relationship Based Care Environment

**Step two, definition of the elements.** Specifying and operationalizing the elements of a construct is essential for the development of a valid scale (Netemeyer, Bearden, & Sharma,
The four elements of nurse to patient; nurse to other disciplines; nurse to organization; and nurse to nurse were operationalized as follows:

1. Nurse to patient was defined as the ability to know the patient beyond their disease, share knowledge, and validate the unique experience of illness for the individual and family. This includes coming to know the patient as a whole person through active listening, caring, intentional presence, and the development of authentic, mutually respectful, trusting relationships between nurse and patients/families.

2. Nurse to other discipline was defined as collaborative decision making with mutual respect for the knowledge, expertise, and values of other disciplines. This occurs within an environment where there is open communication between disciplines and a shared goal of working together towards patient and family centered care.

3. Nurse to organization was defined as the nurse’s ability to participate in an environment that allows nurses to lead policy and practice initiatives, attain adequate resources for patient care, and be respected by the organization as leaders in care.

4. Nurse to nurse was defined as the ability of nurses to care for, understand, and respect other nurses and the self, and to work seamlessly with other nurses toward a mutual goal of providing holistic care for patients.

**Step three, generation of the items.** The third step for scale development is the generation of items (DeVellis, 2012). The purpose of the scale guides this process, and items are created based on the personal judgement of the investigator, the clinical expertise of colleagues, and/or by inductive methods such as utilizing qualitative research methods (DeVellis, 2012; Mishel, 1998). For the present study, items were generated from the elements as defined above. In scales with multiple dimensions, items must reflect the full content of each dimension so as to
insure content validity (DeVellis, 2012; Mishel, 1998). For the NPRBCE scale, the operational
definition of each of the elements defined the boundaries for item development and an attempt
was made to exhaust the possibilities for types of items within those boundaries. Items were
worded in both positive and negative terms so that some items represented low levels of the
element and others reflected higher levels since this helps avoid acquiescence, affirmation, or
agreement bias (DeVellis, 2012). When creating items, the readability level should be
considered in light of the educational level of the population to be studied (DeVellis, 2012). For
the NPRBCE scale, all items were written at an eleventh grade level using the Fry Readability
Formula (Fowler, 1995).

*Item response format.* The most common response format utilized in nursing research is
the Likert-type scale. In this response type, participants are asked to respond to the items in
terms of agreement or disagreement, with options typically varying from strongly agree to
strongly disagree (DeVellis, 2012; Mishel, 1998). For the NPRBCE scale, items were placed on
a six point Likert Scale with 1 = strongly disagree, 2 = disagree, 3 = somewhat disagree, 4 =
somewhat agree, 5 = agree, and 6 = strongly agree. Strongly disagree was defined as the
participant feeling strongly that he/she has a different opinion than the item statement. Disagree
was defined as the participant having a different opinion than the item statement. Somewhat
disagree was defined as having slightly different opinion than the item statement. Somewhat
agree was defined as slightly agreeing with the item statement. Agree was defined as agreeing
with the item statement. Strongly agree was defined as the participant feeling strongly that
he/she agrees with the item statement. This response scale was chosen because numerous
response items increase the opportunity for variability across items and there are equal intervals
between them with respect to agreement (DeVellis, 2012). At this point, version one of the
NPRBCE scale (displayed in Appendix E) contained 71 items distributed in the following manner: Nurse to patient 21 items; Nurse to other disciplines 15 items; Nurse to organization 18 items; and Nurse to nurse 17 items. The content validity of version one of the NPRBCE scale was then determined; that process is described below.

**Step four, establishment of content validity.** In accordance with recommended scale development guidelines (DeVellis, 2012; Netenmeyer, 2003), the next step in scale development is a review of the initial item pool by experts to determine content validity. Content validity refers to the determination of the representativeness or relevance of the scale items (Lynn, 1986). This involves testing the items with a small group of participants similar to the group in which the final scale will be used (Nunnally, 1994). The expert panel review improves item reliability and establishes content validity (DeVellis, 2012; Frank-Stromborg & Olsen, 2004). The expert panel was comprised of individuals who are similar to the population to be studied and who are given the working definition of the construct and the items. Such a panel reduces random error since its members can identify ambiguous or otherwise unclear items (DeVellis, 2012). The most widely used quantification of content validity, the content validity index (CVI) (Lynn, 1985), was utilized to establish content validity in this study. The CVI is an agreement procedure wherein two or more raters independently review the relevance of the items to the domain of content (Wynd, Schmidt, & Schaefer, 2003). Specifically, the CVI is the proportion of items that received a rating of quite relevant or very relevant by the expert panel.

For the NPRBCE scale, seven nurse experts were consulted to determine how well the specific items represented the universe of possible items in each element. The nurse experts consisted of two nurse researchers and five practicing Registered Nurses, all of whom had at least three years of experience in direct care nursing. Each panel member individually scored
every item on version one of the NPRBCE scale, rating each item for relevance, readability, and understandability. Relevance was defined as the degree of match between the scale item and the construct definition. An expert Content Validity Guide (Appendix F) was used to explicitly define the elements for the expert panel. At the end of the scoring for each item within an element, panel members were asked if there were any other important aspects of the element that should be included. In this way, the panel determined the content validity of the items. Content validity is defined as “the degree to which a sample of items, taken together, constitutes an adequate definition of a construct” (Polit & Beck, 2006, p. 490).

Following feedback from the expert panel, minor changes were made in the wording of the definition of the elements, the prefix “on this unit” was added prior to all items on the nurse to nurse, nurse to patient, and nurse to other discipline category, and the prefix “in this organization” was added prior to all items in the nurse to organization category. Additionally, one item was altered to avoid having two ideas in the same item and one item was deleted to avoid duplication. After rewording there was 100% consensus by the expert nurse panel that all items were relevant and fully measured the concept as defined, therefore the CVI index was 1.0.

Some have argued that proportion agreement techniques such as this increases the possibility that the experts will agree by chance alone, when compared to other measures of content validity such as the multirater kappa statistic, however, Lynn posits that this limitation is overcome when a larger (greater than 5) expert panel is utilized (Lynn, 1986). The expert panel reviewing the content validity of the NPRBCE scale items consisted of seven individuals. The final scale after the content validity review is represented as Appendix K. This final NPRBCE scale (Appendix K) contains 70 items distributed across the four elements in the following manner: nurse to patient 20 items, nurse to other disciplines 16 items, nurse to organization 18 items, nurse to
nurse 16 items, plus one open ended question. The open ended question read as follows: “Please describe in your own words any issues that were not represented in this scale that you think effect the Relationship Based Care Environment”.

_Pilot testing_. The goal of the pilot pre-test was to determine if the format of the scale was clear and that participants could answer the survey on either a computer or a cell phone. Three practicing Registered Nurses were recruited for the pilot test. Inclusion criteria were Registered Nurses with a minimum of three years of practice in direct care settings. These nurses examined the format of the NPRBCE Qualtrics survey to determine if it was easily readable, opened easily on a computer and a cell phone. There was one hundred percent agreement that the language and format were readable, clear, and understandable, and the survey opened easily on both a computer and a cell phone.

**Step five, administration of the scale.** The administration of a scale involves the setting in which the scale is administered, the recruitment of participants, and the characteristics of the sample.

_Setting_. An email describing the study and informed consent with a link to an electronic survey (Appendix G) was sent to all direct care Registered Nurses in the following three settings: 1. An 800 bed academic center; 2. A 200 bed community hospital; and 3. Members of the Boston College Graduate Nurses Association (GNA) in the traditional Masters and PhD programs of study. The community hospital and the GNA settings were added to the potential sample pool after recruitment from the academic medical center resulted in less than the anticipated 450 completed surveys. Permission to utilize the GNA list was granted by the Boston College IRB (see Appendix H1) and the faculty co-chair of the Boston College GNA (see Appendix M).
Since it is unusual for a hospital to provide email addresses to external researchers, the hospitals forwarded the email invitations with the survey link to its nurses on behalf of the researcher. Additionally, the principal investigator worked with in-house nurse researchers at the hospitals and jointly submitted an application to the hospitals’ Institutional Review Boards. Participants completed the survey on-line either at home or at a work computer. All Registered Nurses in this study have email addresses and access to computers either at their workplace or their home. Participants received an informed consent via email and once the participant clicked on the “consent to participate” button the page opened to a three component document. The three components included a demographic sheet containing 8 questions; the 70 item survey; and a single open ended question asking participants to describe issues that were not represented in the scale that they think may affect the Relationship Based Care Environment.

*Sample recruitment.* Recruitment strategies, as described by Dillman, Smythe, & Christian (2014) were utilized in an attempt to increase participation. The sample recruitment and the study methods were consistent across the three sample settings. Firstly, the recruitment email specifically asked for the participants’ help and specified that the survey results could be useful for improving future healthcare delivery. This was expected to improve participation rates. Secondly, since sponsorship by a legitimate authority strengthens recruitment, the recruitment email to Registered Nurse participants in the academic medical center specified that the chief nurse at the hospital supported the study. Thirdly, an effort was made to limit the time burden of responding for the participants. Limiting the burden of responding to the survey was expected to improve participation rates. The survey was projected to take 15 minutes to complete and it was possible for participants to save their answers and return at a later time to complete the survey. The fourth recruitment strategy instituted in this study was that the survey was distributed in an
on-line format. The NPRBCE survey was delivered on-line and participants could respond to the
survey either on a computer at home or at the hospital. The convenience of response can serve to
increase participation in a survey (Dillman et al. 2014). Also, reminder messages were sent to all
potential participants (Appendix C) and reminder messages tend to improve the participation rate
(Dillman et. al, 2014).

A sample size of five participants for each item up to a total of 400 participants has been
suggested, after which the ratio can be relaxed (Nunnally, 1994; Tinsley & Tinsley, 1987).
Knapp and Brown have suggested a ratio of three participants per item which for this study
would be a total sample of 210 participants (1995). Since the number of items in this scale is 70,
the minimum number, according to experts, would be 70 times 5, or 350 complete surveys
(Nunnally, 1994; Tinsley & Tinsley, 1987). The goal for the number of completed surveys was
set higher than the minimum of 350, so as to avoid risks of using too few respondents for
analyses. Using a larger sample size minimizes this risk; therefore the goal for this study was set
at 450 completed surveys.

An initial group of 3000 potential respondents were invited to participate in the study in
an effort to meet the goal of at least 450 completed surveys with no missing data. When the
initial response of the 3000 potential participants produced less than the expected number of
completed surveys, 600 additional potential participants were invited to participate in the study.
This resulted in a potential sample pool of 3600 participants. The additional 600 potential
participants were recruited from a community hospital and the Boston College Graduate Nurses
Association. Inclusion criteria were being employed as a Registered Nurse in a direct care role
in the Commonwealth of Massachusetts.
Sample Characteristics.

From the total 3600 recruitment emails distributed, 476 surveys were returned for an overall response rate of 13.2%. Of these, 473 had no missing data on survey questions and these 473 completed surveys were utilized in the psychometric evaluation of the NPRBCE scale.

In describing the sample characteristics and the survey results, the sample from the three sampling sites were blended because a large number of respondents is advantageous in psychometric evaluation and the majority of demographic characteristics were similar across sample sites. The GNA group had a lower mean age and lower experience level than the other two sampling sites but was similar in other demographic characteristics.

Table 1 describes the demographics of the respondents for whom the demographic data were complete.

