

RELATIONSHIPS OF THE NURSING PRACTICE ENVIRONMENT,
NURSING SILENCE BEHAVIORS, AND NURSE
PERCEIVED PATIENT SAFETY

A DISSERTATION

SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE
DEGREE OF DOCTOR OF PHILOSOPHY
IN THE GRADUATE SCHOOL OF THE
TEXAS WOMAN'S UNIVERSITY

COLLEGE OF NURSING

BY

JANE GIBSON KOSAREK M.S., M.B.A.

DENTON, TEXAS

MAY 2018

Copyright © by Jane Gibson Kosarek

DEDICATION

For my husband, children, and grandchildren

ACKNOWLEDGMENTS

I would like to gratefully acknowledge the many individuals who have contributed to this dissertation. I would like to thank my committee chairs, Dr. Vicki Zeigler and Dr. Elizabeth Restrepo. Dr. Restrepo stepped in during my final semester and did a phenomenal job in getting me to the point of final defense and beyond. I would like to thank Dr. Patti Hamilton for her expertise and special support during this long process, and Dr. Rebecca Keele for joining my committee at the last moment to review my work. I would also like to acknowledge Ms. Sandy Owens for answering my many questions regarding the IRB submission, Mr. Zoheb Allam for his statistical expertise and guidance, and Ms. Michan Chowritmootoo for her assistance in the formatting of this document. I want to thank Dr. Alyce Ashcraft for her willingness to distribute information about my survey to the RN-BSN students at Texas Tech University Health Science Center, College of Nursing; and Dr. Virginia Utterback at Texas A&M University, College of Nursing, for her mentorship and encouragement. Finally, I would like to thank my family for their understanding during this challenging time.

ABSTRACT

JANE GIBSON KOSAREK

RELATIONSHIPS OF THE NURSING PRACTICE ENVIRONMENT, NURSING SILENCE BEHAVIORS, AND NURSE PERCEIVED PATIENT SAFETY

MAY 2018

Medical errors have an increasing prevalence in the healthcare system today, and communication is often at the heart of many of these issues. Challenges or difficulties for nurses in communicating about errors, as well as instances of nursing silence about errors, have been noted in the healthcare and nursing literature. While numerous studies have noted constraints and difficulties in speaking up about errors, no studies were found that examined silence in specific relationship to the nurse practice environment and patient safety. The primary purpose of this study was to explore how the nursing practice environment influences nursing silence and patient safety. The secondary purpose was to examine the reliability of the Four Forms of Employee Silence Scale by Knoll and van Dick (2013) for use in the nursing population. A predictive, correlational research design was used. Several variables were examined, including perceptions of the nurse practice environment, preferences and motives for silence, and perceptions of patient safety. A total of 91 registered nurses completed an electronic survey via the Internet which contained 58 questions. Parametric and non-parametric statistics were used for data analysis. The data revealed that the perception of the nurse practice environment is a

predictor of both preferences for silence, and the perception of patient safety. In addition, findings were that nurses working in Magnet® practice environments do not differ significantly from those in Non-Magnet® practice environments in terms of silence behaviors related to the observation of errors. Results suggest that feelings of fear and lack of value sometimes exist among nurses in both Magnet® and Non-Magnet® organizations. Despite the promotion of collaborative relationships, participation, and feedback by Magnet® organizations, these activities do not seem to result in less frequent silence behaviors among registered nurses working in these organizations. Finally, the Four Forms of Employee Silence Scale was noted to be a reliable scale for use in the nursing population. Based upon the findings, implications and recommendations for future study are made.

TABLE OF CONTENTS

	Page
DEDICATION.....	ii
ACKNOWLEDGMENTS	iii
ABSTRACT.....	iv
LIST OF TABLES.....	ix
LIST OF FIGURES.....	xi
 Chapter	
I. INTRODUCTION.....	1
Problem of Study.....	2
Rationale for the Study	11
Theoretical Framework.....	19
Assumptions.....	23
Research Questions and Hypotheses.....	23
Research Question 1.....	23
Research Question 2.....	24
Research Question 3.....	24
Research Question 4.....	25
Research Question 5.....	25
Definitions of Terms.....	29
Limitations.....	35
Summary.....	36
II. REVIEW OF LITERATURE	37
Literature Search.....	40
Data Identification	40
Data Reduction.....	41
Discussion.....	41
Medical Hierarchy	42
Interdisciplinary Diversity	68

Prosocial Behavior.....	81
Unsafe Cultural Climate.....	98
Synthesis.....	111
Conclusion.....	116
III. PROCEDURE FOR COLLECTION AND TREATMENT OF DATA.....	118
Research Design.....	119
Setting.....	122
Population and Sample.....	123
Participant Recruitment.....	124
Sample Size.....	125
Delimitations.....	128
Protection of Human Subjects.....	128
Instrumentation.....	130
Practice Environment Scale of the Nursing Work Index.....	131
Four Forms of Employee Silence Scale.....	132
Hospital Survey on Patient Safety.....	134
Demographic Profile.....	136
Data Collection.....	136
Treatment of Data.....	138
Summary.....	145
IV. ANALYSIS OF DATA	146
Research Design.....	146
Instruments.....	147
Data Preparation.....	149
Preliminary Analysis.....	150
Description of the Sample.....	150
Relationships between Independent Variables.....	157
Relationships between Silence Scales.....	159
Relationships between Nurse Practice Environment and Continuous Dependent Variables.....	161
Primary Analyses.....	162
Research Question 1.....	162
Research Question 2.....	165
Research Question 3.....	167
Research Question 4.....	171

Research Question 5.....	173
Hypothesized Model – Path Analysis Findings.....	174
Summary of the Findings	176
V. SUMMARY OF THE STUDY.....	180
Summary	182
Discussion of the Findings.....	187
Conclusions and Implications.....	202
Recommendations for Future Study.....	205
Summary.....	207
REFERENCES	208
APPENDICES	226
A. Demographic Profile.....	220
B. Practice Environment Scale of the Nursing Work Index.....	229
C. Four Forms of Employee Silence Scale.....	233
D. Hospital Survey on Patient Safety.....	237
E. Study Flyer on Internet Participants.....	239
F. Institutional Review Board Approval Letter.....	241

LIST OF TABLES

Table	Page
1.1 Hypotheses, Variables, Variable Levels, and Statistical Procedures	27
1.2 Definition of Terms	32
2.1 The Medical Hierarchy	49
2.2 Interdisciplinary Diversity	69
2.3 Prosocial Behavior	82
2.4 Unsafe Cultural Climate	96
3.1 Study Variables and Statistics for Primary Analyses	136
4.1. Frequencies and Percentages for Categorical Demographic Variables	141
4.2. Means and Standard Deviations for Continuous Demographic Variables	147
4.3. Frequencies and Percentages for Categorical Independent Variables	148
4.4. Means and Standard Deviations for Continuous Subscales	150
4.5. Frequencies and Percentages for Preference to Remain Silent by Nurse Practice Environment	151
4.6. Means and Standard Deviations for Perception of the Nurse Practice Environment by Nurse Practice Environment	152
4.7. Spearman's Correlation between Preference to Remain Silent and Perception of the Nurse Practice Environment	153
4.8. Means and Standard Deviations for Silence Scales	154
4.9. Means and Standard Deviations for Continuous Dependent Variables by Nurse Practice Environment	155

4.10.	Summary of Linear Regression Model Predicting Preference to Remain Silent from Perception of the Nurse Practice Environment	157
4.11.	Spearman's Correlation between Perception of Nurse Practice Environment and Preference to Remain Silent	158
4.12.	Summary of Linear Regression Model Predicting Perception of Patient Safety from Preference to Remain Silent	159
4.13.	Spearman's Correlation between Perception of Patient Safety and Preference to Remain Silent.....	160
4.14.	Summary of Linear Regression Model Predicting Perception of Patient Safety from Perception of the Nurse Practice Environment	161
4.15.	Summary of Multiple Linear Regression Model Predicting Perception of Patient Safety from Perception of the Nurse Practice Environment and Preference to Remain Silent	162
4.16.	Pearson's Correlation between Perception of Nurse Practice Environment and Perception of Patient Safety	164
4.17.	Pearson's Correlation between Silence Subscales with Perception of Nurse Practice Environment	166
4.18.	Summary of Reliability of the Four Forms of Employee Silence Scale.....	167

LIST OF FIGURES

Figure	Page
1.1. Process of Care and Outcomes Model	23
1.2. Hypothesized Relationships among Perceptions	30
4.1. Hypothesized Relationships among Perceptions	168
4.2. Hypothesized Relationships among Perceptions – Findings	169
5.1. Hypothesized Relationships among Perceptions – Findings	194

CHAPTER I

INTRODUCTION

Healthcare in the United States today is performed within a technically complex, rapidly changing, and poorly integrated system (James, 2013). The need to quickly assimilate new knowledge and to integrate ever-changing technology, combined with staffing shortages, disconnections across systems of inpatient and outpatient care, and cost-related production demands, contributes to a high prevalence of preventable adverse events, defined as medical errors that cause harm to patients (James, 2013). An evidence-based estimate by James (2013) suggested that over 400,000 patients die each year from preventable adverse events in the nation's hospitals. In addition, serious non-lethal harm appears to occur 10 to 20 times more commonly than lethal harm (James, 2013).

Increasing awareness of medical errors that cause harm to patients and their contributing factors is evident in the healthcare literature. Communication is identified as a major underlying theme in these adverse events (Lee, Mills, Neily, & Hemphill, 2014), and The Joint Commission describes communication as a leading root cause of sentinel events (The Joint Commission, 2014). Studies also suggest that hesitancy in speaking up may be a contributing factor in communication errors and adverse events (Okuyama, Wagner, & Bijnen, 2014). Nurses are on the front lines of care in hospitals; therefore, the role they play in communicating about errors is an important one in terms of protecting

patients. The willingness of nurses to speak up about medical errors, versus a propensity to remain silent, impacts the delivery of safe patient care (Maxfield, Grenny, Lavandero, & Groah, 2010).

Silence behavior, or a propensity to remain silent, has been documented in a variety of organizations including the military, educational institutions, police agencies, and the airline industry (Knoll & van Dick, 2013). Silence has also been noted within healthcare organizations and among several healthcare disciplines, including nursing (Belyansky et al. 2011; Firth-Cozens, Redfern, & Moss, 2004; Lyndon, 2008; Lyndon et al., 2012; Maxfield, Grenny, McMillan, Patterson & Switzler, 2005; Maxfield, Lyndon, Kennedy, O'Keefe, & Zlatnik, 2013; Souba, Lucey, Desmak, & Notestine, 2011; Sutcliffe, Lewton, & Rosenthal, 2004).

Multiple studies demonstrate challenges specific to nurses in speaking up about safety concerns, and reveal constraints in communication, as well as silence about observed errors (Abdi, Delgoshaei, Ravaghi, Abbasi, & Heyrani, 2015; Attree, 2007; Beckmann & Cannella, 2015; Canam, 2008; Churchman & Doherty, 2010; Espin, Lingard, Baker, & Regehr, 2006; Elder, Brungs, Nagy, Kudel, & Render, 2008; Gardezi et al., 2009; Hashemi, Nasrabadi, & Asghari, 2012; Maxfield et al., 2010). The nursing care environments described in these studies seem to promote constraint and/or silence about safety concerns and errors, and appear to be dominated by hierarchy, power gradients, intimidation, and conflict. Alternatively, environments that promote speaking up are characterized by collaboration and support (Nembhard, Labao, & Savage, 2015).

This chapter defines the problem of nursing silence in nurse practice environments and describes the rationale for the study. A theoretical framework to guide the direction of the study is identified. The chapter also presents the assumptions, research questions, and hypotheses for the study, provides conceptual and operational definitions of key terms, and delineates the limitations of the study.

Problem of Study

Levitis, Lidicker, and Freund (2009) defined behavior as the action or inaction of an individual to internal and/or external stimuli, while the Merriam-Webster Online Dictionary (2016) defined behavior as the response of an individual to his or her environment. Influences on behavior include individual characteristics such as genetics, and thoughts and feelings, as well as environmental characteristics such as social identity, social interaction at the micro and macro levels, and the physical environment (House of Lords, Parliament, United Kingdom, Science and Technology Committee, 2011). The complexity of these influences makes it difficult to understand how they interact to create behavior (House of Lords, Parliament, United Kingdom, Science and Technology Committee, 2011). Based upon this information, however, it is clear that any particular behavior results from some combination of individual and environmental factors.

As described by Milliken and Morrison (2003), the organizations in which individuals work are known to influence behavior. Many registered nurses are employed in hospitals, where the influencing organizational environments are termed *nursing practice environments*. According to Lake (2002), the nursing practice environment is

defined as, "...the organizational characteristics of a work setting that facilitate or constrain professional nursing practice" (p. 178). Lake (2002) noted, "The nursing practice environment is a complex construct to conceptualize; ... its theoretical foundations are the sociology of organizations, occupations, and work" (p. 177). The nursing practice environment of any individual hospital demonstrates the organization's approach to solving problems and managing work in a complex and unpredictable environment (Lake, 2002). A bureaucratic approach to management emphasizes command and control through hierarchy and rule enforcement, while the professional approach emphasizes collegiality among professionals and nursing decision-making authority (Lake, 2002). These distinctive approaches to management may influence individual registered nurse behavior.

Within all types of organizations, including healthcare organizations, individuals (employees) choose how they wish to communicate. They may use silence or voice behavior, based upon factors within the organization (Milliken & Morrison, 2003), such as the bureaucratic or collegial approaches delineated by Lake (2002). Employees may use silence to withhold information and opinions, or voice to convey them (Van Dyne, Ang, & Botelo, 2003). Employee silence can be defined as, "the omission of work related opinions, information about problems, concerns and suggestions, derived from a conscious decision taken by the employee" (Pacheco, Moniz, & Caldeira, 2015, p. 294). Silence may include failure to speak up, avoidance of real concerns, or reporting issues to the wrong people (Maxfield et al., 2013). In the context of the nursing practice

environment, nursing silence can be conceptualized as an inability, unwillingness, or hesitation in communicating about issues that can lead to poor patient outcomes (Maxfield et al., 2010; Okuyama et al., 2014). Voice can be defined as the expression of ideas, information, and opinions (Van Dyne et al., 2003), and is generally considered synonymous with speaking up. In the healthcare environment, speaking up may include the expression of information about mistakes, poor judgment, or rule breaking (Okuyama et al., 2014). “Speaking up is expected to have an immediate preventive effect on human errors or to improve technical and system deficiencies” (Okuyama et al., 2014, p. 1).

Both silence and voice behaviors are demonstrated by individuals within the internal confines of the organization. The use of voice (or speaking up) must be distinguished from *whistleblowing*. Whistleblowing, in relationship to nursing, “... is the action taken by a nurse who goes outside the organization for the public’s best interest when it is unresponsive to reporting the danger through the organization’s proper channels” (Lachman, 2008, p. 126). Therefore, in the case of whistleblowing, the employee (or nurse) identifies the occurrence of serious harm, and reports it, using all appropriate internal procedures, but the organization does not take action to address the harm (Lachman, 2008).

Although silence behaviors and voice behaviors initially appear as opposites, Van Dyne, Ang, and Botelo (2003) noted that both behaviors are actually independent, multidimensional constructs. In fact, Knoll and van Dick (2013) found four specific dimensions for silence behavior, which they identified as motives for silence: (a)

acquiescent silence in which the individual believes his or her opinion is not valued, (b) quiescent silence in which the individual is fearful, (c) prosocial silence in which the individual values affiliation and social relationships, and (d) opportunistic silence in which the individual is seeking self-advantage. Knoll and van Dick (2013) developed and tested the Four Forms of Employee Silence Scale (FFESS) to assess these four distinct motives for silence.

Organizational silence, a term coined by Morrison and Milliken (2000), describes a dangerous phenomenon in which employees "...withhold their opinions and concerns about organizational problems" (p. 707), obscuring problems that can impact the safety of affected individuals (Knoll & van Dick, 2013). Numerous examples of the negative impact of organizational silence abound in non-healthcare-related literature, and include sexual harassment in the military, abuse in educational institutions, and corruption in police agencies (Knoll & van Dick, 2013). The aviation industry also provides examples. Employee failures in questioning directives and reporting problems up the chain of command, promoted by strict hierarchical structures, contributed to errors that caused both passenger and crew deaths (Pronovost, 2010). Similarly, the organizational culture at the National Aeronautics and Space Administration (NASA) prevented the communication of critical safety information and allowed risks to continue, contributing to the loss of the Columbia space shuttle and its seven-astronaut crew in 2003 (Columbia Accident Investigation Board, NASA, 2003).

Organizational silence has also been described in a variety of healthcare disciplines and organizations (Maxfield et al., 2013). According to Manasse, Turnbull, and Diamond (2002), the hierarchical nature of medical practice creates a barrier to communication and, therefore, to patient safety. This authority gradient, based upon real or perceived power, prevents the communication of problems and the ongoing correction of errors (Manasse, Turnbull, & Diamond, 2002). In a study of medical residents, Sutcliffe, Lewton, and Rosenthal (2004) found that communication may be withheld when hierarchical differences exist between communicators or when there are perceptions that communication is not open between communicators. Using a focus-group design, Firth-Cozens, Redfern, and Moss (2004) interviewed residents, interns, nurses, and nursing students in England and found that speaking up about poor care was constrained by hierarchy and the medical culture. Maxfield, Grenny, McMillan, Patterson, and Switzler (2005) attempted to link silence behaviors among healthcare workers (including physicians, nurses, clinical care staff, and administrators), to preventable errors in patient safety. Maxfield et al. (2005) found that difficulties in communicating about issues such as broken rules, mistakes, incompetence, and poor teamwork may contribute to decreased patient safety and quality of care. A majority of healthcare workers observed these violations on a regular basis, yet less than 10% of workers reported them to anyone (Maxfield et al., 2005).

In a study of physicians, nurses, and midwives at two academic perinatal units in the US, Lyndon (2008) found that hierarchy and power were issues of concern to all

study participants, and that complex social interactions and pressures can impact health care decision making. Gillespie, Chaboyer, Longbottom, and Wallis (2010) studied surgeons, anesthetists, and nurses working in an operating room at a large hospital in Australia. Gillespie et al. (2010) noted that communication failures often resulted from differences in professional culture, identity, and level of responsibility across the various disciplines, and from entrenched organizational practices. Souba, Lucey, Desmak, and Notestine (2011) found that department chairs in academic medicine perceived that problems impairing performance were insufficiently discussed and confronted by their faculty members. Belyansky et al. (2011), in a survey of surgical residents and attending physicians, noted that the residents often felt impaired in voicing concerns to their supervising physicians. Lyndon et al. (2012) demonstrated that the likelihood of speaking up about safety concerns among registered nurses and obstetricians was related to differing professional roles and perceptions of patient harm. Only 36% of clinicians reported they were likely to speak up to an authority figure about improper hand hygiene despite a medium to high potential for harm (Lyndon et al., 2012). Maxfield et al. (2013) also found organizational silence to be evident in labor and delivery areas, reporting that only 9% of physicians, 13% of midwives, and 13% of nurses who observed safety concerns expressed their concerns to the individual involved. These studies, performed across multiple healthcare disciplines and organizations, demonstrate that issues deeply pervading the healthcare organizational environment can discourage communication and openness about problems. These barriers, in turn, can impact patient safety.

According to Rodgers (2005), the organizational context in nursing may be particularly influenced by power differentials. Nurses may feel empowered to voice concerns about issues that can lead to poor patient outcomes or may view themselves as unable or unwilling to communicate, therefore, remaining silent (Committee on the Work Environment for Nurses and Patient Safety, Institute of Medicine, 2004). Multiple studies in the literature describe challenges specific to nurses in speaking up about safety concerns. Some studies reveal not only constraint in communication, but also silence about observed errors. Espin, Lingard, Baker, & Regehr (2006) found that nurses were reluctant to judge the errors of team members citing scope-of-practice issues as the rationale for not reporting errors. Espin et al. (2006) concluded that inter-professional etiquette may allow many errors to go unreported. Attree (2007) interviewed registered nurses from three acute-care hospitals in England and found disincentives to raising concerns about patient care quality. Nurses reported feelings of "...conflict between their professional duty to raise concerns about quality and their predictions that negative consequences would result from raising concerns" (Attree, 2007, p. 400).

Elder, Brungs, Nagy, Kudel, and Render (2008) used focus groups to study intensive care nurses' communication regarding medical errors, and found that nurses were distressed and conflicted about error reporting. Rather than confronting peers about errors, nurses preferred reporting them to managers "... and used complex maneuvering when communicating with physicians about physician error" (Elder et al., 2008, p. 162). Canam (2008) studied pediatric clinical nurse specialists and found that silence was

related to the medical dominance in the practice environment that preferred a technical versus a caring discourse. Gardezi et al. (2009) examined silence, power, and communication in the operating room, and noted that nurses' use of silence can result from situational contexts, and institutional and structural patterns of power that exist within nurse-physician communication. Maxfield et al. (2010) identified three areas where difficulties in speaking up about errors occurred and were often not discussed (i.e., dangerous shortcuts, incompetence, and disrespect), and suggested that solving these problems would require significant changes to cultural and social norms. Churchman and Doherty (2010) interviewed registered nurses at an acute care hospital in England, and found that the nurses only questioned doctors' decisions in certain circumstances, such as when hospital policies supported their positions. Hashemi, Nasrabadi, and Asghari (2012) studied nurses working in Iranian hospitals and found that factors such as the safety culture and prior inadequate responses to errors within the organization created aversions for nurses in reporting errors. Abdi, Delgoshaei, Ravaghi, Abbasi, and Heyrani (2015) studied physicians and nurses working in an Iranian intensive care unit. Data revealed that nurses were less satisfied with teamwork quality than physicians, believed their suggestions were not well received, and were less comfortable communicating their concerns (Abdi et al., 2015). Problems with hierarchy were referenced by some nurse participants (Abdi et al., 2015). Finally, Beckmann and Cannella (2015) surveyed Labor and Delivery registered nurses and found that prior perceived intimidation regarding oxytocin administration influenced the way the nurses clarified orders and asked

questions, suggesting that intimidation may impact nursing actions regarding patient safety.

These studies noted here demonstrate that issues inherent in the nursing organizational environment, or more specifically, the nurse practice environment, can inhibit and/or silence communication about patient safety concerns and errors. As stated by Nembhard et al. (2014), shared values within an organization determine whether speaking up is allowed, promoted, and expected. Environments characterized by collaboration and service seem to promote speaking up (Nembhard et al., 2014), while those environments characterized by hierarchy, power differentials, intimidation, and conflict seem to promote constraint and/or silence (Attree, 2007; Beckmann & Cannella, 2015; Gardezi et al., 2009; Gillespie et al., 2010; Lyndon et al., 2012; Manasse et al., 2002; Maxfield et al., 2013). Attainment of a more detailed and thorough understanding of nurses' perceptions of nurse practice environments and their distinct relationships to silence behaviors and patient safety was deemed a significant area of focus for this study.

Another important area in this study was an exploration of the specific types of nurse practice environments and their relationships to nursing silence behaviors. In 1983, the American Nurses' Credentialing Center (ANCC) and the American Nurses' Association led efforts to improve the practice environments for nurses (American Nurses' Credentialing Center [ANCC], 2016). They created the Magnet® Recognition Program to recognize health care organizations for excellence in nursing service delivery and patient care quality (ANCC, 2016). They identified 14 differentiating characteristics,

termed the *Forces of Magnetism*, which were aimed at the improvement of the work environment for nurses (ANCC, 2018). These characteristics provide a framework for hospitals seeking to enhance the organizational environment in which nurses practice: (a) quality of nursing leadership, (b) organizational structure, (c) management style, (d) personnel policies and programs, (e) professional models of care, (f) quality of care, (g) quality improvement, (h) consultation and resources, (i) autonomy, (j) community and health organization, (k) nurses as teachers, (l) image of nursing, (m) inter-disciplinary relationships, and (n) professional development (ANCC, 2018). The fostering of collaborative care is also a key component of the Magnet® concept (ANCC, 2016). Understanding the influence of these efforts to improve the practice environment in terms of their relationship to silence behaviors was an additional focus for this study.

Rationale for the Study

Each year, thousands of patients die from preventable adverse events in the nation's hospitals (James, 2013). Many of these preventable events involve failures in communication (The Joint Commission, 2014). Communication has been identified as an essential theme in maintaining safe patient care (Lee, Mills, Neily, & Hemphill, 2014; Lyndon et al., 2015). Without good communication, learning ceases, appropriate mechanisms for prevention are not established, and the problems that cause errors persist (Manasse et al., 2002). The hesitancy or inability to proactively identify and resolve problems in clinical care can create safety risks that impact patient care quality and can result in patient harm (Lyndon et al., 2015). Nurses are among the key communicators in

the healthcare environment. They need to better understand the forces that shape their communication behaviors and the impact of these behaviors on the health of others.

Explaining human behavior is a complex and difficult task (Ajken, 1991).

Influences on behavior include both individual and environmental characteristics, and the complexity of the influences makes it challenging to understand how behavior occurs (House of Lords, Parliament, United Kingdom, Science and Technology Committee, 2011). However, it is clear that any particular behavior results from some combination of individual and environmental factors. From an environmental perspective, the organizations in which individuals work are known to influence behavior (Milliken & Morrison, 2003). For registered nurses, these organizations are often hospitals, and the influencing organizational environments are termed *nursing practice environments*. The nursing practice environment of any individual hospital demonstrates the way in which the work is managed and problems are solved (Lake, 2002). Management approaches may range from those with a focus on bureaucracy and control to those based upon collegiality and professionalism (Lake, 2002). These dissimilar management approaches may influence individual registered nurse behavior in different ways.

Within all types of organizations, including hospital organizations, individuals may choose silence behavior to withhold information and opinions, or voice behavior (speaking up) to express them, based upon factors within the organization (Milliken & Morrison, 2003; Van Dyne, 2003). A review of the literature reveals that silence has been described in a broad range of healthcare disciplines and organizations, including

hospitals (Belyansky et al., 2011; Firth-Cozens et al., 2004; Lyndon, 2008; Lyndon et al.; 2012; Manasse et al., 2002; Maxfield et al., 2013; Maxfield et al., 2005; Maxfield et al.; 2013; Souba et al., 2011; Sutcliffe et al., 2004). These studies demonstrate that pervasive issues in the healthcare organizational environment can discourage communication, and ultimately impact patient safety.

Multiple studies in the literature also describe challenges specific to hospital-based nurses in speaking up about safety concerns, with some studies revealing not only constraint in communication, but also silence about observed errors (Abdi et al., 2015; Attree, 2007; Beckmann & Cannella, 2015; Canam, 2008; Churchman & Doherty, 2010; Elder et al., 2008; Espin et al., 2006; Gardezi et al., 2009; Hashemi et al., 2012; Maxfield et al., 2010). Just as the studies cited from the broader healthcare environment demonstrated, these studies establish that problems inherent in the nursing organizational environment, or more specifically, the hospital-based nursing practice environment, can inhibit and/or silence communication about patient safety and errors.

Lake (2002) described how the nursing practice environment of any individual hospital denotes the approach the organization takes in managing and problem solving amid complexity and unpredictability. Nembhard et al. (2015) found that shared values within an organization determine whether speaking up is allowed, promoted, and expected. Environments characterized by collaboration, teamwork, and service promote speaking up (Nembhard et al., 2015), while those environments characterized by hierarchy, power gradients, intimidation, and conflict promote constraint and/or silence

(Attree, 2007; Beckmann & Cannella, 2015; Gardezi et al., 2009; Gillespie et al., 2010; Lyndon et al., 2012; Manasse et al., 2002; and Maxfield et al., 2013). Increased knowledge of the nursing practice environments in which nurses choose to speak up or to remain silent, as well as knowledge of underlying motives for silence is essential in further understanding any potential impacts these behaviors have on patient safety.