Table 1. Descriptive Statistics Demographics on the Nurse’s Perception of Relationship Based Care Environment Scale Sample

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>SD*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>45.7</td>
<td>12.9</td>
</tr>
<tr>
<td>Total Number of years in profession</td>
<td>20.9</td>
<td>13.5</td>
</tr>
<tr>
<td>Total number of years on unit</td>
<td>11.2</td>
<td>9.8</td>
</tr>
<tr>
<td>Gender</td>
<td>N</td>
<td>%</td>
</tr>
<tr>
<td>Female</td>
<td>429</td>
<td>90.1</td>
</tr>
<tr>
<td>Male</td>
<td>44</td>
<td>9.2</td>
</tr>
<tr>
<td>Missing</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Ethnic Group</td>
<td></td>
<td></td>
</tr>
<tr>
<td>African American (non-Hispanic)</td>
<td>14</td>
<td>2.9</td>
</tr>
<tr>
<td>Asian/Pacific Islander</td>
<td>13</td>
<td>2.7</td>
</tr>
<tr>
<td>Caucasian (non-Hispanic)</td>
<td>421</td>
<td>88.4</td>
</tr>
<tr>
<td>Latino or Hispanic</td>
<td>12</td>
<td>2.5</td>
</tr>
<tr>
<td>Native American</td>
<td>2</td>
<td>.4</td>
</tr>
<tr>
<td>Missing</td>
<td>14</td>
<td>2.9</td>
</tr>
<tr>
<td>Highest Educational Level</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diploma</td>
<td>13</td>
<td>2.7</td>
</tr>
<tr>
<td>Associate Degree</td>
<td>35</td>
<td>7.4</td>
</tr>
<tr>
<td>Baccalaureate Degree</td>
<td>293</td>
<td>61.6</td>
</tr>
<tr>
<td>Master’s Degree</td>
<td>115</td>
<td>24.2</td>
</tr>
<tr>
<td>Variable</td>
<td>Mean</td>
<td>SD*</td>
</tr>
<tr>
<td>--------------------------------------</td>
<td>------</td>
<td>-----</td>
</tr>
<tr>
<td>Doctor of Nursing Practice Degree</td>
<td>3</td>
<td>.6</td>
</tr>
<tr>
<td>Doctor of Philosophy Degree</td>
<td>1</td>
<td>.2</td>
</tr>
<tr>
<td>Other</td>
<td>6</td>
<td>1.2</td>
</tr>
<tr>
<td>Missing</td>
<td>10</td>
<td>2.1</td>
</tr>
<tr>
<td>Where practice</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Academic Medical Center A</td>
<td>326</td>
<td>68.5</td>
</tr>
<tr>
<td>Community Hospital B</td>
<td>75</td>
<td>15.8</td>
</tr>
<tr>
<td>Other</td>
<td>75</td>
<td>15.8</td>
</tr>
<tr>
<td>Missing</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>What is current position</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Staff nurse</td>
<td>371</td>
<td>77.9</td>
</tr>
<tr>
<td>Nurse Manager</td>
<td>18</td>
<td>3.8</td>
</tr>
<tr>
<td>Nurse Educator</td>
<td>18</td>
<td>3.8</td>
</tr>
<tr>
<td>Other</td>
<td>68</td>
<td>14.3</td>
</tr>
<tr>
<td>Missing</td>
<td>1</td>
<td>.2</td>
</tr>
</tbody>
</table>

*SD = standard deviation

To summarize Table 1, a majority of participants were female (90.1%) and Caucasian (88.4%). African American (non-Hispanic) respondents represented 2.9% of the sample, Asian/Pacific Islanders represented 2.7% of the sample, and Latino or Hispanic respondents represented 2.5% of the sample. The majority of respondents held Baccalaureate degrees (61.6%) and a substantial number had Master’s degrees (24.2%). The typical respondent worked at a single academic medical center (68.5%) although 31.6% worked elsewhere. The majority of respondents worked as staff nurses (77.9%); nurse managers and nurse educators each represented 3.8% of the respondents. The mean age of participants was 45.7 with a standard deviation of 12.9; the total number of years worked as a nurse averaged 20.9 years with a standard deviation of 13.5; and the mean number of years worked on their specific unit was 11.2 with a standard deviation of 9.8.
Step six, data collection and evaluation of items. The final step in scale development is distribution of the scale, collection of data, management of data, and evaluation of the items (DeVellis, 2012; Netenmeyer, 2003).

Distribution of the scale. The NPRBCE scale with one open ended response question and a demographic data sheet to collect participant information were utilized in this study, and are displayed in Appendix K. The consent emailed to each potential participant (Appendix J) contained a link to the electronic Qualtrics (R) survey. On the opening page the contact information for the principal investigator, the faculty supervisor, and the Boston College IRB were provided. The survey remained open from January 7, 2016 through March 21, 2016.

The investigator attended nurse director and nurse leader meetings in January of 2016 to describe the study and answer questions regarding research aims and intended date for the launch of the survey. This was expected to encourage participation in the study and improve response rate.

Data collection. The process for data collection was identical across the three sampling sites and is described herein. Seven days prior to the survey launch an email describing the study was sent to each direct care Registered Nurse at the academic medical center, the community hospital, and student members of the Boston College GNA in the traditional Masters and PhD tracts (Appendix G). Each potential participant was sent a unique link to the Qualtrics (R) survey, and all surveys and reminder emails were anonymous so as to protect the confidentiality of the participants. The data were then downloaded from Qualtrics (R) to Statistical Package of the Social Sciences (SPSS) version 23.0 by the investigator and entered into the investigator's personal computer, which was stored in a locked file within the locked office of the investigator. The email contained a link to the survey with the instruction to click on the link to affirm consent to participate (Appendix J).
Data management. The process for data management and analysis was identical across the three sampling sites and is described in the following section. All surveys and reminder emails to participants were anonymous; there was no code linking participants’ survey responses to their email or IP address. Qualtrics\textsuperscript{(R)} was programmed to anonymize all data to assure that there was no link between participant response and participant identity. Qualtrics\textsuperscript{(R)} encrypts all transmitted data via Transport Layer Security encryption. Survey data are protected with passwords and HTTP referrer checking. Data are hosted by third party centers that are SSAE-16 SOC II certified (Qualtrics\textsuperscript{(R)} Security Statement, 2015). Thus, Qualtrics\textsuperscript{(R)} meets or exceeds the minimum requirements as outlined in Federal Acts such as the FISMA Act of 2002 and FIPS Publication 2000” (Qualtrics\textsuperscript{(R)} Security Statement, 2015). The integrity of survey data were safeguarded by the investigator’s assurance that all data were anonymous; the investigator’s monitoring of the download of data from Qualtrics\textsuperscript{(R)} to SPSS version 23; and the investigator’s storage of data in a password protected, firewall protected computer in a locked cabinet within a locked office accessible only to the investigator.

Data analysis procedure. The data for all completed surveys across the three sampling sites were merged, and the rationale for merging this data has previously been described. Data were analyzed in the following manner, consistent with recommendations of Tabachnick & Fidell (2013).

1. All negatively worded items in the NPRBCE scale were reverse scored so that when subscale scores were formed a higher score represented a higher amount of the construct being measured.
2. Frequencies were computed on all variables and the data were checked for missing data. If missing data were found on survey items the subject was dropped from analysis.

3. Cronbach’s alpha internal consistency reliability statistic was computed on all items for the NPRBCE as a whole. It was expected that Cronbach’s alpha would be greater than .70. Cronbach’s alpha is an indication of the proportion of variance in the scale scores that is attributable to the true score, and Tabachnick & Fidell (2013) suggest a value of .70 as an acceptable lower bound for Cronbach’s alpha.

4. Principal components analysis with varimax rotation and Kaiser normalization procedures were computed to determine whether the following four elements: Nurse to patient, nurse to other disciplines, nurse to organization, and nurse to nurse were demonstrated in the scale.

Once the component structure was found to be sound, Cronbach’s alpha internal consistency reliability was established on the components. If Cronbach’s alpha was below the .70 cutoff on any component, principal components analysis would be repeated to determine the reliable components.

**Analysis of the Open Ended Question**

In an effort to capture any additional comments from participants, the following open ended question was asked: “Please describe in your own words any issues that were not represented in this scale that you think effect the Relationship Based Care Environment”. The qualitative data were organized in Qualtrics (R) and subjected to content analysis. Approximately 50% of respondents answered the open ended question. The data analysis spiral described by Creswell (2013) was carried out. This involves the following steps: organizing the data; memoing;
categorizing data into codes and themes; interpreting the data; and representing the data. To validate the interpretation of this data, a triangulation strategy was utilized. In triangulation, researchers make use of different sources to provide corroborating evidence (Creswell, 2013; Corbin & Strauss, 2008; Streubert & Carpenter, 2011). In this study, the themes that emerged from the qualitative data supported and enhanced the quantitative data gathered in the survey itself. The qualitative analysis enhanced the methodological rigor of the study as a whole because it enhanced understanding of the perspective of nurses’ regarding the Relationship Based Care Environment.

**Summary**

The purpose of this study was to develop and psychometrically evaluate the NPRBCE scale. This chapter reviewed the methodology utilized in the development of the scale. This included the setting, sample, scale development, protection of human subjects, data collection, and data analysis utilized in the development and psychometric evaluation of the NPRBCE scale.
Chapter Four

Results

The two-fold purpose of this methodological study was to: 1) Develop a scale to measure the nurse’s perception of the relationship based care environment, and 2) to conduct a psychometric evaluation of the scale. The preliminary data analysis is presented here followed by results related to research questions one, two, and three.

Preliminary Data Management and Cleaning of the Data

Data were entered directly into SPSS version 23 from Qualtrics. Once entered, the data were cleaned by the Principal Investigator (PI). Data cleaning involves looking over the data and removing unneeded letters that could result in the survey not being accepted into Qualtrics(R). Several participants added letters in places where numeric answers were expected. For example, the word “years” was entered after demographic questions such as “for how many years have you been employed as a Registered Nurse”. The unneeded letters were removed by the principal investigator so that data from that demographic question was accepted into Qualtrics(R). Of the 3600 individuals in the potential sample pool, 473 returned completed surveys. Thus the final sample size used for psychometric evaluation was 473 surveys. Descriptive characteristics of the sample were reported in Chapter 3 and are displayed as Table 1.

Psychometric Evaluation of the NPRBCE Scale

Descriptive statistics were computed on all study variables and examined for skewness, systematic missing data, and outliers. There were no problems noted, and any survey with missing data on any of the 70 survey items was excluded from further analysis. If 5% or less of the data points is missing from a large data set the problems with missing data are less serious and any procedure for handling missing data yields similar results (Tabachnick & Fidell, 2013).
Deletion of data is a good alternative when only a few cases have missing data and they seem to be a random subset of the whole sample (Tabachnick & Fidell, 2013).

**Research question one.** To what extent does the scale developed, the Nurse’s Perception of Relationship Based Care Environment (NPRBCE) Scale, demonstrate internal consistency reliability?

Research question one was answered by computation of the internal consistency reliability of the total scale using Cronbach’s alpha. The 70 item NPRBCE scale had a standardized Cronbach’s alpha of .96 (N= 473). The scale was judged to be reliable. Reliability is an essential characteristic of any scale and is a prerequisite for validity (DeVellis, 2012).

**Research question two.** To what extent can the components (elements) of the NPRBCE scale be demonstrated in principal components analysis (PCA)?