Knoll and van Dick (2013) viewed silence as a multidimensional construct influenced by organizational structure and triggered by specific motives, or reasons underlying silence behaviors. As stated previously, Knoll and van Dick (2013) described the four specific motives for silence behavior as acquiescent, quiescent, prosocial, and opportunistic. In acquiescent silence, the individual withholds information and believes his or her opinions are not valued (Morrison & Milliken, 2000). These individuals tolerate the status quo and view their circumstances as normal (Pinder & Harlos, 2001). In quiescent silence, the individual withholds information based upon the need for self-protection (Knoll & van Dick, 2013). Fear is the key motive for silence in this case (Pinder & Harlos, 2001). Prosocial silence occurs when the individual withholds information because he or she values affiliation and social relationships (Knoll & van Dick, 2013). The motive in this case is cooperation based upon concern for others rather than on fear (Van Dyne et al., 2003). Finally, opportunistic silence occurs when an individual withholds information in order to seek an advantage (Knoll & van Dick, 2013). The motive underlying opportunistic silence is self-interest, and may involve withholding information to mislead, disguise, or confuse (Knoll & van Dick, 2013).

Knoll and van Dick (2013) acknowledged that little is known about how individual motives contribute to the occurrence of silence. Their development of the FFESS was to assess the four distinct motives for silence in employees (Knoll & van Dick, 2013). They tested the scale on employees of small, mid-size, and large organizations who were also psychology students at a distant German learning institution. Participants included non-management, lower management, and middle management employees.

There is no doubt that silence has been demonstrated among hospital-employed registered nurses, that these behaviors are linked to patient safety, and that certain types of organizational environments may promote silence more than others. However, in an integrative review of scholarly journal articles published between 2000 and 2015; using the search terms of nursing, silence, speaking up, practice environment, organizational culture, and patient safety; no studies were found that examined nurses' perceptions of nurse practice environments related to silence behaviors (involving preferences [or choices] for silence or motives [underlying reasons] for silence as defined by Knoll and van Dick, 2013), and patient safety. Understanding how nurses' perceptions of nurse practice environments are specifically related to silence behaviors and patient safety is important to improving care for patients.

In addition, in the review, no studies were found that examined Magnet® and Non-Magnet® nurse practice environments in relationship to silence behaviors (involving preferences [choices] for silence and motives [underlying reasons] for silence, as described by Knoll and van Dick (2013). The Magnet® Recognition Program has

historically emphasized concepts of collaborative care, responsible and authoritative decision making, and the importance of feedback and advocacy (ANCC, 2018). Especially in light of the aims of the Magnet® program, and the volume of studies citing silence in nursing, the lack of evidence surrounding nursing silence behaviors in Magnet® and Non-Magnet® practice environments was concerning. Since the nursing practice environment of any hospital denotes how the organization approaches management and problem solving (Lake, 2002), understanding how the organizational implementation of the forces of magnetism relate silence behaviors was also considered important in this study.

Finally, no studies could be found in which the FFESS was used to assess the silence behaviors of hospital-employed registered nurses. Understanding how nursing practice environments may shape nursing silence behaviors is important to unraveling why and when nurses “...withhold their opinions, their knowledge, and especially their concerns” about patient safety (Knoll & van Dick, 2013, p. 350).

The primary purpose of this study, therefore, was to explore how the nursing practice environment influences silence and patient safety. Within this purpose, the following issues were examined: (a) how hospital-employed, staff-level, registered nurses’ perceptions of nurse practice environments relate to the frequency of their preferences to remain silent regarding observed patient safety events; (b) how the frequencies of hospital-employed, staff-level, registered nurses’ preferences for silence in nurse practice environments relate to their perceptions of patient safety; (c) how hospital-

employed, staff-level, registered nurses' perceptions of nurse practice environments relate to their perceptions of patient safety; and (d) how hospital-employed, staff-level, registered nurses' perceptions of nurse practice environments relate to their motives for silence. In addition, since no study could be found which used the FFESS in the nursing population, a secondary purpose of this study was to examine the reliability of the scale in this population.

Better understanding of the relationships of nursing perceptions, preferences and motives for silence, and perceptions of patient safety is important for nursing practice, nursing education, and nursing research. In the US today, medical errors are an all too common reality. As the largest group of healthcare providers (Huber, 2010), nurses play a pivotal role in communication. In the increasingly complex nursing practice environment, any limitations placed on communication due to organizational factors need to be examined and corrected in order to ensure optimal patient safety, and decrease any potential for negative patient outcomes. Increased understanding of how silence behaviors manifest themselves will allow practicing nurses, nurse managers, and nurse administrators to plan and develop strategies to address their prevention.

The findings of this study are also pertinent for nursing education. According to Dunn et al. (2007), the traditional methods of educating physicians, nurses, and other healthcare workers has focused largely on the development of proficiency in the technical arena. Less attention has been devoted to educating these professionals as to how to work together (Dunn et al. 2007). Good communication is integral to both teamwork and

patient safety (Gillespie et al., 2010). In order to meet the challenges of the evolving healthcare system and the increasing calls for greater teamwork, nursing education curricula must begin to include information on both appropriate and inappropriate patterns of communication among professionals. In addition, providing students with a better understanding of potential motives for silence behaviors and of practice environment characteristics that do not promote speaking up behaviors will be important for helping them to understand the impact of their communications on patient safety.

Finally, the findings of this study are significant for the field of nursing research. In response to the global nursing shortage, key decision makers have called for the strengthening of leadership and management capabilities within nursing practice (International Council of Nurses, 2006). Similarly, Edwardson (2007) stated, "...there is a growing appreciation of the need for knowledge related to the use, costs, quality, delivery, organization, financing, and outcomes of health care and how nursing practice influences these variables" (p. 4). The need for knowledge supports the significance of this study for nursing research. Increasing knowledge of the relationships of hospital-employed, staff-level registered nurses' perceptions of practice environments, preferences and motives for silence behaviors within these practice environments, and their perceptions of patient safety can increase the understanding of both patient safety and medical error. In addition, the new evidence obtained provides a foundation upon which other studies related to organizational behavior among nurses may be based.

Lyndon et al. (2012) suggested that very little is known about when and how clinicians speak up to address safety concerns. Jeffs, Lingard, Berta, and Baker (2012) noted that limited understanding exists as to how interactions at an organizational level influence the perceptions and responses of clinicians to patient safety events. Based upon this limited evidence, the rationale for this study was the need to understand specifically how nurses' organizational perceptions influence nursing silence behaviors, and subsequently, patient safety within nurse practice environments. Additionally, the measurement of silence behaviors in different types of practice environments (i.e., in Magnet® and Non-Magnet® hospitals), was needed to better understand how differences in practice environments influence both nursing silence and patient safety.

Theoretical Framework

The process of care and outcomes model by Lucero, Lake, and Aiken (2009) serves as the theoretical framework for the study. This model is derived from Donabedian's structure, process, and outcomes model and the quality health outcomes model by Mitchell, Ferketich, and Jennings (Lucero, Lake, & Aiden, 2009). Donabedian (2005) characterized the quality of medical care as based upon three elements: structure, process, and outcomes. The structure of care was described as the administrative and operational functions through which the care is provided; the process of care was described as the appropriateness and completeness of care provision; and the outcomes of care were defined in terms of patient recovery, restoration of function, and survival (Donabedian, 2005). The quality health outcomes model further expanded upon the

Donabedian model by providing a framework relating how multiple, dynamic factors and feedback can affect the quality of care (Mitchell, Ferketich, & Jennings, 1998).

The process of care and outcomes model incorporates elements of structure, process, and outcomes, along with a greater consideration of the care environment and patient factors (Lucero et al. 2009). The model displays the process of care within a closed linear framework which depicts inter-relationships between that process and the environment, patient factors, and outcomes (Lucero et al. 2009). According to Lucero et al. (2009), “The care environment, patient factors, and the process of care have a direct relationship on outcomes” (p. 2301). The care environment includes the structural characteristics of the nursing and hospital organization (Lucero et al. 2009). Patient factors include the characteristics of the patient (Lucero et al., 2009). The process of care includes nursing and medical care activities and communication, and outcomes include both patient and organizational results (Lucero et al., 2009).

Within the linear framework of the process of care and outcomes model, the nursing practice environment, preferences and motivations for silence, and patient safety were examined (see Figure 1.1). The multidimensional construct of nursing silence behavior was conceptualized within the context of the process of care, and as influenced by both nursing and organizational characteristics. For example, as a registered nurse observes a patient safety event; defined as “...any type of error, mistake, incident, accident, or deviation, regardless of whether or not it results in patient harm” (AHRQ, 2017, para. 1) during the process of care; he or she must make a decision to either address

the event or to remain silent. The decision to take action is based upon a motive, which is influenced by nursing and organizational characteristics. Motives may be acquiescent, quiescent, prosocial, or opportunistic. Applying the process of care and outcomes model, registered nurse decisions to address observed patient safety events or to remain silent, based upon underlying motives, subsequently have a direct influence on patient and organizational outcomes.

The major variables for this study are depicted within the process of care and outcomes model in Figure 1.1. Within the nursing care environment, the variables included hospital- employed, staff-level, registered nurse perceptions of the nursing practice environment; and hospital-employed, staff-level, registered nurse motives for silence as described by Knoll and van Dick (2013). Knoll and van Dick described motives for silence as follows: (a) acquiescent silence in which the individual believes his or her opinion is not valued, (b) quiescent silence in which the individual is fearful, (c) prosocial silence in which the individual values affiliation and social relationships, and (d) opportunistic silence in which the individual is seeking self-advantage. The type of nurse practice environment (Magnet® or Non-Magnet®) was also assessed. The variables examined for the process of care included: the frequency with which hospital-employed, staff-level, registered nurses prefer to address observed patient safety events, and the frequency with which hospital-employed, staff-level, registered nurses prefer to remain silent regarding observed patient safety events. The patient and organizational

outcome variable was the hospital-employed, staff-level, registered nurse overall perception of patient safety.

Figure 1.1. Process of Care and Outcomes Model

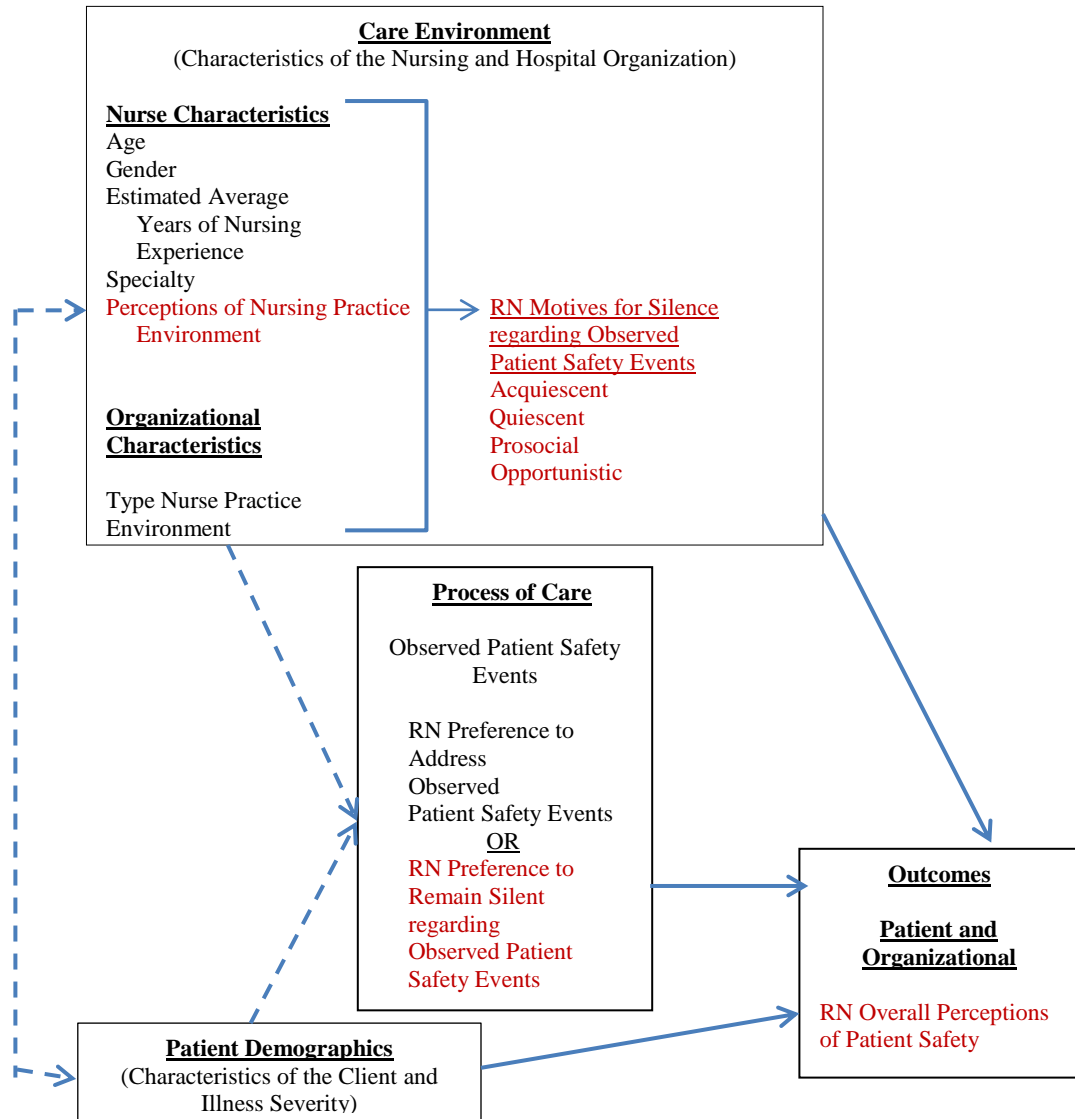


Figure 1.1. Process of care and outcomes model (Lucero et al., 2009) depicting study variables. The items in red font indicate the major variables for the study. The solid blue lines and arrows indicate direct relationships. The care environment, the process of care, and patient factors (demographics) have a direct relationship to outcomes of care. The dashed blue lines and arrows indicate influencing or indirect relationships. The care environment and patient factors influence the association between the process of care and outcomes (R. Lucero, personal communication, July 19, 2016).

Assumptions

The assumptions for the study are as follows:

- Silence behaviors occur in all organizations.
- Registered nurses' preferences (choices) to address or remain silent about observed patient safety events during the process of care can influence the ways in which errors are identified and resolved.
- The sum of interactions between the care environment (nurse and organizational characteristics), the patient, and the process of care produce patient and organizational outcomes.
- Hospital-employed staff-level registered nurses are the most prevalent care providers in the care environment, and as such, they are in a prime position to assess the quality of care in the institution in which they work.

Research Questions and Hypotheses

The research questions and hypotheses for the study are as follows:

Research Question 1

- How do hospital-employed, staff-level, registered nurses' perceptions of Magnet® and Non-Magnet® nurse practice environments relate to the frequency of their preferences to remain silent regarding observed patient safety events?
 - **Hypothesis 1A:** Hospital-employed, staff-level, registered nurses' perceptions of the nurse practice environment will have a direct relationship to the

frequency of their preferences to remain silent regarding observed patient safety events.

- **Hypothesis 1B:** Hospital-employed, staff-level, registered nurses' perceptions of both Magnet® and Non-Magnet® nurse practice environments will be negatively correlated with the frequency of their preferences to remain silent.

Research Question 2

- How do the frequencies of hospital-employed, staff-level, registered nurses' preferences for silence in nurse practice environments relate to their perceptions of patient safety?
 - **Hypothesis 2A:** Hospital-employed, staff-level, registered nurses' preferences for silence will have a direct relationship with their perceptions of patient safety.
 - **Hypothesis 2B.** Hospital-employed, staff-level, registered nurses' perceptions of patient safety in both Magnet® and Non-Magnet® environments will be negatively related to their preferences to remain silent.

Research Question 3

- How do hospital-employed, staff-level, registered nurses' perceptions of nurse practice environments relate to their perceptions of patient safety?
 - **Hypothesis 3A:** Hospital-employed, staff-level, registered nurses'

perceptions of the nurse practice environment will have a direct relationship to their overall perceptions of patient safety.

- **Hypothesis 3B:** Hospital-employed, staff-level, registered nurses' perceptions of the nurse practice environment will have an indirect relationship to their preferences to remain silent and their overall perceptions of patient safety.
- **Hypothesis 3C:** Hospital-employed, staff-level, registered nurses' perceptions of the nurse practice environment will be positively related to their perceptions of patient safety.

Research Question 4

- How do hospital-employed, staff-level, registered nurses' perceptions of nurse practice environments relate to their motives for silence?
 - **Hypothesis 4:** Hospital-employed, staff-level, registered nurses' perceptions of both Magnet® and Non-Magnet® nurse practice environments will be negatively related to their motives for silence.

Research Question 5

- What is the reliability of the Four Forms of Employee Silence Scale?

The specific hypotheses are also listed in Table 1.1, along with their associated variables, variable levels, and statistical procedures.

Table 1.1.

Hypotheses, Variables, Variable Levels, and Statistical Procedures

Number	Hypothesis	Independent Variable Name	Independent Variable Level	Dependent Variable Name	Dependent Variable Level	Statistic
1A	Hospital-employed, staff-level, registered nurses' perceptions of the nurse practice environment will have a direct relationship to the frequency of their preferences to remain silent regarding observed patient safety events	Registered Nurse Perceptions of the Nurse Practice Environment (exogenous)	Interval	Frequency of Registered Nurse Preferences to Remain Silent regarding Observed Patient Safety Events (endogenous)	Ordinal	Simple Linear Regression
1B	Hospital-employed, staff-level, registered nurses' perceptions of both Magnet® and Non-Magnet® nurse practice environments will be negatively correlated with the frequency of their preferences to remain silent	Registered Nurse Perceptions of the Nurse Practice Environment (Magnet® and Non-Magnet®)	Interval	Frequency of Registered Nurse Preferences to Remain Silent regarding Observed Patient Safety Events	Ordinal	Spearman's rank-order Correlation

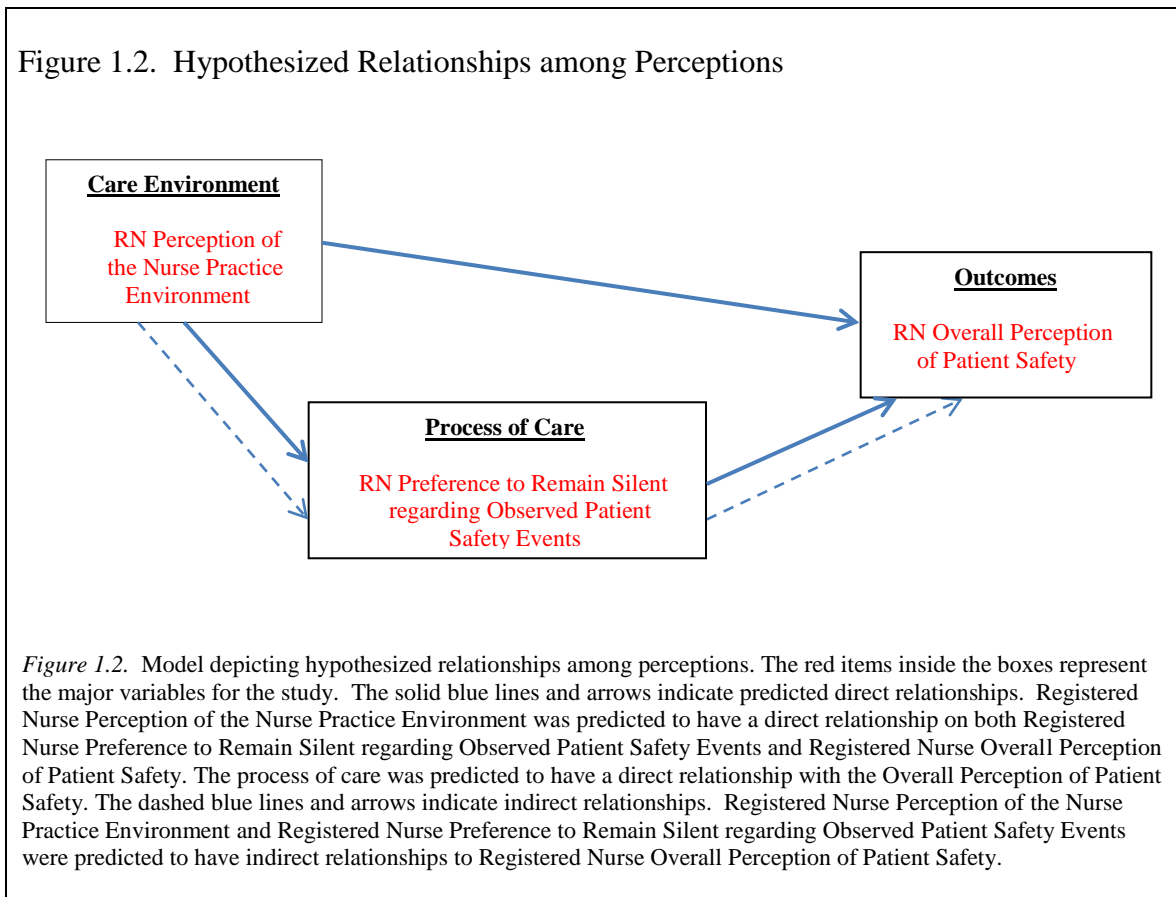
Continued

2A	Hospital-employed, staff-level, registered nurses' preferences to remain silent will have a direct relationship to their overall perceptions of patient safety	Frequency of Registered Nurse Preferences to Remain Silent regarding Observed Patient Safety Events (exogenous)	Ordinal	Registered Nurse Overall Perceptions of Patient Safety (endogenous)	Interval	Simple Linear Regression
2B	Hospital-employed, staff-level, registered nurses' perceptions of patient safety in both Magnet® and Non-Magnet® environments will be negatively related to their preferences to remain silent.	Registered Nurse Overall Perceptions of Patient Safety (exogenous)	Interval	Frequency of Registered Nurse Preferences to Remain Silent regarding Observed Patient Safety Events (endogenous)	Ordinal	Spearman's rank-order Correlation
3A	Hospital-employed, staff-level, registered nurses' perceptions of the nurse practice environment will have a direct relationship to their overall perceptions of patient safety	Registered Nurse Perception of the Nurse Practice Environment (exogenous)	Interval	Registered Nurse Overall Perceptions of Patient Safety (endogenous)	Interval	Simple Linear Regression

Continued

3B	Hospital-employed, staff-level, registered nurses' perceptions of the nurse practice environment will have an indirect relationship to their preferences to remain silent and to their overall perceptions of patient safety	Registered Nurse Perception of the Nurse Practice Environment (exogenous)	Interval	Frequency of Registered Nurse Preferences to Remain Silent regarding Observed Patient Safety Events (endogenous) and Registered Nurse Overall Perceptions of Patient Safety (endogenous)	Ordinal, Interval	Multiple Linear Regression
4B	Hospital-employed, staff-level, registered nurses' perceptions of both Magnet® and Non-Magnet® nurse practice environments will be negatively related to their motives for silence	Registered Nurse Perception of the Nurse Practice Environment	Interval	Registered Nurse Motives for Silence	Interval	Pearson's Product-Moment Correlation

Hypothesized relationships related to the Research Questions (Hypotheses 1A, 2A, 3A, and 3B) and based upon the theoretical framework for the study, the process of care and outcomes model, are depicted in Figure 1.2 below.



Definition of Terms

There are several independent and dependent variables in this study. Independent variables included hospital-employed, staff-level, registered nurse perceptions of the nurse practice environment, the frequency of hospital-employed, staff-level, registered

nurse preferences to remain silent regarding patient safety events, and hospital-employed, staff-level, registered nurse overall perceptions of patient safety.

Dependent variables included the frequency of hospital employed, staff level, registered nurse preferences to remain silent regarding observed patient safety events; hospital employed, staff level, registered nurse overall perceptions of patient safety; and hospital employed, staff level, registered nurse motives for silence. The conceptual and operational definitions of each variable are important in understanding the context of the study. The conceptual definitions are the theoretical meanings of the concepts under study and the operational definitions are the definitions of the variables based upon the procedures by which they were measured (Polit & Beck, 2012). Table 1.2 provides a detailed description of the conceptual and operational definitions for each variable as well as their respective levels of measurement.

Table 1.2.

Definition of Terms

Variable Name	Variable Type and Level	Conceptual Definition	Operational Definition
Registered Nurse Perceptions of the Nurse Practice Environment	Independent Interval	Registered nurse perceptions of the characteristics of the registered nurse work setting that facilitate or constrain professional nursing practice in five areas: nurse participation in hospital affairs; nursing foundations for quality of care; nurse manager ability, leadership, and support of nurses; staffing and resource adequacy; and collegial nurse-physician relations (Lake, 2002).	Registered nurse perception of the nurse practice environment is measured by registered nurse responses on the Practice Environment Scale of the Nursing Work Index (Appendix B) which contains 31 questions. The responses for each question consist of a 4-point Likert scale with categories of strongly agree, agree, disagree, and strongly disagree (Lake, 2002). Strongly agree is coded 4 and strongly disagree is coded 1. Summative scores range from 31 to 124. A higher score indicates greater agreement (E. Lake, personal communication, April 23, 2014). Means are derived for each of five subscales. Practice environments are classified as favorable if four or five subscales have means greater than 2.5 and unfavorable if none or one of the subscales has a mean of 2.5 or less (Lake & Friese, 2006). The composite score is calculated as the mean of the five subscale scores (E. Lake, personal communication, April 23, 2014). The composite score can range from 1 to 4 with scores indicative of disagreement or agreement that the subscale items are present in the current work environment (Lake & Friese, 2006). Scores above 2.5 indicate greater agreement that subscale items are present while scores below 2.5 indicate less agreement (disagreement) that the subscale items are present (Lake & Friese, 2006). The Cronbach's alpha for Practice Environment Scale of the Nursing Work Index ranges from .71 to .84 for the five subscales and .82 for the composite (Lake, 2002).
Frequency of Registered Nurse	Independent, Dependent, Ordinal	Registered nurse self-identification of preferences (choices) to	Registered nurse self-identification of preferences to remain silent about observed patient safety events is measured by the Four Forms of Employee Silence Scale by Knoll and van Dick (2013), as seen in Appendix C. This instrument consists of 18

Continued

Preferences to Remain Silent Regarding Observed Patient Safety Events		<p>remain silent regarding observed patient safety events (Knoll & van Dick, 2013). A patient safety event is defined as "...any type of error, mistake, incident, accident, or deviation, regardless of whether or not it results in patient harm" (AHRQ, 2017, para 1).</p>	<p>questions and question #3 is used for measurement of this variable. The responses on question #3 consist of a 4-point Likert scale with categories ranging from 1 (no, never) to 4 (yes, many times). A higher mean indicates more frequently identified preferences to remain silent about observed patient safety events. The Cronbach's alpha for the Four Forms of Employee Silence Scale ranges from .80 to .89 (Knoll & van Dick, 2013).</p>
Registered Nurse Motives for Silence Regarding Observed Patient Safety Events	Dependent Interval	<p>Registered nurse motives (underlying reasons) for remaining silent about observed patient safety events (Knoll & van Dick, 2013). A patient safety event is defined as (...any type of error, mistake, incident, accident, or deviation, regardless of whether or not it results in patient harm" (AHRQ, 2017, para. 1). Motives for silence include: (a) acquiescent silence in which the individual believes his or her</p>	<p>Registered nurse self-identification of motives for remaining silent about observed patient safety events is measured by the Four Forms of Employee Silence Scale (Appendix C). This instrument consists of 18 questions with four subscales designed to differentiate four motives for silence including acquiescent silence, quiescent silence, prosocial silence, and opportunistic silence (Knoll & van Dick, 2013). The responses on questions 4 through 18 consist of a seven-point Likert scale with categories ranging from 1 (never) to 7 (very frequently). Summative scores for questions 4 through 18 range from 15 to 105. A higher overall mean indicates more frequently identified motives for silence (M. Knoll, personal communication, April 24, 2014). Each of the four-subscale means is determined by adding the scores for the three questions that specifically relate to the particular motive for silence, and dividing by 3 to determine the mean for the particular motive (M. Knoll, personal communication, April 24, 2014). The subscale for acquiescent silence includes questions 10, 11, and 13 (Knoll & van Dick, 2013). The subscale for prosocial silence includes questions 6, 7, and 16 (Knoll & van Dick, 2013). The subscale for opportunistic silence includes questions 14, 15, and 18 (Knoll & van Dick, 2013). The subscale for quiescent silence includes questions 4, 5, and 17 (Knoll & van Dick, 2013). Higher subscale means indicate that the motive is present to a greater degree (M. Knoll, personal communication, April 24, 2014). The</p>