The 70 item survey was subjected to PCA, varimax rotation and Kaiser normalization. Application of the Kaiser criterion of using all unrotated factors with eigenvalues greater than 1.0 resulted in 8 components accounting for 55.5% of variance. The scree test graphing the eigenvalues was more parsimonious, indicating a 5, 6, or 7 component solution (see Figure 2). Each of these solutions was explored, and a 5 component solution made the best conceptual sense and was considered, by the principal investigator to be the best solution. Since fewer factors were initially hypothesized in the theoretical model, and a five component solution was thought to be conceptually and theoretically congruent with the theoretical representation, a second PCA was performed specifying 5 components. Examination of the rotated component matrix revealed a parsimonious and interpretable solution. The principal investigator determined that the five component solution was the best solution; and the final solution contained five components. The results of the PCA are displayed in Table 2.
Figure 2. Scree Plot for Principal Components Analysis

*First analysis, factor loading cut-off of .3.* Items were first examined with a factor cut-off point of .30 and sixty eight of the 70 items loaded greater than .30 on one of the five components. The two items that failed to load on any of the 5 components were the following: “I often have difficulty dealing with my stress”, and “I use coping strategies that help me address my stress”. In addition to not loading well, the item “I often have difficulty dealing with my stress” had a low item-total correlation of -.2.
<table>
<thead>
<tr>
<th>Component 1: Nurse to Other Disciplines</th>
<th>12% variance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cronbach α = .93</td>
<td></td>
</tr>
<tr>
<td>Nurses and other disciplines have shared goals</td>
<td>.75</td>
</tr>
<tr>
<td>Other disciplines share information with nurses</td>
<td>.73</td>
</tr>
<tr>
<td>Nurses and other disciplines support each other</td>
<td>.70</td>
</tr>
<tr>
<td>I have a trusting relationship with other disciplines</td>
<td>.68</td>
</tr>
<tr>
<td>Other disciplines respect the perspective of nurses</td>
<td>.68</td>
</tr>
<tr>
<td>Nurses and other disciplines exchange ideas</td>
<td>.68</td>
</tr>
<tr>
<td>Nurses work with other disciplines to discuss patient care</td>
<td>.68</td>
</tr>
<tr>
<td>Conflict between nurses and other disciplines is managed</td>
<td>.66</td>
</tr>
<tr>
<td>Other disciplines respect the knowledge of nurses</td>
<td>.65</td>
</tr>
<tr>
<td>Nurses and other disciplines help each other</td>
<td>.65</td>
</tr>
<tr>
<td>Nurses collaborate with other disciplines</td>
<td>.63</td>
</tr>
<tr>
<td>Nurses participate in interdisciplinary rounds</td>
<td>.57</td>
</tr>
<tr>
<td>Nurses respect the perspective of other disciplines</td>
<td>.55</td>
</tr>
<tr>
<td>Nurses share information with other disciplines</td>
<td>.53</td>
</tr>
<tr>
<td>Nurses respect the knowledge of other disciplines</td>
<td>.51</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Component 2: Nurse to Organization</th>
<th>11.4% variance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cronbach α = .92</td>
<td></td>
</tr>
<tr>
<td>The environment supports nursing judgment</td>
<td>.80</td>
</tr>
<tr>
<td>The time I spend with my patients is valued by leadership</td>
<td>.78</td>
</tr>
<tr>
<td>Nursing knowledge is valued by leadership</td>
<td>.69</td>
</tr>
<tr>
<td>The perspective of nurses is respected in this environment</td>
<td>.67</td>
</tr>
<tr>
<td>Enough time to discuss patient care with my colleagues</td>
<td>.63</td>
</tr>
<tr>
<td>Relationships between nurses and patients are promoted</td>
<td>.61</td>
</tr>
<tr>
<td>The environment supports continuity in patient care</td>
<td>.61</td>
</tr>
<tr>
<td>Nurses participate in decisions about resource allocation</td>
<td>.58</td>
</tr>
<tr>
<td>Relationships between nurses/ other disciplines promoted</td>
<td>.58</td>
</tr>
<tr>
<td>I am able to access the resources that my patients need</td>
<td>.56</td>
</tr>
<tr>
<td>Relationships between and among disciplines are a priority</td>
<td>.55</td>
</tr>
<tr>
<td>Nurses have time to know their patient as a person</td>
<td>.54</td>
</tr>
<tr>
<td>I am able to advocate for my patients</td>
<td>.50</td>
</tr>
<tr>
<td>Sensitivity to psychosocial and spiritual dimensions of care is considered important</td>
<td>.49</td>
</tr>
<tr>
<td>Nurses lead nursing policy and procedure development</td>
<td>.48</td>
</tr>
<tr>
<td>Nurses and other disciplines are guided by a professional practice model</td>
<td>.46</td>
</tr>
<tr>
<td>I feel motivated to improve the care of my patients</td>
<td>.43</td>
</tr>
<tr>
<td>Nurses are often rushed when communicating with other nurses about</td>
<td>.36</td>
</tr>
<tr>
<td>Component</td>
<td>Component 1</td>
</tr>
<tr>
<td>-----------</td>
<td>-------------</td>
</tr>
<tr>
<td>patient care</td>
<td></td>
</tr>
<tr>
<td>I am rarely able to access the resources that my patients need</td>
<td></td>
</tr>
<tr>
<td>Component 3: Nurse to Nurse</td>
<td></td>
</tr>
<tr>
<td>Cronbach’s α = .90</td>
<td></td>
</tr>
<tr>
<td>Nurses manage conflict effectively</td>
<td></td>
</tr>
<tr>
<td>Nurses respect one another regardless of differences in age</td>
<td></td>
</tr>
<tr>
<td>Nurses communicate effectively with one another</td>
<td></td>
</tr>
<tr>
<td>Nurses respect one another regardless of differences in education</td>
<td></td>
</tr>
<tr>
<td>Nurses trust one another</td>
<td></td>
</tr>
<tr>
<td>Nurses think that their relationships with other nurses are important</td>
<td></td>
</tr>
<tr>
<td>Nurses openly share ideas regarding patient care with other nurses</td>
<td></td>
</tr>
<tr>
<td>Nurses work together to provide holistic care for patients</td>
<td></td>
</tr>
<tr>
<td>Nurses share the goal of providing holistic care for their patients</td>
<td></td>
</tr>
<tr>
<td>I have a trusting relationship with other nurses</td>
<td></td>
</tr>
<tr>
<td>Nurses recognize when their own stress level is high</td>
<td></td>
</tr>
<tr>
<td>Nurses report to work well rested</td>
<td></td>
</tr>
<tr>
<td>Component 4: Nurse to Patient: Knowing the Patient</td>
<td></td>
</tr>
<tr>
<td>Cronbach’s α = .90</td>
<td></td>
</tr>
<tr>
<td>I engage in uncovering the meaning of illness for my patients</td>
<td></td>
</tr>
<tr>
<td>I adapt the environment of care to the pattern of patients’ lives</td>
<td></td>
</tr>
<tr>
<td>I am fully attentive to the meaning of health for my patients</td>
<td></td>
</tr>
<tr>
<td>I focus on knowing what is important to my patients</td>
<td></td>
</tr>
<tr>
<td>I am aware of my patients’ spiritual beliefs</td>
<td></td>
</tr>
<tr>
<td>I come to know my patients as unique individuals</td>
<td></td>
</tr>
<tr>
<td>I partner with my patients to identify health problems</td>
<td></td>
</tr>
<tr>
<td>My plan of care is guided by the patients’ preferences</td>
<td></td>
</tr>
<tr>
<td>I take the time to listen attentively to my patients</td>
<td></td>
</tr>
<tr>
<td>I have enough time to come to know my patients</td>
<td></td>
</tr>
<tr>
<td>I feel that patients generally trust all the nurses who deliver care</td>
<td></td>
</tr>
<tr>
<td>I feel comfortable articulating my nursing perspective to members of other disciplines</td>
<td></td>
</tr>
<tr>
<td>Component 5 nurse to patient: Respect for the patient,</td>
<td></td>
</tr>
<tr>
<td>Cronbach’s α = .88</td>
<td></td>
</tr>
<tr>
<td>I show interest in my patient’s perception of their illness</td>
<td></td>
</tr>
<tr>
<td>I validate the unique experiences of my patients</td>
<td></td>
</tr>
<tr>
<td>I show authentic interest in the lives of my patients</td>
<td></td>
</tr>
<tr>
<td>I actively listen to the words of my patients</td>
<td></td>
</tr>
<tr>
<td>My interactions with my patients are genuine</td>
<td></td>
</tr>
<tr>
<td>My intentional presence with my patients brings them comfort</td>
<td></td>
</tr>
<tr>
<td>I respect my patients’ goals</td>
<td></td>
</tr>
<tr>
<td>I accept my patients’ beliefs and values without judgement</td>
<td></td>
</tr>
</tbody>
</table>
Second analysis, factor loading cut-off of .5. Following the first PCA, the Principal Investigator (PI) examined each item that loaded less than .50 to determine if removing these items would lessen internal consistency reliability of the scale as a whole or that of any individual component. The specific factor loading cutoff point that a researcher should utilize is controversial. Some researchers suggest a factor cut-off loading of .3 (as was utilized in the first analysis) while others suggest the higher level of .5 (DiStefano, Zhu, & Mindrila, 2009; Tabachnick & Fidell, 2013). In this second analysis, with the higher factor loading cut-off, twelve items across the four elements had factor loadings less than .50 but greater than .30. Several of these items, including the following: “I am rarely able to access the resources that my patients need” and “nurses are often rushed when communicating with other nurses about patient care” had negative item-total correlations as well as factor scores less than .50. The PI determined that the second analysis, with a factor loading cut-off of .5, made conceptual sense and maintained the integrity and reliability of the scale. Therefore the factor loading cut-off point was set at .5 and an additional 12 items were removed from the final solution. The twelve items that were removed are discussed below.

Of the twelve removed items, none were from component one; 7 items were from component two; 1 item was from component three; 2 items were from component four; and 2 items were from component five. The 12 items removed because they were lower than .50 but higher than .30 are highlighted in red in Table 2. In the judgement of the principal investigator, removal of these 12 items did not affect the conceptual integrity of any component or the scale as

<table>
<thead>
<tr>
<th>Component</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>I accept my patients’ emotions without judgment</td>
<td></td>
<td></td>
<td></td>
<td>.45</td>
<td></td>
</tr>
<tr>
<td>I am reflective in my practice</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.37</td>
</tr>
</tbody>
</table>
a whole. Removal of these 12 items did not lower reliability of the scale as a whole or of any individual component. Therefore the 12 items were removed, leaving a final solution with 56 items in total.

The Final Solution

The final solution was a 56 item NPRBCE scale that was deemed acceptable for use in future research. The final solution total scale had a Cronbach’s alpha of .96 and the reliability of each of the five components was Cronbach’s alpha equal to or greater than .87 (displayed in Table 2). The items in each of the five subscales were judged to be sufficient to capture the entirety of the component as it was operationally defined. The themes emerged from the extended response question supported the final solution.

The five component solution accounted for a total of 48.8% of initially extracted common variance. Table 2 displays the items and their component loadings on the PCA-derived scales. Component 1, labeled nurse to other disciplines, was defined by 15 items with an eigenvalue of 20.3, and accounted for 12% of variance. Component 2, named nurse to organization, was composed of 13 items with an eigenvalue of 5.9, and explained an additional 11.4% of variance. Component 3, labeled nurse to nurse was defined by 10 items with an eigenvalue of 3.2, and explained an additional 8.9% of variance. Component 4, named nurse to patient: Knowing the patient, was composed of 10 items with an eigenvalue of 2.9, and accounted for an additional 8.3% of variance; and Component 5, named nurse to patient: Respect for the patient, was defined by 8 items with an eigenvalue of 1.9, and explained an additional 8.2% of variance.

Component 1 of the NPRBCE scale was labeled Nurse to Other Disciplines, and had factor loadings ranging from .50 to .75. These items all focus on the nurse’s relationship with members of other disciplines, consistent with the underlying theoretical model. Three of the
items in this component loaded to a lesser extent on component 2, nurse to organization. This is conceptually congruent in that the culture of the organization may impact interdisciplinary communications. For example, the item “during interdisciplinary rounds nurses take part in discussions about the patient’s plan of care” could be affected by organizational culture and policy. It was judged to be more congruent, however, in component one, nurse to other disciplines. All three items were judged to be a better fit within component one.

Component 2 of the NPRBCE scale was called Nurse to Organization and items had factor loadings from .50 to .80. These items all relate to the nurse to organization relationship. Several items had lesser loadings on component 1. For example, the item “I am able to advocate for my patients” loaded most highly on component 2 but did also load on component 1. All items in component two were judged to best fit in component two.

Component 3 of the NPRBCE scale was labeled Nurse to Nurse and the factor loadings of these items ranged from .50 to .73. There were no significant loadings on any other component.

Component 4 of the NPRBCE scale was called Nurse to Patient/ Knowing the Patient and had factor loadings from .50 to .75. Several items side loaded on component 5, which is to be expected given that both components concern the nurse to patient relationship.

Component 5 of the NPRBCE scale was labeled Nurse to Patient/ Respect for the Patient, with factor loadings between .5 and .72. Several of these items side loaded on component 4. For example, the item “I validate the unique experiences of my patients” is mainly concerned with respecting the patient but is also related to knowing the patient. The original theoretical model (Figure 1) had one component called nurse to patient but in the PCA this subdivided into knowing the patient and respecting the patient, so some overlap between these components
would be expected. These items were thought to be most relevant in component 5 and so were kept in component 5.

**Research Question 3**

To what extent are the PCA-derived scales internally consistent? Prior to computing mean subscale scores, Cronbach’s alpha internal consistency reliability was calculated for each of the 5 PCA-derived components. As Table 2 shows, subscale reliabilities ranged from .88 to .93. The internal consistency of Component 1 was .93, component 2 had an internal consistency of .92, component 3 had an internal consistency of .90, component 4 had an internal consistency of .90 and the internal consistency of component 5 was .88. Thus the now 56 item NPRBCE final solution with its 5 components was judged to be reliable for use as independent measures in subsequent research.