Continued

		<p>opinion is not valued, (b) quiescent silence in which the individual is fearful, (c) prosocial silence in which the individual values affiliation and social relationships, and (d) opportunistic silence in which the individual is seeking self-advantage (Knoll & van Dick, 2013).</p>	<p>Cronbach's alpha for the Four Forms of Employee Silence Scale (subscales) ranges from .80 to .89 (Knoll & van Dick, 2013).</p>
Registered Nurse Overall Perception of Patient Safety	Dependent Interval	<p>Registered nurse overall perception of patient safety within the hospital work area /unit where he or she works (AHRQ, 2017).</p>	<p>This component (four questions) of the Hospital Survey on Patient Safety (Appendix D) is measured by the mean of registered nurse overall perception of patient safety within the hospital work area /unit where he or she works. Responses use a 5-point Likert scale consisting of categories ranging from 1 (strongly disagree) to 5 (strongly agree). Summative scores range from 5 to 20. The higher the mean, the higher the perception of patient safety (Agency for Healthcare Research and Quality (AHRQ), 2017). The Cronbach's alpha for the Hospital Survey on Patient Safety is .74 for the overall perception of safety (AHRQ, 2017).</p>
Magnet Nurse Practice Environment	Independent Nominal	<p>Nurse practice environments based in hospitals recognized by the Magnet® Recognition Program and designated as Magnet hospitals (ANCC, 2016).</p>	<p>This variable is measured by the Demographic Profile (Appendix A) and the individual's response on the fifth question entitled Type of Nurse Practice Environment (Magnet® or Non-Magnet®). The Demographic Profile is a researcher developed tool.</p>

Continued

Non-Magnet Practice Environment	Independent Nominal	Nurse practice environments not based in hospitals recognized by the Magnet® Recognition Program and not designated as Magnet hospitals.	This variable is measured by the Demographic Profile (Appendix A) and the individual's response on the fifth question entitled Type of Nurse Practice Environment (Magnet® or Non-Magnet®). The Demographic Profile is a researcher developed tool.
---------------------------------	---------------------	--	---

Limitations

There are six limitations identified for this study:

- Social desirability bias: registered nurses who participated in the study may have provided answers on the questionnaires that were deemed to be more socially desirable.
- Volunteer bias: registered nurses who volunteered to participate in the study may have had fewer or more issues with silence in the workplace environment than those who decided not to participate.
- Selection bias: due to the use of a convenience sample, registered nurses who participated in the study may have had certain characteristics that were more atypical than those of the population as a whole. In addition, the sample of registered nurses was unbalanced, as it included 27 Magnet® nurses and 56 Non-Magnet® nurses.
- Generalizability: results obtained from this sample of English speaking RN-BSN nurses from two universities who had Internet access may not apply to broader populations of nurses; replication will be needed to establish external validity.
- External events may have occurred during the period of data collection that impacted the responses of participants.
- Path analysis implies causality, but does not measure it.

Summary

Medical errors are an unfortunate and common reality in the current healthcare delivery system. Practices and cultures that contribute to poor safety outcomes need to be examined and improved. Measuring registered nurses' perceptions about the nursing practice environment, preferences and motives for silence regarding observed patient safety events, and patient safety perceptions can increase the understanding of patient safety and medical error. This new evidence provides clues as to factors in the care environment that might be revised to improve patient care and ultimately patient outcomes.

CHAPTER II

REVIEW OF LITERATURE

Medical errors are among the most prevalent problems in the US healthcare system. It is estimated that over 400,000 patients die each year from preventable adverse events in our nation's hospitals (James, 2013). In addition to the numerous lives lost, there are also significant impacts on patients who are injured as a result of preventable errors, some of whom must live with long-term disabilities (Zeltser & Nash, 2010).

Increasing awareness of medical errors and contributing factors is evident in the healthcare literature today. It is now recognized that communication is a major underlying theme in these adverse events (A. Lee et al., 2014). In fact, the Joint Commission identifies communication as a leading cause of sentinel events (The Joint Commission, 2014). Nurses are on the front lines of care in hospitals, therefore, the role they play in communicating about errors is an important one in terms of protecting patients. The willingness of nurses to speak up about medical errors, versus a propensity to remain silent, impacts the delivery of safe patient care (Maxfield et al., 2010).

Behavior is a complex entity. Levitis, Lidicker, and Freund (2009) defined behavior as an individual's response of action or inaction to internal and/or external stimuli, while the Merriam-Webster Online Dictionary (2016) defined behavior as a response to the environment. Influences on behavior may include individual

characteristics such as genetics, and thoughts and feelings, as well as environmental characteristics such as social identity, social interaction, and the physical environment (House of Lords, Parliament, United Kingdom, Science and Technology Committee, 2011). These complex interactions can make behavior difficult to understand (House of Lords, Parliament, United Kingdom, Science and Technology Committee, 2011). Based upon this information, however, it is clear that any particular behavior results from some combination of individual and environmental characteristics.

The organizations where individuals work are known to influence behavior (Milliken & Morrison, 2003). For registered nurses, these organizations are often hospitals, where the influencing organizational environments are termed nursing practice environments. The nursing practice environment is defined as, "...the organizational characteristics of a work setting that facilitate or constrain professional nursing practice" (Lake, 2002, p. 178). Lake (2002) noted the complexity of conceptualizing this construct, as its basis is found in the theoretical foundations of "... the sociology of organizations, occupations, and work" (p. 177). Distinctive approaches to solving problems and managing work in a complex, dynamic environment can differentially impact the nursing practice environment (Lake, 2002). Bureaucratic approaches emphasize command, control, and hierarchy, while professional approaches stress collegiality and nursing decision making (Lake, 2002). These approaches to management may influence individual registered nurse behavior.

Individuals (employees) choose how they wish to communicate within all types of organizations, including healthcare organizations. Organizational factors, such as the bureaucratic or collegial approaches delineated by Lake (2002), may influence the use of silence or voice behavior (Milliken & Morrison, 2003). Silence may be used to withhold information and opinions, and voice may be used to disclose them (Van Dyne et al., 2003). Voice can be defined as the verbalization of ideas, information, and opinions (Van Dyne et al., 2003), and is generally considered synonymous with speaking up. Within the healthcare environment, nursing silence can be conceptualized as an inability, unwillingness, or hesitance to communicate about issues that may result to poor patient outcomes (Maxfield et al., 2010; Okuyama et al., 2014). Speaking up may include the verbalization of information about mistakes and lapses, or instances of poor judgement or rule breaking that relate to patient safety (Okuyama et al., 2014). According to Okuyama et al. (2014), it is expected that speaking up will have a preventive effect on errors and/or will improve deficiencies with the system. Thus, the approach the organization takes to managing the characteristics of the nurse practice environment and their influence on individual nursing communication behaviors may ultimately impact patient safety. Therefore, the purpose of this literature review is to examine the organizational characteristics present in the nurse practice environment and their relationships to nursing silence behaviors and patient safety.

This chapter begins with a description of the literature search methodology. The findings of the review are next presented through a discussion of the four major

organizational characteristics that emanated from the literature and that relate to nursing silence behaviors and patient safety. These characteristics included: (a) the medical hierarchy, (b) interdisciplinary diversity, (c) prosocial behavior, and (d) the safety culture climate. Each organizational characteristic was examined in the light of its specific influence on nursing silence behaviors, and patient safety. How these characteristics may relate to the fundamental principles of Magnet® organizations was also explored. Finally, a synthesis of the literature is presented and conclusions regarding the direction of the study are articulated.

Literature Search

The search method proposed by Whittemore and Knafl (2005) was used to conduct the literature search. According to Whittemore and Knafl (2005), this method facilitates the inclusion of both experimental and non-experimental research in the review of literature and allows for a better understanding of the phenomenon of interest.

Data Identification

Various combinations of the search terms were utilized to search in six electronic databases including the Cumulative Index to Nursing and Allied Health Literature (CINAHL), Academic Search Complete, Medline, PsycArticles, Proquest, and Google Scholar. The following terms were utilized for the search: nursing, silence, speaking up, practice environment, organizational culture, and patient safety. The sample inclusion criteria for the search included primary research studies published in English between 2000 and 2015. In addition to the use of electronic databases, additional studies were

located for the sample through searching the reference lists of included studies. Sample exclusion criteria included articles that were not research studies, not published in English, not published between 2000 and 2015, and not pertaining to registered nurses. Dissertations and unpublished manuscripts were also not included in the sample.

Data Reduction

A total of 288 articles were initially identified through the use of the six databases. These articles were then reviewed and eliminated if they were not primary research studies published in English between 2000 and 2015, were duplicates, or did not pertain to registered nurses. Dissertations and unpublished manuscripts were also excluded from the sample. Based upon a review of the reference citations of studies selected for inclusion, additional studies were also included in the sample. A total of 91 studies remained after these steps were taken. Subsequently, additional studies were excluded if they did not pertain to nurses working in hospitals and/or healthcare centers, or if they did not pertain in some way to nursing silence, speaking up behaviors, and patient safety. A total of 65 studies remained after this additional step was taken.

Discussion

Due to the diversity of the studies included, in terms of research methods and approaches utilized, each study was coded according to specified criteria. Criteria included: (a) the methodology, (b) purpose of the study, (c) setting, (d) population and sample size, (e) the characteristics of the nurse practice environment, (f) presence of silence or speaking up behaviors, (g) impact on patient safety, and (h) limitations of the

study. Matrices were constructed to identify commonalities among the studies regarding the characteristics of the nurse practice environment, nursing communication behaviors, and patient safety. Four key organizational characteristics of the nurse practice environment (care environment) that appear to impact nursing communication behaviors and patient safety during the process of care emerged from the data. These characteristics included: (a) the medical hierarchy, (b) interdisciplinary diversity, (c) prosocial behavior, and (d) an unsafe cultural climate. Each of these characteristics was examined in terms of specific findings regarding its impact on nursing silence or speaking up communication behaviors and patient safety. The studies falling within each category are identified in tables within each section that follows.

The Medical Hierarchy

Perhaps the most prominent organizational characteristic of the nurse practice environment demonstrated in the literature that relates to nursing communication behavior and patient safety is the medical hierarchy. Multiple levels of authority gradients pervade the environment and are demonstrated between and among physicians, nurses, and administrators, as well as among other healthcare disciplines, including students of all types. These authority gradients appear to foster silence and powerlessness among nurses, both elements that can impact patient safety during the process of care and seem to occur in a variety of healthcare settings. Studies demonstrating this characteristic are listed in Table 2.1.

Lyndon (2008) studied social and environmental conditions in two urban academic health centers and noted that both nurses and physicians believed hierarchy and power to be of concern in patient management. Todorova, Alexandrova-Karamanova, Panayotova, and Dimitrova (2014) found that organizational hierarchies within hospitals are pervaded by unfairness and silence affecting the well-being of professionals and engagement in work.

In exploring the perceptions of nurses and physicians regarding safety, Abdi et al. (2015) found that hierarchy impeded communication, particularly at lower levels. Similarly, Schwappach and Gehring (2014a) found that health care providers of lower hierarchical status perceived greater discomfort in speaking up and had more difficulty deciding to speak up. Furthermore, in a qualitative study exploring the experiences of doctors and nurses, Firth-Cozens et al. (2004) noted that barriers to speaking up about poor care included difficulty in reporting or confronting those at higher hierarchical levels. Firth-Cozens et al. (2004) concluded that cultural change is required to improve patient safety.

Hierarchical relationships between administrators and staff nurses are also described by Liu, Hsu, and Chen (2015), and are evidenced in staff nurse difficulties in speaking up and expressing concerns and opinions. These researchers suggested that nurses' silence and lack of involvement in decision making impacts both job satisfaction and the nursing attrition that ultimately affects the quality of patient care. Similarly, Lee, Hsu, Li, and Sloan (2013) found that new nurses believed they needed to act with

constraint and caution when interacting with senior nurses, and that this type of environment results in high nursing attrition that subsequently impacts patient safety. Managers, themselves, also appear to have difficulties with voicelessness. In a study of nursing unit managers, Paliadelis and Cruickshank (2008) found that participants felt unheard, especially in relationship to decision making. Entrenched voicelessness was reinforced by the medically dominated culture of the workplace (Paliadelis & Cruickshank, 2008).

In particular, authority gradients between physicians and nurses appear to have a significant impact on nursing silence behaviors during the process of care. In a study of nurses' views about challenging physicians' practices in an acute care hospital, Churchman and Doherty (2010) noted that hierarchical organizational structures and medical dominance discouraged nurses from challenging physician practices. Abdi et al. (2015) reported nurses' difficulties in voicing opinions or expressing disagreement with decisions of senior colleagues and physicians. Elder, Brungs, Nagy, Kudel, & Render (2008) found that nurses used hinting, asking permission, or acknowledging lower status, rather than directly approaching physicians about their errors. Wilson, McCormack, and Ives (2005) also described how some nurses experienced discomfort in challenging decisions of medical staff.

Vivian, Marais, McLaughlin, Falkenstein, and Argent (2009) conducted a qualitative study to explore care-giving practices in a pediatric intensive care unit, and noted that conflict in hierarchical relationships resulted in problems in decision making.

Nurses expressed reluctance to challenge decisions, and as a result, became complacent and silent (Vivian, Marais, McLaughlin, Falkenstein, & Argent, 2009). Malloy et al. (2009), in a study of organizational culture and nurse-physician relationships, found that nurses reported difficulties in decision making based on hierarchical relationships with physicians, and that nurses' silence related to hierarchy seemed to be pervasive across all cultures and countries within the study. In another study designed to explore problems in communication in a radiotherapy department, registered nurses denied the presence of hierarchy, but the language they used in focus groups reinforced their status as below physicians (Widmark, Tishelman, Gustafsson, & Sharp, 2012). In a descriptive, qualitative study exploring error communication in the intensive care unit, Elder et al. (2008) discovered that the authority gradient between nurses and physicians in intensive care units continues to be problematic. Nurses reported directly approaching physicians about physician error only when the potential or actual patient harm had occurred (Elder et al., 2008).

Powerlessness appears to be the other prominent element demonstrated within the medical hierarchy that results in silence, and potentially impacts patient safety. Todorova et al. (2014) reported that all professions in their study (both physicians and nurses) experienced disempowerment in the various existing hierarchies. Lyndon et al. (2014) described how nurses, however, seemed most vulnerable to disempowerment, leading to problems that become undiscussable and create potentially dangerous consequences for patients. This sense of powerlessness among nurses is echoed in several other studies.

Malloy et al. (2009) found that nurses believed that they lacked power to speak up regarding the opinions of physicians and/or believed that their opinions would not be accepted. Widmark, Tishelman, Gustafsson, and Sharp (2012) noted that powerlessness was internalized by registered nurses and that they exhibited a sense of passivity and resignation. In investigating barriers and strategies for effective patient rescue, Wakeam, Hyder, Ashley, and Weissman (2014) found that staff reported a lack of psychological safety in raising patient care concerns and feeling empowered to use the chain of command when needed. Finally, Palidelis and Cruickshank (2008) noted that nursing management participants described the limitations of their working relationships and a sense of powerlessness within the organization.

Lyndon (2008) observed that nurses' confidence plays a key role in their assertiveness regarding concerns. Supporting this observation, Churchman and Doherty (2010) found that nurses lacked confidence in questioning the decisions of physicians. Moreover, in a study of silence, power, and communication in the operating room, Gardezi et al. (2009) noted general reticence among nurses in communication with physicians, and observed nurses speaking to other nurses rather than addressing surgeons for problem resolution. In addition, nurses were observed speaking quietly regarding enforcement of institutional rules, repeating questions rather than increasing speech volume (Gardezi et al., 2009). Lastly, Churchman and Doherty (2010) reported that registered nurse participants in their study believed they acted as patient advocates;

however, they questioned physician actions only under specific circumstances such as when there were supporting hospital policies.

The disruptive behaviors of others may also influence powerlessness and subsequent silence. Beckmann and Cannella (2015) documented that order clarification and nurse questions were influenced by prior experiences with intimidation, and that perceptions of intimidation may influence patient care safety and outcomes.

Environments in which nurses are afraid to question orders, or feel inhibited in communication may experience greater numbers of unsafe practices (Beckman & Cannella, 2015). Similarly, Walrath, Dang, and Nyberg (2010) found that most nurses, when confronted with disruptive behaviors, reported they did not speak up regarding concerns with the instigator of the behavior. In addition, Walrath, Dang, and Nyberg (2013) documented that nurses experienced more disruptive behavior than physicians, suggested this may be due to hierarchy and gender, and that further study is indicated (Walrath, Dang, & Nyberg, 2013).

Powerlessness is also demonstrated in nurses' exclusion from important information sources and/or from making contributions to the plan of care (Lyndon, 2008). Newton, Storch, Makaroff, and Pauly (2012) described nurses' attempts to voice concerns about patients, but a subsequent lack of response by others to these concerns. Nurses in the study expressed that being silenced in this way adversely impacted patient safety, and sometimes prolonged and increased patient suffering (Newton et al., 2012).

It is clear from the studies presented here and within Table 2.1 that hierarchical organizational structures are organizational characteristics that exist within the nurse practice environment (care environment) that have an impact on nursing communication. How this characteristic relates to individual nursing silence or speaking up behaviors during the process of care, as well as to patient safety, is an area that needs further study. However, other organizational characteristics in the nurse practice environment also seem to be at play in influencing nursing communication. These characteristics are next explored.

Table 2.1.

The Medical Hierarchy

Author (Year)	Method	Purpose	Setting	Population / Sample Size	Characteristics of the Nurse Practice Environment	Silence/Speaking Up Behaviors	Impact on Patient Safety	Limitations
bdi, Z., Delgoshaei, B., Ravaghi, H., Abbasi, M., & Heyrani, A. (2015)	Mixed method design: question- naires and interviews	To explore nurse and physician perception regarding safety culture and safety promotion strategies	Eight bed teaching hospital ICU	46 physicians 18 nurses	Nurse– physician communication ineffective. Nurses less comfortable expressing concerns. Power distance or hierarchy impeded communication especially at the lower hierarchical levels, including nurses	Lack of speaking up Difficulty in voicing opinions or expressing disagreement with decisions of senior colleagues or physicians Communications of nurses are suggestive rather than questioning	Underreport- ing Failure to learn from errors	Internal consistency not established for the translated SAQ (Farsi) Small sample size and single-site design limits ability to generalize to other institutions

Continued

Ajeigbe, D. O., McNeese-Smith, D., Leach, L. S., & Phillips, L. R. (2013)	Quantitative analysis of teamwork training	To examine group difference regarding perception of job environment, autonomy, and practice control	Emergency departments at eight California hospitals	403 nurses and 65 physicians from	Staff in the intervention group perceived that there was effective communication, their opinions were important, and they were listened to by their superiors and team members; they were more empowered and engaged			Convenience sample Non-experimental design did not establish cause and effect relationships Confounding variables not examined
Balakas, K., Sparks, L., Steurer, L., & Bryant, T. (2013)	Phenomenological design with focus groups questionnaire	To identify factors related to the use of evidence-based practice	Focus groups conducted at a facility outside the hospital	20 staff nurses who completed an Evidence Based Practice Scholar's program	Nurses reported a new sense of empowerment post program, and felt their opinions were valued	Nurses reported ability to question practices post program	Evidence based safe and effective patient care fostered by the ability to question	Small sample size Questionnaire used was not validated
Continued								

Beckmann, C. A., & Cannella, L. (2015)	Descriptive study design using a web based questionnaire	To assess Labor and Delivery registered nurse perceptions of intimidation while managing oxytocin	Online survey to members of the Association of Women's Health, Obstetric, and Neonatal Nurses	Random sample of 913 registered nurses drawn from AWHONN members who listed L&D as their major clinical site	82% of nurses reported some form of provider intimidation during oxytocin administration	Order clarification and nurse questions were influenced by prior experiences with intimidation	Perceptions of intimidation may influence patient care safety and outcomes	Convenience sampling, using only AWHONN members, may have led to bias
							Environments in which nurses are afraid to question orders, or feel inhibited in communication may experience greater numbers of unsafe practices	Some who were not intimidated may not have completed the survey Roles were not queried, so nurses with more responsibility may have been more likely to have spoken up

Continued

Churchman, J.J. & Doherty, C. (2010)	Qualitative study using in-depth interviews	To explore the willingness of nurses to challenge physician practices	400 bed National Health Service Hospital in England	12 registered nurses selected from a random sample of 45	Nurses are discouraged from challenging physician practice due to hierarchical organizational structures, gender inequality, and the dominance of the medical model in the workplace	Nurses lack confidence in questioning the decisions of physician	Participants believe they act as patient advocates; however, they question physician action only under specific circumstances such as when there are supporting hospital policies	Small sample in only one hospital Views of physicians are not included in the study
--------------------------------------	---	---	---	--	--	--	---	--

Continued

Elder, N. C., Brungs, S. M., Nagy, M., Kudel, I., & Render, M. L. (2008)	Qualitative study using focus groups and surveys	To describe models of nursing communication about medical error	Four Midwest U.S. hospitals that had implemented evidence based practice to reduce hospital acquired infections	Thirty- three intensive care nurses attended 8 focus groups, and 92 intensive care nurses completed the surveys	The authority gradient or power distance in intensive care units continues to exist between nurses and physicians with nurses using hinting, asking permission, or acknowledging lower status, rather than using directly approaching in physicians about their errors	Nurses are conflicted about disclosing errors to peers and physicians	Nurses disclosed errors to physicians only when potential or actual patient harm had occurred	Participating nurses and hospitals may be inherently different from others
---	---	--	---	--	--	---	---	---

Continued

Espin, S., Wickson- Griffiths, A., Wilson, M., & Lingard, L. (2010)	Qualitative descriptive study using semi- structured interviews facilitated by a script with scenarios and questions	To explore factors that influence error reporting among nurses in the intensive care unit	Three different hospitals in Canada	37 intensive care unit nurses	Intensive care unit nurses stated they would report both inter- professional and inter- situations regardless of hierarchical status	ICU nurses reported that they would bring errors to the attention of their work colleagues Findings convey that ICU nurses may have a broader scope of practice that enables them with more power to formally and informally report events involving other health professionals and superiors		Specific hospital practices and procedures at the individual hospitals may have influenced differences in perception The scenarios used were not real situations. Selected scenario verbiage used may have influenced responses
Firth-Cozens, J., Redfern, N., & Moss, F. (2004)	Qualitative study using a focus group design	To explore what indivi- duals do when they	Education and healthcare facilities in	Conveni- ence sample of 44	Individuals in all groups found it difficult to know when and	Barriers to speaking up about poor care included difficulty in	Cultural change is needed to improve	Description of coding methodology was limited Continued

		note poor care or errors, and what encourages them to speak up	England	residents, interns, nurses, and nursing students	how to report errors	reporting or confronting those at higher levels	patient safety Consistent messaging about what is appropriate or not appropriate can lead to change and increase trust among the staff	
Gardezi, F., Lingard, L., Espin, S., Whyte, S., Orser, B., & Baker, G.R. (2009)	Retrospective ethnography of silences observed between nurses and surgeons in the operating room during a multi-site observational study of inter-professional team briefings	To investigate the use of a structured checklist in a pre-op inter-professional team briefing	Three tertiary care hospitals in Toronto, Canada	116 operating room nurses, 11 general surgeons, and 74 anesthesiologists		Nurses observed speaking to other nurses rather than addressing surgeons for problem resolution General reticence observed in nursing communication with physicians Nurses observed speaking quietly regarding		Critical ethnographic approach may lack reliability and generalizability
Continued								

						enforcement of institutional rules, repeating questions rather than increasing speech volume		
Lee, H. Y., Hsu, M., Li, P., & Sloan, R. S. (2013)	Phenomenological design with focus group interviews	To understand the transitional process for new Taiwanese nurses	Teaching hospital in Taiwan	16 new nurses	Taiwanese culture places great value on conformity, hierarchical power, and harmony; new nurses found they had to adapt to survive and view unreasonable behaviors on the part of others as necessary challenges; mistreatment by others is rationalized as learning that must occur for success.	New nurses believed they needed to act with constraint and caution when interacting with senior nurses.	Treatment of new nurses impacts high attrition rates in Taiwan which subsequently impacts patient safety	Phenomenological approach Small sample

Continued

Liu, Y., Hsu, H., & Chen, H. (2015)	Mixed-method study design using online survey and forum discussion questions	To investigate staff nurses' actual and preferred levels of decisional involvement and their perceptions about decisional involvement	Internet survey and discussion based in Taiwan	125 staff nurses completed the survey and 15 completed forum discussion questions	Power gap between administrators and staff nurses	Staff nurses experienced difficulties in speaking up and expressing opinions and concerns	Involvement in decision making facilitates nursing retention and a positive work environment	Convenience sample
Lyndon, A. (2008)	Qualitative study using structured interviews and participant observation	To identify processes affecting agency for safety (willingness to take a stand) among perinatal nurses, physicians, and certified nurse midwives	Two academic perinatal units in the western United States	12 registered nurses, 5 physicians and 2 certified nurse-midwives	All participants believe that issues of hierarchy and power are of concern; negative consequences result from "...going over another's head" (p.18) Deeply embedded organizational hierarchies	Nurses' confidence plays a key role in their assertiveness regarding concerns		Purposive sample The researchers' experience as a perinatal nurse may have biased data Findings in this academic setting may not be generalizable Continued

					exclude nurses from important information sources and from making contributions to the plan of care			
					Traditional hierarchies influence team interactions			
Lyndon, A., Zlatnik, M. G., Maxfield, D. G., Lewis, A., McMillan, C., & Kennedy, H. P. (2014)	Qualitative study	To investigate clinician perceptions of difficulty in problem resolution regarding patient care concerns, or observed performance or behavior problems	Email survey to members of four professional organizations	1932 nurses, physicians and certified nurse midwives	Power dynamics within facilities indicate a lack of respect for professional knowledge among the team members	Nurses seemed most vulnerable and expressed feelings of powerlessness, resignation, and defeatism leading to problems that become undiscussable.	Potentially dangerous consequences for patients created by toxic environments and systematic disrespect	Selection bias Non-response bias

Continued

Malloy, D. C., Hadjistavro- poulos, T., McCarthy, E. F., Evans, R. J., Zakus, D. H., Park, I., Williams, J. (2009)	Qualitative study	To explore nurses’ perceptions of ethical decision making, nursing role, and ability to be heard	Four nations (Canada, Ireland, Korea, and Australia)	42 nurses of varying specialties and educational background	<p>Nurses reported constraint in decision making based upon established guidelines and hierarchical relationships with physicians</p> <p>Nurses’ silence related to hierarchy seemed to be pervasive across cultures and countries in the study</p> <p>Nurses reported a sense of powerlessness</p>	<p>Nurses conveyed that their voices were often voluntarily silenced by the system regarding ethical decision making</p> <p>Nurses believed that they lacked power to speak up regarding the opinions of physicians and/or believed that their opinions would not be accepted</p>	<p>Subjectivity of qualitative research</p> <p>Social desirability bias in focus groups</p>
--	----------------------	--	--	--	---	---	---