**Extended Response to the Open Ended Question.** The themes resultant from content analysis of the extended response to the open ended questions seemed to support the elements of the final solution. Participant replies were first categorized based on the type of relationship being referenced, thereafter; three main themes emerged, including: time to come to know the patient and form a relationship; nurse to nurse communication; and interdisciplinary collaboration.

**Theme 1: Time to know the patient.** The time to know the patient and develop a relationship was revealed in comments such as the following “computer charting is a huge barrier to all relationships, each night I spend more time on the computer than I do with the patient”. And “technology has become a major barrier to my ability to develop relationships with my patients”. This theme supports the Nurse to Patient: Knowing the patient element.

**Theme 2: Nurse to nurse communication.** Nurse to nurse communication was perceived to be suboptimal, as evidenced in comments such as “nurses still engage in lateral
violence”; “there is general disrespect of newer nurses toward older nurses”; and “I have difficulty as a new nurse with nurses who have worked on the floor for a longer period of time” indicate a lack of collaboration between nurses. This theme supports the nurse to nurse element of the final solution.

Theme 3: Interdisciplinary collaboration. Interdisciplinary collaboration was seen lacking, as expressed in the following statements: “we are a long way from interdisciplinary collaboration, last week a resident told a nurse that her opinion didn’t count”, and “everyone is like an island onto themselves, doctors do not communicate with nurses about patient care”. This theme supports the nurse to other disciplines element of the final solution.

The three themes support the elements of the NPRBCE scale and point out a need for the broadened conceptualization of the RBCE. As a result of these findings, the theoretical representation was expanded to include communication and collaboration. The revised theoretical representation can be found in Appendix B1. Findings suggest the need to measure and intervene to improve the nurse to patient; nurse to other discipline, and nurse to nurse relationships. Although the nurse to organization was not a thematic finding of the content analysis, participants’ comments included statements such as “financial constraints being felt by the organization affect relationships and patient centered care”. The revised theoretical model (Appendix B1) includes the finding that social determinants such as financial constraints effect relationships within the care environment. A program of research involving further qualitative inquiry and further evaluation of the NPRBCE scale would be beneficial in expanding nursing knowledge and improving the experiences of patients/families, and healthcare providers.
Summary

This chapter reported the results of the psychometric evaluation of the NPRBCE scale and content analysis of the open ended question regarding the nurse’s perception of the RBCE. The participants were 473 Registered Nurses working in direct care of patients in the Commonwealth of Massachusetts. Research question 1 explained the reliability of the NPRBCE Scale. Cronbach’s coefficient alpha internal consistency was used to determine the reliability of the scale and showed standardized alpha of .96.

Research question 2 explained the extent to which the 5 factors of the NPRBCE scale could be demonstrated through principal components analysis. A five-factor solution using varimax rotation with a loading cutoff point of .5 was most parsimonious and interpretable. The five factors consisted of 56 items and explained a total of 48.8% of variance. Factor 1, Nurse to other disciplines was comprised of 15 items with an eigenvalue of 20.3 and accounted for 12% of variance. Factor 2, Nurse to organization consisted of 13 items with an eigenvalue of 5.9 and explained 11.4% of variance. Factor 3, Nurse to nurse contained 10 items with an eigenvalue of 3.2 and explained 8.9% of variance. Factor 4, nurse to patient: Knowing the patient, consisted of 10 items with an eigenvalue of 2.9 and explained 8.3% of variance. Factor 5, Nurse to patient: Respect for the patient, contained 8 items with an eigenvalue of 1.9 and explained 8.2% of variance. The 56 item final solution is contained in Appendix L.

Research question 3 determined the reliability of each of the 5 components of the NPRBCE Scale. All five components were independently reliable with Cronbach’s alpha equal to or greater than .87.

The thematic findings from analysis of the open ended question supported and enhanced the findings of the psychometric evaluation of the NPRBCE scale.
Chapter 5

Discussion and Implications

This chapter consists of four sections. The first section provides a discussion of study findings. The second section links the study findings to the literature to date and the emerged theoretical framework. The third section identifies implications for practice, education, policy, and future research. The final section describes the limitations of the study.

Discussion of Findings

The theoretical representation provided the framework for the development of the NPRBCE scale. The existence of the elements of the RBCE (nurse to other disciplines, nurse to organization, nurse to nurse, and nurse to patient) were supported by the principal components analysis. The final solution of the NPRBCE scale supports the contribution of these elements individually and as a group to a measure of the relationship based care environment. The relationship between nurse and patient has been widely viewed as the core to optimal nursing practice and the hallmark of the discipline of nursing (Watson & Smith, 2004). The critical influence of the nurse to patient relationship within the care environment was strongly supported by the findings of this study. Beyond this, the relationships between and among nurses, other disciplines, and the organization in which care delivery takes place were also found to be central elements within the practice environment.

The NPRBCE scale adds to the current body of knowledge, expands and enriches the conceptualization of RBC for nursing, and may be utilized in the future to measure the impact of RBC within the practice environment. This broadening of our understanding of the relationships within the practice environment from the nursing perspective represents an important step forward in improving the environment. The nurse to organization component was found to be an
independent contributor to the RBC environment, supporting the theoretical representation of NPRBCE. Implications of this are that the organization wherein healthcare occurs must support nursing core knowledge of the importance of relationships to health and healing. New innovations can be designed and evaluated for their contributions to a redesign of the healthcare wherein relationships are fostered and a healing space is created.

Participants’ responses to the open ended question at the end of the survey stressed the importance of communication and collaboration within the practice environment. Nurse participants perceive that improved communication and collaboration will enhance patient care and promote knowing self and other persons. With the NPRBCE scale, new models of care designed to improve collaboration and communication between and among nurses, patients, and other disciplines can be evaluated and supported over time.

Findings

Four hundred and seventy three participants provided data used to evaluate the psychometric properties of the NPRBCE scale. Principal components analysis (PCA) revealed a parsimonious and interpretable 5 factor solution accounting for 48.8% of initially extracted common variance. After computing the PCA, items that loaded less than .5 were examined to determine whether removing all items loading less than .5 would lessen the reliability or the conceptual integrity of the scale. Removal of items with factor loadings less than .5 did not lessen the conceptual congruency or the reliability of any of the five components or of the scale as a whole. Therefore, these items were removed and the final solution contained 56 items. Each of the 5 components, including: Nurse to other disciplines; nurse to organization, nurse to nurse, nurse to patient-knowing the patient; and nurse to patient-respecting the patient, retained
between 8 and 15 items with a range of Cronbach’s alpha from .87 to .93. The Cronbach’s alpha for the 56-item scale as a whole was .957.

**Study Findings, Theoretical Representation, and Extant Literature**

The findings of this study support the proposed theoretical representation and also serve to refine the elements of the representation. The relationship based care environment, as initially conceptualized in this study, was made up of four components including nurse to other disciplines; nurse to organization; nurse to nurse; and nurse to patient. In the final solution, the ten items within the nurse to nurse element did not reflect the nurse’s relationship with self. Perhaps the nurse to self-concept is integral to other relationships yet is under-recognized by nurses. Another potential reason is that the items for nurse to self should be expanded and in future research the addition of items relating to nurse to self may prove to be an element in and of itself. In other words, it may not be considered part of a nurse to nurse element but could prove to be an independent element in future research. Qualitative research exploring how the nurse to self-concept is perceived to influence the Relationship Based Care Environment would be very valuable in a future program of research.

Findings of the study supported the elements of the theoretical representation. In addition one of the elements, the nurse to patient, was expanded and separated into 2 components based on study findings. Findings indicate that the element nurse to patient is actually comprised of two distinct parts: nurse to patient-knowing the patient and nurse to patient-respect for the patient. Thus the theoretical representation was refined to include these two distinct components of the nurse-patient relationship. The two elements of nurse to patient knowing the patient and nurse to patient respect for the patient may warrant further investigation for greater clarity. Results of this
study support extant literature and nursing knowledge of the importance of relationships in the care environment.

The dynamic, multidimensional, complex, and intertwining relationships between and among nurses, patient/families, the environment (including the organization in which care is delivered) and health have always been the disciplinary focus and this focus is essential for effective healthcare redesign. Caring relationships between persons are fundamental to high quality, safe, effective, efficient and patient-centered care (Flanagan, 2009; Newman 2008; Peplau, 1952; Roy & Jones, 2007; Somerville, 2009; Wagner & Whaite, 2010; Watson, 2006).

Nurse to other disciplines. In the NPRBCE scale, the component nurse to other disciplines contributed more to variance (12%) than any other component. This supports extant literature that nurse to other discipline relationships is a critical element in the practice environment (Baggs, et al., 1999; Crocker & Scholes, 2009; Cropley, 2012; Gittell, et al., 2000; Koloroutis, 2004; Testa & Emery, 2014). These findings support the theoretical representation in that relationships in healthcare are complex and involve not only those between providers and patients but also the many interrelationships among and between the providers themselves. This highlights the need for trusting, respectful, authentic relationships both within and between disciplines. The Relationship Based Care involves not only the relationship between healthcare providers and patients but also those between the providers themselves. This complex web of interrelationships has clinical implications for quality of care and care outcomes. When the associations between nurse–physician relationships and patient outcomes were explored, a perfect correlation was found between greater collaboration and better patient outcome (Baggs, et al., 1999). Qualitative studies support this finding; nurses report that positive, caring
relationships between providers allow them more opportunity to share their knowledge of the
patients’ unique goals and concerns (Testa & Emery, 2014).

The nursing discipline, with its patient-specific and relationship-based view of healthcare,
is well positioned to lead efforts to redesign the healthcare system of the future (IOM 2010,
2015). Nursing models of care are universally built around relationships and have led to the
delivery of high quality and cost effective care in a variety of settings (Mason et al, 2015).
Nurse-designed models of care and interventions to support the dynamic, collaborative, and
mutually respectful relationships between nurses and other disciplines must continue to develop,
and nursing knowledge of the overarching importance of relationships should be promulgated
within the interdisciplinary community.

Nurse to organization. The Nurse to Organization component also contributed greatly to
variance of the scale (11.4%), indicating the high overall importance of the nurse-organization
relationship to the overall RBCE. This fits well with previous research linking organizational
culture, values, and policies to outcomes of care such as healthcare provider satisfaction,
patient/family satisfaction, patient morbidity, and mortality (Aiken, et al., 2008; Friese, Lake,
Aiken, Sloane, & Sochaslski, 2008, Lashinger & Leiter, 2006). Several items that best fit in the
nurse to other disciplines component also loaded to a lesser extent in the nurse to organization
component. This is understandable since it is known that the organizational culture can impact
the relationships between and among healthcare providers (Koloroutis, 2004; Manojlovich, 2005;
Testa & Emery, 2014).

The element of nurse to organization as a key component of the RBCE is unique to this
theoretical representation (Appendix B) and the PCA findings are congruent with the proposed
conceptual model. In addition, responses to the open ended question emphasized the importance
of collaboration, communication, and social determinants within the practice environment. These responses influenced the theoretical representation framing this study; the revised theoretical representation can be found in Appendix B1.

**Nurse to nurse: including self.** Findings of this study support the proposed theoretical representation in that the nurse to nurse relationship is a critical component of the RBCE. There is evidence that the relationships between nurses, and the ability of the nurse to know the self, are critical elements in the practice environment (Dougherty & Larson, 2010; Koloroutis, 2004; Watson 2008). The answers to the open ended question in this study support previous literature that nurse’s knowing and caring for the self is a critical element in the nurse’s ability to form relationships with others (Flanagan, 2009, Newman, 2008; Watson, 2008). Participants in the both the earlier qualitative (Testa & Emery, 2014), and in this study (in response to the open ended question) perceived self-care to be a critical component if one is to be fully present in relationships with others. Participants felt that one must be present for the self before being able to be fully present for others. This was expressed (in answer to the open ended question) in the following statement “it’s rare to find an individual who is able to be fully present to others for eight hours, let alone for a 12 hour shift”. Further research on the nurse’s relation to self would be helpful in increasing knowledge of the relationship based care environment. Interestingly, in the quantitative analysis of the survey items, those items that addressed the nurse to self did not load prominently on any component. The items related to nurse to self had factor loadings less than .5 and therefore were not included in the final solution. More research is needed on the nurse to self aspect of the relationship based care environment, and future studies should explore how the nurse to self concept fits into the relationship based care environment.
A recent study on nurse to nurse collaboration concluded that an improved relationship between nurses improves both patient care and nurse job satisfaction, but more research is needed in this area (Dougherty & Larson, 2010). In a previous qualitative study by this author, communication, collaboration, and social determinants were found to be potent intervening variables effecting the practice environment (Testa & Emery, 2014).

**Nurse to patient: Knowing the patient.** In the proposed theoretical representation, the fourth component was expected to be nurse to patient. Findings of this study align with extant literature and longstanding nursing knowledge that the nurse to patient relationship is an important element of the RBC environment. To truly know and effectively advocate for patients, nurses seek to understand the meaning of health and illness to the patient/family; actively collaborate with them, and come to know them as a whole person. Knowing the patient is a core component of nursing practice, and involves recognizing the person as a unique human being, respecting their values and beliefs, and preserving their dignity and autonomy. For nurses, knowing the patient is of critical importance, nurses seek to know the patient as a whole person, and the process is dynamic and transformative for both nurse and patient (Jones, 2006; MacLeod, 2011; Smith, 2011; Watson & Smith, 2004).

Coming to know the patient is a mutual process, based on the pattern of the individual’s life experience; within this process a partnership develops (Jones, 2013; Newman, 2008; Smith 2011). Knowing the patient has been linked to outcomes such as the quality of care and patient satisfaction (Della Monica, 2008; Radwin, Alster, & Rubin, 2003; Somerville, 2009). Interestingly, in the PCA the nurse-patient concept split into two distinct components – knowing the patient, and respecting the patient. Respecting the patient is often thought of as an intrinsic part of knowing the patient; yet findings of this study point to the need to separate the nurse to
patient concept into knowing the patient and respect for the patient. Findings support current knowledge and reinforce the importance of knowing the patient as a whole.

**Nurse to patient: Respecting the patient.** Respecting the patient/family is the cornerstone of the professional practice of nursing and is so integral to nursing practice that it is often an “unspoken” aspect of the nurse/patient relationship. The art of nursing involves caring for others with a high degree of respect for the whole person, being authentically present to others; and enabling and sustaining the deep belief system of other human beings (Watson, 1989; 2008). The first statement of the Code of Ethics for Nursing is that “the nurse acts with … respect for the inherent dignity, worth, and uniqueness of every individual unrestricted by constraints of social or economic status, personal attributes, or the nature of the health problem (American Nurses Association, 2001, p.1). Humanization, the disciplinary focus of nursing, cannot be achieved without first respecting patients/families, understanding the meaning that illness and health holds for them; and honoring their values, beliefs, and experiences (Willis, et al, 2008; Watson, 2008). The findings of this study support extant nursing disciplinary knowledge that respect for patients and families is integral to the nurse-patient relationship and is a critical component for the creation of a healing space. Further, the findings point to a need to refine the theoretical representation to explicitly name respect for the patient rather than to leave it as an assumed but “unspoken” part of the nurse patient relationship. The refined theoretical representation can be found in Appendix B1.

**Implications for Care Redesign**

Data from the NPRBCE scale will provide evidence based data supporting models of care that promote relationships between and among nurses, colleagues, organizational leaders, and patient/family units. The IOM (2010, 2015) has called upon nurses to help lead the redesign of
healthcare. The nurse-designed care models that have been most effective in improving the quality of care while limiting the costs of care universally incorporate relationship building as a central focus (Mason, et al., 2015). It is the human relationships in healthcare that provide patient/family and provider satisfaction and promote healing, and the NPRBCE scale provides a way to measure the impact of nurse-driven interventions to foster relationships between and among providers and patient/families. Improving these relationships will improve the practice environment by transforming the care experience for patients, families, and healthcare providers. Within relationship one comes to know the other person and in this process meaning is discovered and both persons are transformed (Jones, 2013). The ability to measure relationships provides the opportunity for growth, discovery, advocacy, and the creation of a safe healing place for healthcare delivery.

Data from the NPRBCE can be utilized to evaluate the RBCE and examine the impact that nurse-designed interventions and policies have over time. The scale will promote a practice environment wherein every health care provider knows the patient as a person, plans care around the patient’s goals and expectations, provides coordinated care across disciplines; and promotes a healing space for patients, families, and healthcare providers. The NPRBCE scale will enable nurses, other disciplines, and organizational leaders to assess the current state of the practice environment and the utility of innovative models of care enacted to improve relationships and provide a safe, healing space.

**Implications for Education**

Relationship between persons is the core and ontology of the discipline of nursing and should be prioritized in the development of nursing curriculum. As nursing curriculum focusing on relationship based care expands, nurses will be optimally prepared to lead an interdisciplinary
effort to design and implement care models that foster and promote RBC. The IOM (2010, 2015) has suggested that nurses lead the redesign of healthcare. The NPRBCE scale will allow for innovations in practice, development of nurse-designed models of care, and policies that promote the RBCE within the practice environment. Caring relationships, a core focus of the discipline of nursing, can be nurtured not only in the practice environment but also in educational curriculum. The nursing focus on relationships, and the multifaceted, dynamic model of NPRBCE presented in the theoretical representation (Appendix B1) can be useful in educating clinicians in multiple disciplines in the art of relationship building rather than purely in scientific knowledge.

There are many educational strategies to teach nurses and all health care providers to form caring, therapeutic relationships with patients and colleagues, including: seminars in which team-work, collaboration, and patient/family interactions are explored; self-evaluation and reflection on listening skills workshops; and dialogue concerning human relationships and healing. Curricular design and teaching strategies must embrace the centrality of caring relationships, both between persons and with the self, to health and well-being. A valid and reliable measure of the NPRBCE will allow for the assessment of educational strategies designed to foster the relationships between and among health care providers, patients/families, and organizations.

**Implications for Future Research**

A program of research including both quantitative and qualitative studies would be beneficial in expanding knowledge and improving the experience of healthcare for both patients and healthcare providers. The research trajectory on the nurse’s perception of the relationship based environment should proceed in the following manner. The NPRBCE scale should be
utilized across settings and populations to evaluate and further refine the scale. Next, data from the NPRBCE scale should be utilized to evaluate the effects of interventions, innovations, and models of care designed to improve the RBCE. The association between the NPRBCE scale score, patient satisfaction, nurse satisfaction, adverse events, healthcare outcomes, and healthcare costs should be determined. A research program focusing on RBCE should be knowledge-driven rather than method-driven; multiple methods can and should be used to study the RBCE.

Qualitative studies examining the perception of nurses and other healthcare providers about relationships, including the relationship with self, would extend nursing knowledge of the relationship based care environment. This study demonstrates the impact of intertwining both quantitative and qualitative data to enhance, enrich, and validate findings. The linkage of qualitative, quantitative, and mixed methods studies on the RBCE would add to nursing knowledge and make more explicit the importance of nurses within these complex, dynamic, and intertwining relationships within the practice environment. The redesign of healthcare must utilize nursing knowledge including programs of research designed to better understand and to promote a RBCE across units, hospitals, and health care systems.

**Implications for Policy**

A valid and reliable measure of the NPRBCE provides needed data to change and improve healthcare policies, models of care, and practice so as to improve the quality of care. With the NPRBCE scale, the impact of changes in care over time can be evaluated. Caring relationships that exist over time promote trust and enhance care quality (Koloroutis, 2004; Mason et al., 2015; Watson, 2008) Data from the NPRBCE scale can be utilized to link the RBCE to positive care outcomes such as patient satisfaction, nurse satisfaction, reduced medical errors, reduces length of stay, reduced morbidity and mortality, and lowered cost of healthcare.
The redesign of the United States healthcare system must include nursing disciplinary knowledge concerning the critical importance of caring, authentic relationships. Data from the NPRBC scale will provide an evidence-based measure of the effects of policy initiatives directed toward improving relationships, and allow for the development and evaluation of innovative models of care and the redesign of the health care system.

**Study Limitations**

This is the initial evaluation of the NPRBCE scale, the sample size was four hundred and seventy three completed surveys. The survey response rate was low at 13.2%. This may have been due to the relatively long length of the survey (70 items and 8 demographic questions) together with the lack of time that practicing Registered Nurses have to answer the survey. Self-selection bias may have occurred if the respondents were in some way different than the non-respondents. An assumption of this study and of survey research in general, is that participants answer honestly and there could be response bias if participants answer questions in a socially desirable manner rather than answer honestly. Additionally, this survey involved Registered Nurses working in direct care positions in hospitals in one state and may not be applicable to Registered Nurses in other states, countries, or practice settings. Further research is required to establish generalizability across populations of nurses.

**Summary**

The purpose of this study was to develop and psychometrically evaluate the NPRBCE scale. Nurses have been called upon to utilize their unique disciplinary knowledge to redesign healthcare so that it is patient-centric (IOM, 2010, 2015). The redesign of our healthcare system must be based on healing relationships, sharing of knowledge, cooperation, and collaboration amongst clinicians (IOM, 2010, 2015). Nursing is ideally placed to lead in this redesign effort.
due to the longstanding disciplinary focus on the importance of relationships between and among persons for the creation of a healing environment. The newly created NPRBCE scale will enable nurse leaders and researchers to measure the relationships within the practice environment, design and implement interventions to improve those relationships, and thereby create a high quality, patient centric, cost effective healing care delivery model. Utilizing the NPRBCE scale as a whole or any of its five subscales (nurse to organization, nurse to other disciplines, nurse to nurse, nurse to patient- knowing the patient, nurse to patient-respect for the patient) nurse researchers and leaders can evaluate and improve the RBCE and investigate the correlation between the RBCE and outcomes of care.

The recent update on the Future of Nursing Report (2015) recommends that the goals for nurse leaders today should be to: Design and implement research on evidence-based improvements to care, advocate for policy change, promote collaboration, and improve data collection using the unique disciplinary perspective of nursing. The development and psychometric evaluation of the NPRBCE scale represents a step forward in meeting these goals. Improvements in relationships within the practice environment are now measureable, and this measurement will promote evidence-based interventions and policies to improve the RBCE. These improvements may be in the RBCE as a whole or in any of its five components. Once the RBCE is evaluated in a specific setting, it may become apparent that one of the components needs improvement and interventions can be designed to foster those specific relationships. Data derived from the NPRBCE scale will support the development of relationship based care environments across settings and disciplines. The improvements in RBCE will be quantifiable, and linkage between these improvements, outcomes of care, and cost savings for healthcare systems can be demonstrated.
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Radwin, L., Alster, K., & Rubin, K. (2003). The development and psychometric testing of the Oncology Patients’ Perceptions of the Quality of Nursing Care Scale (OPPQNCS). *Oncology Nursing Forum*.


Lippincott, Williams, & Wilkins.