Continued

Manias, E., & Street, A. (2000)	Critical ethnography using professional journaling, participant observation, and interviews.	To examine power relationships between and among nurses and physicians and to assess ways nurses use policies and protocols to mediate communication	16-bed, critical care unit in a teaching hospital in Melbourne, Australia	Six registered nurses worked in the critical care unit	Power relationships between physicians and nurses are affected by policies and protocols in enabling and constraining ways; these provide control to constrain practice and limit the type of knowledge used by nurses		Documentation provided a way for legitimization of nursing activities and demonstration of safety in practice	Critical care environment may limit generalizability to other settings and contexts.
Newton, L., Storch, J. L., Makaroff, K. S., & Pauly, B. (2012)	Mixed method design using quantitative and qualitative approaches	To explore the relationship between voice, ethical climate, and moral distress	Random sample of practicing nurses in British Columbia	374 nurses completed the quantitative survey and 292 completed the qualitative portion of the survey	The practice environment inextricably influences nurses' abilities to provide competent, ethical care.	Nurses described actions to voice their concerns, but received little attention. The lack of attention appeared to be a function of power relationships and medical dominance.	Nurses expressed that being silenced adversely impacted patient safety, and sometimes prolonged and increased suffering	Non-response bias Subjective nature of qualitative surveys

Continued

Paliadelis, P., & Cruickshank, M. (2008)	Qualitative method using interviews and a voice centered relational method of data analysis	To explore nursing unit managers' perceptions of their role.	One health care region of Australia	21 nursing unit managers	Participants described the limitations of their working relationships and a sense of powerlessness within the organization.	Participants reported feeling unheard, especially in relationship to decision making; voicelessness was reinforced by the medically dominated culture of the workplace	Small sample size
Riley, R. G., & Manias, E. (2006)	Ethnography	To explore nurse to nurse and nurse to doctor communication practices in the operating room	Three hospitals and their respective operating room departments in Australia	Eleven operating room nurses	Nurses shape their O.R. practice through knowledge of technical and behavioral aspects of surgeons with whom they work; this knowledge is subjugated and low form of knowledge, however, it transcends		Subjective nature of ethnographic studies
Continued							

					hierarchical relationships and serves as resistance to the handmaiden identity			
Schwappach, D. L., & Gehring, K. (2014a)	Quantitative using a researcher developed survey containing vignettes	To ascertain the effect of contextual factors in on the likelihood of speaking up about patient safety	Eight hospitals containing nine oncology units in Switzer-land	1013 oncology nurses and physicians	Health care providers of lower status in the hierarchy (non-managers) perceived greater discomfort in speaking up and had more difficulty deciding to speak up	Willingness to speak up about safety among physicians and nurses was impacted by situational factors such as type of error or rule violation; there was wide variability in the likelihood of speaking up related to different errors described	Training should be provided regarding the importance of voicing safety concerns	Speaking up was not observed, but was reported Artificial scenarios used, not real life situations. Social desirability bias
Continued								

Todorova, I. L. G., Alexandrova-Karamanova, A., Panayotova, Y., & Dimitrova, E. (2014)	Qualitative design using focus groups and interviews.	To investigate health professionals' perceptions of hierarchies within hospitals in Bulgaria	Three Bulgarian hospitals	42 participants including 27 nurses, and 15 physicians and medical residents	<p>All professions reported experiencing disempowerment in the various existing hierarchies.</p> <p>Participants expressed perceptions of the absence of justice and respect in relationship to hierarchy</p>	<p>Organizational hierarchies within the hospitals are pervaded by unfairness and silence affecting the well-being of professionals and engagement in work</p> <p>Nurses described giving up attempts to provide opinions on hospital affairs</p>	<p>Convenience sample</p> <p>Hospital management controlled access to participants</p> <p>Social desirability bias</p>
--	---	--	---------------------------	--	---	---	--

Continued

Vivian, L., Marais, A., McLaughlin, S., Falkenstein, S., & Argent, A. (2009)	Qualitative research using focus groups, observations, and semi- structured interviews	To explore care-giving practices among health-care providers in the pediatric intensive care unit	Multidiscipli nary pediatric intensive care unit in a Hospital in South Africa	Staff working in the PICU (registered nurses, allied health and registrars – numbers not clarified)	<p>Nurses expressed reluctance to challenge decisions, and as a result, became complacent and silent.</p> <p>Clinical decision making by physicians was differentiated from the care giving practices of nurses and was seen as hierarchical in nature</p> <p>Social disharmony /conflict in hierarchical relationships results in distrust of formal unit structures and problems in decision making</p>
--	---	---	--	---	---

Continued

Wakeam, E., Hyder, J. A., Ashley, S. W., & Weissman, J. S. (2014)	Qualitative research using semi- structured interviews	To understand organization al factors regarding failure to rescue in surgical patients	Seven hospitals in the United States.	106 nurses, physicians, and administra- tors	Frontline staff reported lack of psychological safety in raising patient care concerns and feeling empowered to use the chain of command when needed		Reevaluating the structure of rescue teams and flattening the hierarchy were two methods identified to achieve superior rescue outcomes.	Social acquiescence bias Hospitals studied were medium and large; processes may differ in smaller hospitals
Walrath, J. M., Dang, D., & Nyberg, D. (2013)	Quantitative methodology using email recruitment and web based survey	To explore registered nurse and physician experiences with disruptive behavior	2759 registered nurses, 470 midlevels, and 2481 physicians	Conveni- ence sample of 5,710 including registered nurses, advanced practice nurses, and physicians	Nurses experienced more disruptive behavior than physicians. Researchers suggested this may be due to hierarchy and gender and further study is indicated	Both RN's and MD's speak up when observing behavior that may negatively impact patients. This finding contrasts with prior research.	Staff members reported knowledge of direct harm to patients as a result of disruptive behaviors	Study conducted in only one academic medical center Social desirability bias Low response rate of 27.3%
Continued								

Walrath, J. M., Dang, D., & Nyberg, D. (2010)	Qualitative study using focus groups	To explore disruptive behavior in healthcare institutions	An academic medical center in the northeast area of the United States	Conveni- ence sample of 96 registered nurses	Patterns of disruptive behaviors identified included incivility, psychological aggression, and violence own roles and conceptualizatio ns of others regarding their roles Registered nurses denied the presence of hierarchy, but the language they used in focus groups reinforced their status as below physicians	Most nurses, when confronted with disruptive behaviors, reported they did not speak up regarding concerns with the instigator of the behavior	Participants limited to registered nurses. Convenience sample Researchers approach to data collection
--	--	---	--	---	---	--	--

Continued

Wilson, V. J., McCormack, B. G., & Ives, G. (2005)	Qualitative method using surveys, observations, and interviews	To understand a workplace culture in a special care nursery	Level II Special Care Nursery in a healthcare institution	27 registered nurses	Some staff believed themselves open to critique; others reported problematic reactions, if challenged. Nurses reported not feeling valued for input in decision making. Some nurses reported discomfort in challenging decisions of medical staff; others tried to challenge authoritative and autocratic styles Team issues: group pressure, tension, and anxiety	Nurses seemed reluctant to question peers as well as other members of the team
--	--	---	---	----------------------	---	--

Continued

Interdisciplinary Diversity

Interdisciplinary diversity is an organizational characteristic that appears to have a significant role in the nurse practice environment and in the evolution of nursing silence during the process of care. Within the literature, several elements reflect interdisciplinary diversity, and include professional identity, discourse, individual vigilance, and perception of patient safety. Studies demonstrating this characteristic are listed in Table 2.2.

Professional identity is influenced by professional education, professional status, and the culture and common discourse of the particular discipline. Gillespie, Chaboyer, Longbottom, and Wallis (2010) noted that communication failures often result from differences in professional culture, identity, and level of responsibility across the various disciplines. In their study of team communication in surgery, Gillespie et al. (2010) found that interdisciplinary diversity in teams complicated interpersonal relationships and limited inter-professional collaboration. This lack of collaboration was corroborated by Jeffs, Lingard, Berta, and Baker (2012) who reported that interactions among the different professions were minimal in the environment, with the exception of clarification and supervision. Vivian, Marais, McLaughlin, Falkenstein, and Argent (2009) echoed this finding, stating that individual staff members spend the most time in informal relationships within their disciplinary groups. Thus, the distance between groups influences interactions that could be important for patient care. In fact, Nembhard and Edmondson (2006) found that professional status influences the ease and appropriateness

of speaking up and raising concerns. This finding is especially pertinent for nurses. For example, Wilson, McCormack, and Ives (2005) noted that some nurses reported that it was not their place to speak up during patient rounds. Moreover, in some cases, this lack of speaking up may allow the persistence of errors impacting patient safety. In an exploration of safety in the operating room, Espin et al. (2006) noted that nurses stated they would report errors in nursing practice, but not practice errors of other team professionals. Nursing constraint in reporting errors was related to scope of practice issues and what was termed “turf etiquette” (Espin et al., 2006, p.169). Espin et al. (2006) proposed that nurses’ views of their defined scope of practice or turf undermined the identification of patient safety issues and influenced the persistence of unsafe practices. Lyndon et al. (2012) also found that boundaries between professional disciplines are infrequently crossed.

Professional discourse seems to have an impact on nursing communication behaviors as well. Professional discourse results in differences in the ways that physicians and nurses communicate with each other. In exploring the link between nursing discourse and nursing silence among clinical nurse specialists, Canam (2008) found that the clinical nurse specialists perceived that their practice environment promoted the objective, technical discourse, and knowledge of physicians, and diminished the caring discourse and subjective/experiential language of nursing. They reported feeling pressure to speak the language of objective, technical discourse which did not adequately represent their practice, and which they viewed as primarily relational

rather than technical (Canam, 2008). In a different type of discourse example, Manias and Street (2000) found that nurses referenced policies and protocols in communication, while physicians communicated based upon experience and knowledge based upon medical texts.

Individual vigilance is another professional value that seems to create a sense of constraint and/or silence in reporting errors (Espin et al., 2006). For example, Jeffs et al. (2012) reported that clinicians' responses to near miss situations generally took the form of independent action to correct potentially harmful errors, with the clinician frequently acting in isolation, rather than speaking to the individual making the error. In other cases, some clinicians individually weighed the need to speak up based upon the level of risk involved in speaking up (Schwappach & Gehring, 2014b). Both physicians and nurses believed they could estimate risks to the patient, the actor, and themselves in speaking up (Schwappach & Gehring, 2014b). The importance of individual professional vigilance to the disciplines is supported by the findings of Naveh, Katz-Navon, and Stern (2006) who noted that priorities for safety among health professionals tend to be guided by the importance of service, professional autonomy, expertise, and a conviction for self-regulation.

Perception of patient safety also appears to differentiate the professions resulting in an impact on silence and patient safety. Naveh et al. (2006) found that physician and nurse perceptions of patient safety procedures vary, and that these perceptions may impact the willingness to report errors. Listyowardjo, Nap, and Johnson (2011) reported

that nurses perceived less institutional commitment to safety than did physicians, and that physicians rated the organizational and safety culture more positively than did nurses. Additionally, Lyndon et al. (2012) found that nurses rated the potential for harm higher than did physicians, while Prati and Pietrantonio (2014) found that nurses were less likely than surgeons to report that mistakes were correctly handled. These differing perceptions of safety can impact what, how, and why safety errors are reported among the various professionals.

As shown here and in Table 2.2, interdisciplinary diversity (in the form of professional identity, discourse, individual vigilance, and perception of safety) is an organizational characteristic that exists within the nurse practice environment (care environment) and has an impact on nursing communication. How this characteristic relates to individual nursing silence or speaking up behaviors during the process of care, as well as to patient safety, is an area that needs further study. However, other characteristics in the nurse practice environment such as prosocial behavior and the safety culture climate also seem to be at play in influencing nursing communication. These two organizational characteristics are next explored.

Table 2.2.

Interdisciplinary Diversity

Author (Year)	Method	Purpose	Setting	Population/ Sample Size	Characteristics of the Nurse Practice Environment	Silence/Speaking Up Behaviors	Impact on Patient Safety	Limitations
Canam, C. J. (2008)	Descriptive methodology using in-depth interviews	To understand clinical nurse specialist perspectives regarding their roles and practice.	Specialty programs providing health services for children with complex needs	Sixteen nurses, who worked in pediatric clinical nurse specialist roles	Clinical Nurse Specialists perceived that their practice environ- ment promotes an objective, technical discourse and knowledge and diminishes a caring discourse and subjective/experien- tial language Clinical nurse specialists reported feeling pressure to speak the language	Clinical Nurse Specialists described informal and formal situations with other team members where they could have contributed relevant knowledge to discussions, but they remained silent.		Small number of participants Specialized population

Continued

					of objective, technical discourse which did not adequately represent their practice, which they viewed as primarily relational rather than technical			
Espin, Lingard, Baker, & Regehr (2006)	Qualitative study using semi structured interviews built around hypothetical scenarios	To explore factors that influence unsafe practices in an inter-professional team setting	Two teaching hospitals	28 members of an operating room team including nine surgeons, nine nurses, and 10 anesthesiologists	Strong organizational values related to individual vigilance create a sense of constraint in reporting errors.	Nurses described they would report errors in nursing practice, but not practice errors of other team professionals Nursing constraint in reporting errors was related to scope of practice issues and what was termed "turf Etiquette" (p.69).	Combination of elements (psychological, professional, and organizational) influence persistence of unsafe practices. Nurses' view of their defined scope or turf undermines identification of safety issues.	Qualitative approach may lack reliability and generalizability

Continued

Gardezi, F., Lingard, L., Espin, S., Whyte, S., Orser, B., & Baker, G.R. (2009)	Retrospective ethnography of silences observed between nurses and surgeons in the operating room during a multi-site observational study of inter- professional team briefings	To investigate the use of a structured checklist in a pre-op inter- professional team briefing.	Three tertiary care hospitals in Toronto, Canada	116 operating room nurses, 11 general surgeons, and 74 anesthesi- ologists	Silences among staff may reflect factors that result from institutional power relations among professional groups.			Critical ethnogra- phic approach may lack reliability and generaliza- bility
Gillespie, B.M., Chaboyer, W., Longbot- tom, P., & Wallis, M. (2010)	Qualitative study using semi- structured interviews and a grounded theory approach to create a theoretical model	To understand individual and organiza- tional factors that impact teamwork in surgery	Operating room of a large metropoli- tan hospital in Australia	Purposive sample with 16 participants (surgeons, anesthesiol- ogists, and nurses)	Interpersonal relations are complex due to the interdisciplinary diversity in teams; professional identification and mores limit inter- professional collaboration	Communication failures often resulted from differences in professional culture, identity, and level of responsibility across the	The use of structured pre- and post- operative surgical briefings can improve communicati- on, provide	Use of a single hospital may impact generaliza- bility