Appendix A

Review of Scales

<table>
<thead>
<tr>
<th>Author/ Year</th>
<th>Scale Name</th>
<th>Theoretical Framework</th>
<th>Sample</th>
<th>Total items/ subscales</th>
<th>Reliability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cossette, Cara, Ricard &amp; Pepin/ 2005</td>
<td>Caring Nurse-Patient Interaction(CNPI) Scale</td>
<td>Watson Caring Theory</td>
<td>Nurses and nursing students</td>
<td>70 total items 10 subscales (determined by literature): humanistic-altruistic values; faith-hope; sensitivity; human caring relationship; acceptance of feelings; problem solving; teaching-learning; supportive environment; gratification of needs; existential forces.</td>
<td>Internal consistency of entire scale .98; internal consistency of subscales range .73-.91</td>
</tr>
<tr>
<td>Cossette, Cote, Pepin, Ricard &amp; D’Aoust/ 2006</td>
<td>Caring Nurse-Patient Interaction Scale (CNPI – Short Scale)</td>
<td>Watson Caring Theory</td>
<td>Nurses</td>
<td>23 total items 4 subscales (determined by factor analysis): humanistic care; relational care; clinical care; comforting care.</td>
<td>Internal consistency of entire scale not reported; internal consistency of subscales range .61-.94</td>
</tr>
<tr>
<td>Nelson/ 2006</td>
<td>Caring Factor Survey</td>
<td>Watson Caring Theory</td>
<td>Patient</td>
<td>20 total items 2 items for each of the 10 caritas processes.</td>
<td>Not reported</td>
</tr>
<tr>
<td>DiNapoli, Nelson, Turkel, Watson. 2006</td>
<td>Revised Caring Factor Survey</td>
<td>Watson Caring Theory</td>
<td>Patient</td>
<td>10 total items 1 item for each of the 10 caritas processes.</td>
<td>Internal consistency for scale overall .89</td>
</tr>
<tr>
<td>DellaMonica2008</td>
<td>Nurse Caring Scale (NCS)</td>
<td>Literature review of qualitative</td>
<td>Patients</td>
<td>23 total items 3 subscales (determined by stage of cancer)</td>
<td>Internal consistency for scale</td>
</tr>
<tr>
<td>Author/ Year</td>
<td>Scale Name</td>
<td>Theoretical Framework</td>
<td>Sample</td>
<td>Total items/ subscales</td>
<td>Reliability</td>
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<tr>
<td>Weiss/ 1985</td>
<td>Collaborative Practice Scale (CPS)</td>
<td>Interaction theory</td>
<td>2 separate scales, one for physicians, one for nurses</td>
<td>Nurse scale: 9 total items 2 factors (derived from factor analysis): direct assertion of professional expertise; active clarification of mutual responsibilities MD scale: 10 total items total: 2 factors (derived from factor analysis): acknowledge nurse contribution;</td>
<td>Internal consistency for entire RN scale .8 factor one .77; factor two .70 Internal consistency for entire MD scale 0.84; factor one .72, factor two.72</td>
</tr>
</tbody>
</table>

Scales measuring relationships between nurses and other disciplines
Section a – nurse/physician scales
<table>
<thead>
<tr>
<th>Authors (Year)</th>
<th>Questionnaire Title</th>
<th>Source of Development</th>
<th>Description</th>
<th>Reliability Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shortell/1991</td>
<td>ICU nurse-physician questionnaire</td>
<td>Derived from the Organizational Culture Inventory</td>
<td>Measures organizational climate</td>
<td>48 total items 3 factors (derived from factor analysis): team orientation; people security; and task security. Internal consistency for entire scale not reported. Internal consistency for subscales .62-.88</td>
</tr>
<tr>
<td>Baggs/1994</td>
<td>Collaboration and satisfaction about care decisions</td>
<td>Review of the literature and conflict resolution theory</td>
<td>ICU Nurse-physician collaboration in making specific care decisions</td>
<td>9 items total 2 factors (derived from factor analysis) collaboration; satisfaction with decision making. Internal consistency for entire scale not reported. Internal consistency for collaboration subscale .93</td>
</tr>
<tr>
<td>Hojat/1999</td>
<td>Attitudes toward physician-nurse collaboration</td>
<td>Review of the literature</td>
<td>Nursing students and medical students</td>
<td>15 items total 4 subscales determined by factor analysis): teamwork; caring as opposed to curing; nurse’s autonomy; physicians dominance. Internal consistency for entire scale nursing students .85; medical students .84; Internal consistency for subscales not reported.</td>
</tr>
</tbody>
</table>
# Section b. nurses and multiple disciplines

<table>
<thead>
<tr>
<th>Author/Year</th>
<th>Scale Name</th>
<th>Theoretical Framework</th>
<th>Sample</th>
<th>Total items/subscales</th>
<th>Reliability</th>
<th>Discipline</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gittell/2000</td>
<td>Relationship Coordination (RC) Scale</td>
<td>Literature review</td>
<td>Collaboration among nurses, physicians, physical therapists, social workers, case managers, and patients</td>
<td>35 items total 4 factors in provider scale (derived from the literature): communication and 3 relationship dimensions: shared goals, shared knowledge, mutual respect.</td>
<td>Internal consistency for entire provider scale .85; internal consistency for subscales range .71-.84</td>
<td>Management</td>
</tr>
<tr>
<td>Orchard/2012</td>
<td>Assessment for Interprofessional Team Collaboration (AITC) Scale</td>
<td>Literature review</td>
<td>Collaboration among Registered Nurses, physiotherapists, social workers, occupational therapists, pharmacists, physicians, dietitians, practical nurses</td>
<td>37 items total; 3 factors(derived from factor analysis): partnership/ shared decision making; cooperation; coordination.</td>
<td>Internal consistency for entire scale .98; Internal consistency for subscales range .8 -.97</td>
<td>Nursing</td>
</tr>
<tr>
<td>Anthione/2014</td>
<td>Communication and Sharing of Information (CSI) Scale</td>
<td>Literature review</td>
<td>Measures communication and shared information between 3 groups: Nurse – physicians; physician – physician; nurse – nurse’s assistant</td>
<td>13 items total 3 subscales (derived from factor analysis): sharing of medical information; communication between physicians; communication between RN and nursing assistants.</td>
<td>Internal consistency for entire scale not reported. Internal consistency for subscales range .80-.87</td>
<td>Medicine</td>
</tr>
</tbody>
</table>
## Scales measuring relationships between nurses and organizations

<table>
<thead>
<tr>
<th>Author/ Year</th>
<th>Scale Name</th>
<th>Theoretical Framework</th>
<th>Sample</th>
<th>Total items/ subscales</th>
<th>Reliability</th>
<th>Discipline</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kramer &amp; Hafner/ 1989</td>
<td>Nursing Work Index (NWI)</td>
<td>Literature on job satisfaction and characteristics of Nursing Magnet hospitals</td>
<td>Nurses</td>
<td>65 total items 4 subscales (determined by literature review: work values; perceived productivity; job satisfaction; environment conducive to quality nursing care.)</td>
<td>Not Reported</td>
<td>Nursing</td>
</tr>
</tbody>
</table>

### Scales Based on the NWI Scale

<table>
<thead>
<tr>
<th>Author/ Year</th>
<th>Scale Name</th>
<th>Theoretical Framework</th>
<th>Sample</th>
<th>Total items/ subscales</th>
<th>Reliability</th>
<th>Discipline</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aiken &amp; Patrician/ 2000</td>
<td>Revised NWI</td>
<td>Developed from NWI</td>
<td>Nurses</td>
<td>55 total items 4 subscales (determined by factor analysis): autonomy; control over practice setting; nurse-patient relationships; organizational support.</td>
<td>Internal consistency entire scale .96; subscale range .80 – .93</td>
<td>Nursing</td>
</tr>
<tr>
<td>Lake/ 2002</td>
<td>PES - NWI</td>
<td>Developed from NWI</td>
<td>Nurses</td>
<td>31 total items 5 subscales (determined by factor analysis): nurse participation in hospital affairs, nursing foundations for quality of care;, nurse manager ability, leadership, and support of nurses; staffing and resource adequacy; nurse- patient relations.</td>
<td>Internal consistency. Entire scale individual level .82; hospital level .69. for all subscales range .71-.84 on the individual level; .64-.91 on the hospital level</td>
<td>Nursing</td>
</tr>
<tr>
<td>Study</td>
<td>Scale Details</td>
<td>Participants</td>
<td>Internal Consistency Details</td>
<td></td>
<td></td>
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<tr>
<td>Whitley &amp; Putzier/1994</td>
<td>Work Quality Index</td>
<td>Nurses</td>
<td>entire scale .94; subscale range .72-.91</td>
<td></td>
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</tr>
<tr>
<td></td>
<td>38 total items; 6 subscales (determined by factor analysis): work environment; autonomy; work worth; professional relationships; role enactment; benefits.</td>
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<tr>
<td>Adams, Bond &amp; Arber/1995</td>
<td>Ward Organization Features Scale (WOFS)</td>
<td>Nurses</td>
<td>entire scale .94; subscales range .66-.90</td>
<td></td>
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<tr>
<td></td>
<td>105 total items; 6 subscales (determined by factor analysis): physical environment; professional nursing practice; ward leadership; relationship with nursing colleagues; inter-professional relationships; control and discretion issues.</td>
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<tr>
<td>Nolan, Grant, Brown &amp; Nolan/1998</td>
<td>Assessment of Work Environment Schedule (AWES)</td>
<td>Nurses</td>
<td>entire scale .93; subscales range .74-.92</td>
<td></td>
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<tr>
<td></td>
<td>33 total items; 6 factors (determined by factor analysis): recognition and regard; workload; professional development; quality of care; working relationships; autonomy and decision making.</td>
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</table>
### Erickson, Duffy, Gibbons, Fitzmaurice, Ditomassi & Jones

- **Designed**: 1998, validated in 2004

<table>
<thead>
<tr>
<th>Author/Year</th>
<th>Scale Name</th>
<th>Theoretical Framework</th>
<th>Sample</th>
<th>Total items/subscales</th>
<th>Reliability</th>
<th>Discipline</th>
</tr>
</thead>
<tbody>
<tr>
<td>Erickson &amp; Duffy/ 2009</td>
<td>Revised PPE Scale (RPPE)</td>
<td>PPE Scale</td>
<td>Nurses</td>
<td>39 items; same 8 subscales (determined by factor analysis).</td>
<td>Internal consistency for entire scale .93; subscales range .8-.88</td>
<td>Nursing</td>
</tr>
</tbody>
</table>

**Scales measuring relationships among nurses (including relationship with self)**

<table>
<thead>
<tr>
<th>Author/Year</th>
<th>Scale Name</th>
<th>Theoretical Framework</th>
<th>Sample</th>
<th>Total items/subscales</th>
<th>Reliability</th>
<th>Discipline</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dougherty &amp; Larson/ 2010</td>
<td>The Nurse to Nurse Collaboration (NNC) Scale</td>
<td>Nursing literature</td>
<td>ICU nurses</td>
<td>5 subscales: problem solving; communication; coordination; shared process; professionalism.</td>
<td>Internal consistency for scale overall .89; internal consistency for subscales range .66-.91</td>
<td>Nursing</td>
</tr>
<tr>
<td>Nelson &amp; Watson/ 2011</td>
<td>Caring Factor Survey – Caring for Self (CFS – CS) Scale</td>
<td>Watson Caring Theory</td>
<td>nurses</td>
<td>10 items, each reflecting one caritas process.</td>
<td>Not Reported</td>
<td>Nursing</td>
</tr>
</tbody>
</table>
Appendix B

Initial Nurse’s Perception of the Relationship Based Care Environment Theoretical Representation
Appendix B₁

Revised Nurse’s Perception of the Relationship Based Care Environment Theoretical Representation
Appendix C
Reminder Emails

Subject: Reminder email one

Dear nursing colleague,

One week ago I emailed you asking you to please complete a 15 minute survey on your perception of the relationship based care environment on your unit and in your organization. If you have already completed it you have my utmost gratitude. If not, please click the link below to take the survey. I realize how busy you are and if you do not have time to complete the survey in one sitting you can save it and come back to it. Together we can make a difference, thank you very much.

LINK

Best Regards,

Denise Testa, RN, PhD(c)
William F. Connell School of Nursing

Subject: Reminder email two

Dear nursing colleague,

Two weeks ago I invited you to complete a 15 minute survey on your perception of the relationship based care environment in which you work. If you have already completed the survey I am very grateful. If not, please click the link below to take the survey. Your time and attention to this important subject is greatly appreciated.

LINK

Best Regards,

Denise Testa, RN, PhD(c)
William F. Connell School of Nursing
Appendix D

Flow Chart of Development Process

Review of the Literature

Qualitative Study Published December 2014

Theoretical Representation of NPRBCE
Appendix E

NPRBCE Scale Items Version One (71 items)

**Nurse to Nurse** (17 items)

Defined as the ability of nurses to care for, understand, and respect other nurses and the self, and to work seamlessly with other nurses towards a mutual goal of providing excellent and efficient care for patients.

1. I have a trusting relationship with other nurses
2. Nurses generally trust one another
3. Nurses have the same overarching goal
4. Nurses work well together
5. Nurses manage conflict in an effective manner
6. Nurses’ relationships with other nurses are considered important
7. I always try to report to work well rested
8. I recognize it when my stress level is high
9. I have effective coping mechanisms to deal with my stress
10. Nurses work well together to provide the best care for patients
11. Nurses work collaboratively to provide care
12. I am reflective in my practice
13. Nurses are open with each other
14. Nurses communicate well with one another
15. Nurses are open to the idea of other nurse
16. There is a sense of hurry when nurses communicate about patient care
17. I often feel stressed at work
Nurse to Patient (21 items)

Defined as the ability to know the person beyond their disease, show mutual respect, share knowledge, discuss and validate the unique experience of illness to the individual and family.

1. I treat my patients with respect
2. I am interested in the patient’s life outside the hospital
3. I value each of my patients as a whole person
4. I seek to understand the patient’s perception of their illness
5. I accept my patients beliefs and values
6. I plan my patient care in a way that meets their needs
7. I communicate effectively with my patients
8. I actively listen to the words of my patients
9. My patients trust me
10. My patients trust all the nurses on this unit
11. I partner with my patients to identify problems that compromise their health
12. Plan of care is guided by my patients preferences
13. I try to understand what is really important to my patients
14. I take the time to listen to my patients
15. Nurses spend enough time with their patients
16. I intentionally spend time listening to my patients
17. I am attentive to my patients spiritual needs
18. I actively seek to uncover the meaning of illness for my patients
19. I actively seek to understand the life experience of my patients
20. I promote and accept my patients emotions
21. Nurses and patients come together to promote health

**Nurse to Other Disciplines** (15 items)

Defined as collaborative decision making with mutual respect for the knowledge, expertise, and values of other disciplines

1. I have a trusting relationship with other disciplines
2. Nurse and other disciplines jointly participate in decisions
3. Nurse and other disciplines share information well
4. Nurses are open to ideas and values of members of other disciplines
5. Other disciplines open to the ideas and values of nursing
6. Nurses and other disciplines come together to discuss patient care
7. The future direction of the patients care is based on mutual exchange of ideas between nurses and other disciplines
8. I am able to articulate the nursing perspective of holistic care
9. Nurses respect the perspective of members of other disciplines
10. Other disciplines respect the perspective of nurses
11. Nurses are involved in interdisciplinary rounds to discuss the plan of care for their patients
12. Nurses and other disciplines show concern for each other when they are stressed
13. Nurses and other disciplines help each other
14. Nurses respect the knowledge and ability of members of other disciplines
15. Other disciplines respect the knowledge and ability of nurses
**Nurse to Organization** (18 items)

Defined as the nurse’s ability to participate in policy development, attain adequate resources for patient care, be respected by organizational leaders, and be supported in a professional practice that promotes nurse autonomy, decision making, and leadership.

1. On this unit nursing expertise is valued
2. This hospital allocates resources so that nurses can spend more time with their patients
3. On this unit, nurses participate in hospital policy development
4. On this unit relationships between nurses and patients are fostered
5. On this unit relationships between nurses and other health care providers are fostered
6. Relationships are a priority at this hospital
7. On this unit sensitivity to non-medical and spiritual dimensions of care are considered important
8. On this unit the professional practice of nurses is supported
9. On this unit nurses have a voice in the allocation of resources
10. On this unit the time I spend with my patients is valued by the unit leadership
11. On this unit continuity of care is considered when patient care assignments are made
12. My professional judgment matters greatly to the leadership of this unit
13. My professional judgment does not matter at all to the leadership of this unit
14. On this unit there is enough time to discuss patient care issues with my colleagues
15. On this unit I feel motivated to do my best for my patients
16. On this unit there is seamless delivery of care
17. On this unit I am always able to access the resources that my patients need
18. On this unit I am rarely able to access the resources that my patients need.
Appendix F

Expert Panel Content Validity Guide

The purpose of this scale is to measure nurse’s perception of the Relationship Based Care Environment. The Relationship Based Care environment is measured using four constructs, which are the relationships between: 1.) Nurses and Nurses, 2.) Nurses and Patients, 3). Nurses and Other Disciplines, and 4). Nurses and Organization.

Operational definitions are as follows:

**Nurse to Nurse:**

Defined as the ability of nurses to care for, understand, and respect other nurses and the self, and to work seamlessly with other nurses towards a mutual goal of providing excellent and efficient care for patients.

**Nurse to Patient:**

Defined as the ability to know the person beyond their disease, show mutual respect, share knowledge, discuss and validate the unique experience of illness to the individual and family.

**Nurse to Other Disciplines:**

Defined as collaborative decision making with mutual respect for the knowledge, expertise, and values of other disciplines.

**Nurse to Organization:**

Defined as the nurse’s ability to participate in policy development, attain adequate resources for patient care, be respected by organizational leaders, and be supported in a professional practice that promotes nurse autonomy, decision making, and leadership.

Instructions:
Please evaluate the items developed for each of the four constructs for relevance, readability, and understandability. All items will be scored on a four point Likert scale in the following manner:

1 = not (relevant, readable, understandable)
2 = somewhat (relevant, readable, understandable)
3 = relevant, readable, understandable
4 = very (relevant, readable, understandable)

<table>
<thead>
<tr>
<th>Item</th>
<th>Relevant</th>
<th>Readable</th>
<th>Understandable</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I respect my patients’ goals</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>2. I show authentic interest in the lives of my patients</td>
<td>4</td>
<td>4</td>
<td>4</td>
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<tr>
<td>3. I show interest in my patient’s perception of their illness</td>
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<td>4</td>
<td>4</td>
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<tr>
<td>4. I accept my patient’s beliefs and values without judgement</td>
<td>4</td>
<td>4</td>
<td>4</td>
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<tr>
<td>5. My intentional presence with my patients brings them comfort</td>
<td>4</td>
<td>4</td>
<td>4</td>
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<tr>
<td>6. I validate the unique experiences of my patients</td>
<td>3</td>
<td>4</td>
<td>4</td>
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<tr>
<td>7. I actively listen to the words of my patients</td>
<td>4</td>
<td>4</td>
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<tr>
<td>8. My interactions with my patients are genuine</td>
<td>4</td>
<td>4</td>
<td>4</td>
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<tr>
<td>9. I feel that patients generally trust all the nurses who deliver care</td>
<td>4</td>
<td>4</td>
<td>4</td>
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<tr>
<td>10. I partner with my patients to identify problems that compromise their health</td>
<td>4</td>
<td>3</td>
<td>4</td>
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<tr>
<td>11. My plan of care is guided by the patient’s preferences</td>
<td>4</td>
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<td>4</td>
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<tr>
<td>12. I focus on knowing what is important to my patients</td>
<td>4</td>
<td>4</td>
<td>4</td>
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<tr>
<td>13. I take the time to listen attentively to my patients</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>14. I have enough time to come to know my patients</td>
<td>4</td>
<td>4</td>
<td>3</td>
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<tr>
<td></td>
<td>Relevant</td>
<td>Readable</td>
<td>Understandable</td>
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<tr>
<td>15.</td>
<td>I come to know my patients as unique individuals</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>16.</td>
<td>I am aware of my patient’s spiritual beliefs</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>17.</td>
<td>I am engaged in uncovering the meaning of illness for my patients</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>18.</td>
<td>I adapt the environment of care to best fit with the pattern of the patients’ lives.</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>19.</td>
<td>I accept my patients’ emotions without judgement</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>20.</td>
<td>I am fully attentive to the meaning of health for my patients</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>21.</td>
<td>I have a trusting relationship with other disciplines</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>22.</td>
<td>I feel comfortable articulating my nursing perspective to members of other disciplines</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>23.</td>
<td>Nurses collaborate with other disciplines to make decisions</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>24.</td>
<td>Nurses share important information about the patients with other disciplines</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>25.</td>
<td>Other disciplines share important information about the patients with nurses</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>26.</td>
<td>Nurses and other disciplines have shared goals</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>27.</td>
<td>If conflict arises between nurses and other disciplines it is managed</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>28.</td>
<td>Nurses work with other disciplines to discuss patient care concerns</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>29.</td>
<td>Nurses and other disciplines exchange ideas to determine the future direction of patient care</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>30.</td>
<td>Nurses respect the perspective of other disciplines</td>
<td>4</td>
<td>4</td>
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<tr>
<td>31.</td>
<td>Other disciplines respect the perspective of nurses</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>32.</td>
<td>During interdisciplinary rounds nurses participate in discussions about the patient’s plan of care</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>33.</td>
<td>Nurses and other disciplines support each other</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>34.</td>
<td>Nurses and other disciplines help each other whenever possible</td>
<td>4</td>
<td>4</td>
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<tr>
<td></td>
<td></td>
<td>Relevant</td>
<td>Readable</td>
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<tr>
<td>35.</td>
<td>Nurses respect the knowledge of other disciplines</td>
<td>4</td>
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<tr>
<td>36.</td>
<td>Other disciplines respect the knowledge of nurses</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>37.</td>
<td>I have a trusting relationship with other nurses</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>38.</td>
<td>I use coping strategies that help me address my stress</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>39.</td>
<td>I am reflective in my practice</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>40.</td>
<td>I often have difficulty dealing with my stress</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>41.</td>
<td>Nurses trust one another</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>42.</td>
<td>Nurses share the goal of providing holistic care for their patients</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>43.</td>
<td>Nurses respect one another regardless of differences in age</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>44.</td>
<td>Nurses respect one another regardless of differences in educational level</td>
<td>3</td>
<td>4</td>
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<tr>
<td>45.</td>
<td>Nurses manage conflict effectively</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>46.</td>
<td>Nurses think that their relationships with other nurses is important</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>47.</td>
<td>Nurses report to work well rested</td>
<td>4</td>
<td>4</td>
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<tr>
<td>48.</td>
<td>Nurses recognize when their own stress level is high</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>49.</td>
<td>Nurses work together to provide holistic care for patients</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>50.</td>
<td>Nurses communicate effectively with one another</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>51.</td>
<td>Nurses openly share ideas regarding patient care with other nurses</td>
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<td>4</td>
</tr>
<tr>
<td>52.</td>
<td>Nurses are often rushed when communicating with other nurses about patient care</td>
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<td>4</td>
</tr>
<tr>
<td>53.</td>
<td>Nursing knowledge is valued by leadership</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>54.</td>
<td>Nurses have time to know their patient as a person</td>
<td>4</td>
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</tr>
<tr>
<td>55.</td>
<td>Nurses lead nursing policy and procedure development</td>
<td>3</td>
<td>4</td>
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<td></td>
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<td>Relevant</td>
<td>Readable</td>
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</tr>
<tr>
<td>56.</td>
<td>Relationships between nurses and patients are fostered</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>57.</td>
<td>Relationships between nurses and other disciplines are promoted</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>58.</td>
<td>Relationships between and among disciplines are a priority</td>
<td>4</td>
<td>4</td>
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<tr>
<td>59.</td>
<td>Sensitivity to psychosocial and spiritual dimensions of care is considered important</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>60.</td>
<td>Nurses and other disciplines are guided by a professional practice model</td>
<td>4</td>
<td>4</td>
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<tr>
<td>61.</td>
<td>Nurses participate in decisions around allocation of resources</td>
<td>4</td>
<td>3</td>
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<tr>
<td>62.</td>
<td>The time I spend with my patients is valued by the leadership</td>
<td>3</td>
<td>4</td>
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<tr>
<td>63.</td>
<td>An environment has been created that supports the professional judgement of nurses</td>
<td>4</td>
<td>4</td>
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<tr>
<td>64.</td>
<td>There is enough time to discuss patient care issues with my colleagues</td>
<td>4</td>
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<tr>
<td>65.</td>
<td>The environment supports continuity in patient care</td>
<td>3</td>
<td>4</td>
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<tr>
<td>66.</td>
<td>The perspective of bedside nurses is respected within this environment</td>
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<td>4</td>
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<tr>
<td>67.</td>
<td>I feel motivated to improve the care of my patients</td>
<td>3</td>
<td>4</td>
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<tr>
<td>68.</td>
<td>I am able to advocate for my patients</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>69.</td>
<td>I am able to access the resources that my patients need</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>70.</td>
<td>I am rarely able to access the resources that my patients need</td>
<td>3</td>
<td>4</td>
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</table>
Appendix G
Recruitment email

Subject: Upcoming survey

I will be conducting a research study regarding the nurse’s perception of the relationship based care environment. As part of my doctoral work in nursing at Boston College, I am asking you to reflect on the environment in your unit and in the organization in which you work.

Your responses to this survey are very important; they will help to create a measure of the relationship based care environment.

The survey is expected to take you approximately 15 minutes to complete. One week from today the link to the electronic survey will be sent to you. Two reminder emails that contain the survey link will be sent to you in the two weeks following the launch of the survey.

Your response is voluntary and all of your responses will be kept confidential. This survey is fully anonymous; there is no linkage between your responses and your identity.

The Boston College Institutional Review Board and the Partners Hospitals Institutional Review Board have approved this study. If you have any questions or concerns regarding this study please feel free to contact me at 617-552-6936 or testade@bc.edu.

I very much appreciate your help with this study, and it is my hope that together we can improve the healthcare delivery environment of the future.

Many thanks,

Denise Testa, RN, CRNA
PhD candidate, William F. Connell School of Nursing
Boston College
Appendix H

Survey Consent

Dear colleague,

You are being asked to participate in a research study titled “Development and Psychometric Evaluation of the Nurse’s Perception of the Relationship Based Care Environment Scale”. You were selected to participate in this project because you are a Registered Nurse practicing in a direct care role in the state of Massachusetts. The purpose of this study is to measure how nurses’ perceive the relationships within their practice environment. This study will be conducted through this online survey, which should take you approximately 15 minutes to complete. There are no direct benefits to you, but if you do choose to participate your answers may provide needed information to assess and improve the environment of care in the future. You will not be compensated for the time you take to complete this survey and there are no costs to you associated with your participation.

I will make every effort to keep your responses and your identity confidential. The survey is fully anonymous; there is no linkage between your answers and your identity or IP address. Please note that regulatory agencies, the Boston College Institutional Review Board, and Boston College internal auditors may review research records. Your participation is voluntary. If you choose not to participate it will not affect your relations with Boston College or with the Brigham and Women’s hospital. You are free to withdraw or skip questions for any reason and there are no penalties for withdrawing or skipping questions.

If you have questions or concerns concerning this research you may contact me by email at testade@bc.edu or by phone at 617-552-6936 or contact my faculty advisor, Dorothy.jones@bc.edu. If you have questions about your rights as a research participant, you may contact the Office for Research Protections, Boston College 617-552-4778 or irb@bc.edu. This study was reviewed by the Boston College Institutional Review Board and its approval was granted on February 10, 2016.

If you agree to the statements above and agree to participate in this study, please press the “Consent given” button below.

Consent given

Denise Testa, PhD(c), RN, CRNA along with Dorothy Jones, EdD, RN, FAAN
Appendix I

Final Nurse’s Perception of the Relationship Based Care Environment Scale (70 items)

I am asking for your assistance in evaluating this survey concerning nurses’ perceptions of the relationships within their practice environment. All answers will remain anonymous and you are free to withdraw your participation at any time without any negative consequence to yourself. The survey is divided into four sections. Section one concerns the relationships on the unit where you work, section two refers to relationships within the organization where you work, section three is one question for you to answer in your own words, and section four is a demographic sheet. Brief instructions will be given at the beginning of sections two, three, and four.

Section 1

Instructions: Please answer all questions on a six point scale where

1 = strongly disagree (you feel strongly that you have a very different opinion than the statement)
2 = disagree (you have a different opinion that the statement)
3 = somewhat disagree (you have a slightly different opinion than the statement)
4 = somewhat agree (you slightly agree with the statement)
5 = agree (you agree with the statement)
6 = strongly agree (you feel strongly that you agree with the statement)

On my unit:

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<thead>
<tr>
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<th>SD</th>
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<th>sD</th>
<th>sA</th>
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<th>SA</th>
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<tr>
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</table>
1. I respect my patients’ goals
2. I show authentic interest in the lives of my patients
3. I show interest in my patient’s perception of their illness
4. I accept my patient’s beliefs and values without judgement
5. My intentional presence with my patients brings them comfort
6. I validate the unique experiences of my patients
7. I actively listen to the words of my patients
8. My interactions with my patients are genuine
9. I feel that patients generally trust all the nurses who deliver care
10. I partner with my patients to identify problems that compromise their health
11. My plan of care is guided by the patient’s preferences
12. I focus on knowing what is important to my patients
13. I take the time to listen attentively to my patients
14. I have enough time to come to know my patients
15. I come to know my patients as unique individuals
16. I am aware of my patient’s spiritual beliefs
17. I am engaged in uncovering the meaning of illness for my patients
18. I adapt the environment of care to best fit with the pattern of the patients’ lives.
19. I accept my patients’ emotions without judgement
20. I am fully attentive to the meaning of health for my patients
21. I have a trusting relationship with other disciplines
22. I feel comfortable articulating my nursing perspective to members of other disciplines
23. Nurses collaborate with other disciplines to make decisions
24. Nurses share important information about the patients with other disciplines
25. Other disciplines share important information about the patients with nurses
26. Nurses and other disciplines have shared goals
27. If conflict arises between nurses and other disciplines it is managed
28. Nurses work with other disciplines to discuss patient care concerns
29. Nurses and other disciplines exchange ideas to determine the future direction of patient care
30. Nurses respect the perspective of other disciplines
31. Other disciplines respect the perspective of nurses
32. During interdisciplinary rounds nurses participate in discussions about the patient’s plan of care
33. Nurses and other disciplines support each other
34. Nurses and other disciplines help each other whenever possible
35. Nurses respect the knowledge of other disciplines
36. Other disciplines respect the knowledge of nurses
37. I have a trusting relationship with other nurses
38. I use coping strategies that help me address my stress
39. I am reflective in my practice
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<th>SD</th>
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<th>sD</th>
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<tbody>
<tr>
<td>40.</td>
<td>I often have difficulty dealing with my stress</td>
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<tr>
<td>41.</td>
<td>Nurses trust one another</td>
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<tr>
<td>42.</td>
<td>Nurses share the goal of providing holistic care for their patients</td>
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<tr>
<td>43.</td>
<td>Nurses respect one another regardless of differences in age</td>
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<tr>
<td>44.</td>
<td>Nurses respect one another regardless of differences in educational level</td>
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<td>45.</td>
<td>Nurses manage conflict effectively</td>
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<td>46.</td>
<td>Nurses think that their relationships with other nurses is important</td>
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<td>47.</td>
<td>Nurses report to work well rested</td>
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<td>48.</td>
<td>Nurses recognize when their own stress level is high</td>
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<tr>
<td>49.</td>
<td>Nurses work together to provide holistic care for patients</td>
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<tr>
<td>50.</td>
<td>Nurses communicate effectively with one another</td>
<td></td>
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<tr>
<td>51.</td>
<td>Nurses openly share ideas regarding patient care with other nurses</td>
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<tr>
<td>52.</td>
<td>Nurses are often rushed when communicating with other nurses about patient care</td>
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</table>

** SD=Strongly Disagree, D=Disagree, sD=Somewhat Disagree, sA= Somewhat Agree, A=Agree, SA=Strongly Agree

Section 2

In this section the response format is the same but the items are preceded by the phrase in this organization.

<table>
<thead>
<tr>
<th></th>
<th>SD</th>
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<th>sD</th>
<th>sA</th>
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<th>SA</th>
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<tbody>
<tr>
<td>53</td>
<td>Nursing knowledge is valued by leadership</td>
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</table>
Nurses have time to know their patient as a person

Nurses lead nursing policy and procedure development

Relationships between nurses and patients are fostered

Relationships between nurses and other disciplines are promoted

Relationships between and among disciplines are a priority

Sensitivity to psychosocial and spiritual dimensions of care is considered important

Nurses and other disciplines are guided by a professional practice model

Nurses participate in decisions around allocation of resources

The time I spend with my patients is valued by the leadership

An environment has been created that supports the professional judgement of nurses

There is enough time to discuss patient care issues with my colleagues

The environment supports continuity in patient care

The perspective of bedside nurses is respected within this environment

I feel motivated to improve the care of my patients

I am able to advocate for my patients
69 I am able to access the resources that my patients need
70 I am rarely able to access the resources that my patients need

** SD=Strongly Disagree, D=Disagree, sD=Somewhat Disagree, sA= Somewhat Agree, A=Agree, SA=Strongly Agree

Section 3

Please respond to the following question:

Please describe in your own words any issues that were not represented in this scale that you think affect the relationship based care environment?

The reporting of all comments will be fully anonymous. Please check this box if you do not wish to be quoted even if your response can not be linked to you in any way.

Section 4 Demographic Sheet

1. Age _____ years
2. Gender  Male _____ Female ______
3. To which racial or ethnic group do you most identify
   African-American (non-Hispanic) _____ Asian/ Pacific Islander ______
   Caucasian (non- Hispanic) _____ Latino or Hispanic _____ Native American _____
   Other _______
4. Highest educational level  Diploma ______ Associate Degree ______ Baccalaureate
   Degree _____ Master’s Degree ______ Doctor of Nursing Practice Degree ______
   Doctor of Philosophy Degree ______ Other _______
5. For how many years have you practiced as a Registered Nurse _______ years
6. Where do you currently practice as a Registered Nurse
_____ Brigham and Women’s Hospital _____ Faulkner Hospital _____ Other

7. For how many years have you practiced as a Registered Nurse on this unit _______ years

8. Current Position  Staff Nurse ______ Nurse Manager ________ Nurse Educator _______
Other ________
Appendix J

Final Solution after Principal Components Analysis, 5 Components, 56 Items

Component 1: Nurse to other disciplines

1. Nurses and other disciplines have shared goals
2. Other disciplines share information with nurses
3. Nurses and other disciplines support each other
4. I have a trusting relationship with other disciplines
5. Other disciplines respect the perspective of nurses
6. Nurses and other disciplines exchange ideas
7. Nurses work with other disciplines to discuss patient care
8. Conflict between nurses and other disciplines is managed
9. Other disciplines respect the knowledge of nurses
10. Nurses and other disciplines help each other
11. Nurses collaborate with other disciplines
12. Nurses participate in interdisciplinary rounds
13. Nurses respect the perspective of other disciplines
14. Nurses share information with other disciplines
15. Nurses respect the knowledge of other disciplines

Component 2: Nurse to organization

16. The environment supports nursing judgment
17. The time I spend with my patients is valued by leadership
18. Nursing knowledge is valued by leadership
19. The perspective of nurses is respected in this environment
20. Enough time to discuss patient care with my colleagues
21. Relationships between nurses and patients are promoted
22. The environment supports continuity in patient care
23. Nurses participate in decisions about resource allocation
24. Relationships between nurses/other disciplines promoted
25. I am able to access the resources that my patients need
26. Relationships between and among disciplines are a priority
27. Nurses have time to know their patient as a person
28. I am able to advocate for my patients

Component 3: Nurse to nurse

29. Nurses manage conflict effectively
30. Nurses respect one another regardless of differences in age
31. Nurses communicate effectively with one another
32. Nurses respect one another regardless of differences in education
33. Nurses trust one another
34. Nurses think that their relationships with other nurses are important
35. Nurses openly share ideas regarding patient care with other nurses
36. Nurses work together to provide holistic care for patients
37. Nurses share the goal of providing holistic care for their patients
38. I have a trusting relationship with other nurses

Component 4: Nurse to patient: Knowing the patient

39. I engage in uncovering the meaning of illness for my patients
40. I adapt the environment of care to the pattern of patients’ lives
41. I am fully attentive to the meaning of health for my patients
42. I focus on knowing what is important to my patients
43. I am aware of my patients’ spiritual beliefs
44. I come to know my patients as unique individuals
45. I partner with my patients to identify health problems
46. My plan of care is guided by the patients’ preferences
47. I take the time to listen attentively to my patients
48. I have enough time to come to know my patients

Component 5: Nurse to patient: Respect for the patient

49. I show interest in my patient’s perception of their illness
50. I validate the unique experiences of my patients
51. I show authentic interest in the lives of my patients
52. I actively listen to the words of my patients
53. My interactions with my patients are genuine
54. My intentional presence with my patients brings them comfort
55. I respect my patients’ goals
56. I accept my patients’ beliefs and values without judgement
Appendix K

Permission to Survey Boston College GNA Members

February 16, 2016

Dear Denise,

You may expand your survey population to include the 250-member Boston College School of Nursing Graduate Nurse Association. I think that your on-line survey entitled The Nurse's Perception of the Relationship Based Care Environment will be informed by this population expansion.

Sincerely,

Patricia A Tabloski, PhD, GNP-BC, FGSA, FAAN
Associate Professor
GNA Advisor