Continued

					The organization influences cohesion among team members through blame, limited resources, and implementation issues. Dominance of the professional culture limited collaboration.	various disciplines, and from embedded organizational practices.	feedback, and help identify issues related to patient safety
Jeffs, L. P., Lingard, L., Berta, W., & Baker, G. R. (2012)	Qualitative study using semi-structured interview and a grounded theory approach	To explore how different clinicians and administrators experience and respond to near misses	One academic health science center in a large Canadian city	24 participants including staff nurses, physicians, pharmacists, advanced practice nurses, administrators, a dietitian, and a technician	Interactions among the different professions were minimal in the environment with the exception of clarification and supervision. Clinicians responses to near miss situations generally took the form of independent		Encouraging clinicians who detect near misses and violations to talk with others who make errors will enhance collaboration and teamwork in practice and promote safe practices Data was collected from only one academic acute-care hospital setting so may not be generalizable to other settings. Seasonal variation

Continued

					action to correct potentially harmful errors with professional frequently acting in isolation, rather than dialog with the clinician making the error		with influx of new learners may have impacted results
Listyowar-dojo, T. A., Nap, R. E., & Johnson, A. (2011)	Quantitative study using a questionnaire	To compare groups in terms of perceptions of institutional practices that influence patient safety	1300 bed hospital in the Netherlands	2995 nurses, physicians, lab workers, consultants, support workers, and administrative personnel	Nurses perceived less institutional commitment to safety than did physicians. Physicians rated the organizational and safety culture more positively than did nurses.		Possibility of non-response bias The questionnaire had only been in the Netherlands.
Lyndon, A., Sexton, J. B., Simpson, K. R., Rosenstein, A., Lee, K. A., & Wachter, R. M. (2012)	Cross-sectional study using a scenario based survey instrument	To assess potential harm and likelihood of speaking up to perceived harm	Two U.S. Labor & Delivery units	125 registered nurses and obstetricians	Boundaries between professional disciplines are infrequently crossed. Conflicts are avoided.	The likelihood of speaking up was predicted by a higher perception of harm, role, experience in the specialty, and site	Likelihood of speaking up may have been Continued

						Nurses rated the potential for harm higher than physicians		reported to a greater degree due to social desirability bias
						Harm rating predicted speaking up, but twelve percent of respondents stated they were not likely to speak up, despite a high perceived potential for harm in some situations		Only two units and hospitals utilized
Manias, E., & Street, A. (2000)	Critical ethnography using professional journaling, participant observation, and interviews	To examine power relationships between and among nurses and physicians and to assess ways nurses use policies and protocols to mediate	16-bed critical care unit in a teaching hospital in Melbourne, Australia	Six registered nurses worked in the critical care unit	Discrepancies noted in the ways physicians and nurses communicate. Nurses referenced policies and protocols in communication, while physicians communicated based on experience	Nurses used policies and protocols to generate questions and provide answers, and to understand expected practice standards	Documentation provided a way for legitimization of nursing Activities and demonstration of safety in practice	This study in a critical care environment may limit generalizability to other settings and contexts
								Continued

		communica- tion			and knowledge of medical texts			
Naveh, E., Katz-Navon, T., & Stern, Z. (2006)	Quantitative design	To investigate the relationship between the safety climate and error reporting readiness	Three acute care hospitals in Israel	632 hospital physicians and nurses	Priorities for safety among health professionals tend to be guided by the importance of service, pro- fessional auto- nomy, expertise, and a conviction for self-regulation.		Physician and nurse percep- tions of patient safety procedures vary among different departments. These percep- tions may impact the willingness to report errors	Readiness to report errors was measured by the number of reports, not the number of actual errors
Nembhard, I. M., & Edmond- son, A. C. (2006)	Quantitative design	To explore factors that promote engagement when team status differences exist	23 neonatal intensive care units involved in quality im- prove- ment projects in the United States and Canada	1440 staff members including registered and advanced practice nurses, physicians, and other health profession- als	Different departments within hospitals have unique characteristics, attitudes, and behaviors	Professional status influences the ease and appropriateness of speaking up and raising concerns		Use of only profession- als in the Neonatal Intensive Care Unit may hinder generaliza- tion to broader populations
								Continued

Prati, G., & Pietrantoni, L. (2014)	Quantitative study using a questionnaire	To assess safety and teamwork attitudes	One hospital in Italy	Surgical team members (55 surgeons and 48 O.R. nurses)	Participants slightly agreed that if they noted a problem with patient management, they would speak up	Nurses, more than surgeons, reported that safety procedures more often ignored by surgeons Nurses were less likely to report than surgeons that mistakes correctly handled.	Participation of only one hospital in Italy Small sample Influence of national culture
Schwappach, D. L., & Gehring, K. (2014b)	Qualitative study using semi-structured interviews	To explore factors that impact the ability to voice or remain silent about safety concerns.	Six hospitals containing seven oncology units in Switzerland	32 physicians and nurses	Decisions about voicing concerns involved trade-offs/complex considerations of risk. Physicians and nurses believed they could estimate risks to patient, actor, and themselves in speaking up; this	Medication safety concerns were more often voiced than errors in hygiene standards	Introspection of participants more subject to bias. Social desirability bias Continued

					<p>allowed for interpretation of need to follow safety rules</p> <p>Motivation to speak up was based on the need to protect patients, but one third of participants based their decision on the level of risk</p>	Nurses represented to a greater degree in the sample
Wilson, V. J., McCormack, B. G., & Ives, G. (2005)	Qualitative methodology using surveys, observations, and interviews	To understand a workplace culture in a special care nursery	Level II Special Care Nursery in a healthcare institution	27 registered nurses	Some nurses reported that it was not their place to speak up during patient rounds	

Prosocial Behavior

Prosocial behavior is an organizational characteristic that appears to have a role in the nurse practice environment. Eisenberg and Mussen (1989) defined prosocial behavior as voluntary action taken to benefit or help individuals or groups (as cited in Flynn, Ehrenreich, Beron, & Underwood, 2015). According to Flynn, Ehrenreich, Beron, and Underwood (2015), prosocial behavior has been associated with many positive individual qualities, including empathy, agreeableness, and acceptance by peers. The existence of prosocial behavior between and among colleagues in the nurse practice environment appears to be important in terms of the evolution of nursing silence. Studies highlighting this characteristic are depicted here and in Table 2.3.

In studying silence among labor and delivery teams (including nurses, midwives, and physicians), Maxfield, Lyndon, Kennedy, O'Keeffe, & Zlatnik (2013) noted that a primary reason for not speaking up about errors for all groups included worry about future working relationships. Maxfield et al. (2013) found that low percentages of professionals shared their concerns about patient safety with the individuals involved. In her research on agency for safety, Lyndon (2008) also noted that clinicians described efforts to maintain and preserve relationships, actively avoiding conflicts by decreasing interactions, failing to mention problems, and withholding reporting of incidents. Interestingly, nurses, mid-wives, as well as physicians, also reported the use of communication strategies designed to provide safe care without conflict, including the use of suggestions, or “sweet talk” (Lyndon, 2008, p. 20).

Schwappach and Gehring (2014b) reported that damage to relationships was a barrier to speaking up about safety concerns. Elder et al. (2008) noted that nurses preferred reporting observed errors to supervisors as opposed to directly confronting the individual involved. Likewise, Schwappach and Gehring (2014b) reported that safety concerns were more often expressed to co-workers and supervisors; and Maxfield et al. (2010) found that nurses more often expressed concerns to managers rather than speaking directly to the individuals involved.

In addition to difficulties in confronting individuals directly involved in errors, Elder et al. (2008) also noted that nurses sometimes use complex maneuvering to communicate with physicians regarding their errors (Elder et al., 2008). For example, in the Malloy et al. (2009) study of nurse and physician relationships, nurses stated they had to become adroit at presenting information palatably and politically to physicians. Similarly, Abdi et al. (2015) reported that nurses were less comfortable expressing concerns to physicians and that their communications were often suggestive rather than questioning.

Maxfield et al. (2005) found that reticence in confronting poor performance is deeply rooted in the healthcare culture. In their study to examine communication breakdowns that are recognized but not discussed, Maxfield et al. (2010) found that less than one third of nurse participants reported speaking up and sharing concerns such as shortcuts, incompetence, and disrespect, all elements that may contribute to patient harm. Alternatively, in a study designed to examine the experiences of those who observe and

report poor care, Moore and McAuliffe (2010) found that 90% of nurse respondents stated they had observed incidents of poor care in the past six months, and 70% stated they had reported it. However, the authors advised that social desirability bias may have impacted their results.

Prosocial characteristics of valuing social relationships among nurses may also be noted upon examining the differing perceptions of collaboration and teamwork among nurses and physicians. Hughes and Fitzpatrick (2010) found that both nurses and physicians recognized the importance of collaboration in the promotion of patient safety; however, nurses placed more emphasis on collaboration and interpersonal skills than did physicians. Nathanson et al., (2011) found that nurses and resident physician views regarding collaboration in the intensive care unit were very different; nurses were much less satisfied than resident physicians. Abdi et al. (2015) documented statistically significant differences between physicians' and nurses' attitudes regarding quality of teamwork, with nurses reporting being less pleased. Likewise, Prati and Pietrantonio (2014) noted that attitudes about teamwork between surgeons and nurses in the operating room were discrepant. Surgeons viewed teamwork and communication more positively than did nurses (Prati & Pietrantonio, 2014).

The findings described in this literature review regarding prosocial behavior suggest that it exists within the nurse practice environment (care environment) and has an impact on nursing communication. It is clear that relationships are very important to nurses. How these needs for affiliation ultimately relate to individual nursing silence or

speaking up behaviors during the process of care, as well as to patient safety, is an area that needs further study. As Lyndon (2008) advised, clinicians should maintain awareness that complex social pressures can impact clinical decision making.

Table 2.3.

Prosocial Behavior

Author (Year)	Method	Purpose	Setting	Population / Sample Size	Characteristics of the Nurse Practice Environment	Silence/Speaking Up Behaviors	Impact on Patient Safety	Limitations
Abdi, Z., Delgoshaei, B., Ravaghi, H., Abbasi, M., & Heyrani, A. (2015)	Mixed method design: question- naires and interviews	To explore nurse and physician perception regarding safety culture and safety promotion strategies	Eight bed teaching hospital ICU	46 physicians 18 nurses	Statistically significant differences noted between physicians' and nurses' attitudes regarding quality of teamwork (nurses less pleased)			Internal consistency not established for the translated SAQ (Farsi) Small sample size and single- site design limits ability to generalize to other institutions
Continued								

Bridges, R., Sherwood, G., & Durham, C. (2014)	Quantitative design using a pretest and posttest survey to assess an educational intervention	This study examined the influence of an educational intervention on mutual support among nursing team members	28 bed intermediate care unit for adult medical cardiac patients	25 nurses, 11 nursing assistants, and five-unit secretaries	Responses revealed that mistakes of teammates were not discussed 25% of the time pre-intervention and 50% of the time post intervention	Small sample size Educational sessions may have varied
Elder, N. C., Brungs, S. M., Nagy, M., Kudel, I., & Render, M. L. (2008)	Qualitative study using focus groups and surveys	To describe models of nursing communication about medical error	Four Midwest hospitals in the United States that had implemented evidence based practice to reduce hospital acquired infection	Thirty-three intensive care nurses attended 8 focus groups, and 92 intensive care nurses completed the surveys	Nurses preferred reporting observed errors to supervisors as opposed to confrontation of the individual involved Nurses used complex maneuvering to communicate with physicians regarding their errors	Participating nurses and hospitals may be inherently different from others
Continued						

Hughes, B., & Fitzpatrick, J. J. (2010)	Comparative descriptive design using a survey instrument	To investigate attitudes toward collaboration among nurses and physicians	100-bed acute care community hospital located in the northeast United States	The sample included 118 registered nurses and 53 physicians.	Differences in inter-professional education may result in different attitudes regarding the importance of collaboration. Nurses place greater emphasis on interpersonal skills than do physicians	Both nurses and physicians recognized the importance of collaboration in the promotion of patient safety, however, nurses placed more emphasis on collaboration than physicians	Findings may not be generalizable to other types of facilities Nurse and physician groups were not equal All data was not reported
Lee, C. T., Doran, D. M., Tourangeau, A. E., & Fleshner, N. E. (2014)	Cross-sectional observational survey	To assess the perceived interaction quality between nurses and physicians working in oncology outpatient clinics.	Oncology outpatient clinics at two cancer centers in Ontario, Canada	250 oncology nurses and physician oncologists	Nurses and physicians rated their inter-professional interactions highly including supportive relationships and quality communication Relationships are collegial and collaborative.		Convenience sample with may result in sampling bias Generalizability is limited to North American

Continued

					Between-site differences noted in perceived interactions may be due to contextual differences between the two sites; further research could clarify the impact of work environment characteristics and organizational support.			comprehensive cancer centers
Lyndon, A. (2008)	Qualitative study using structured interviews and participant observation	To identify processes affecting agency for safety (willingness to take a stand) among perinatal nurses, physicians,	Two academic perinatal units in the western United States	12 registered nurses, 5 physicians, and 2 certified nurse-midwives	Agency for safety varied for all groups dependent upon the situational context and interpersonal relationships.	Confidence was impaired in new or ambiguous situations and by poor interpersonal relationships. Clinicians describe that in order to maintain relationships, they actively avoid	Contexts, conditions, and processes fluctuate and are variable in nature creating a lack of reliability in the provision of safe care	Purposive sample The researchers' experience as a perinatal nurse may have biased data
Continued								

		and certified nurse-midwives.			conflicts by decreasing interactions, failing to mention problems, and withholding incident reporting.	Clinicians must maintain awareness that complex social pressures can impact clinical decision making	Findings in this academic setting may not be generalizable
					Nurses, physicians, and CNM's reported communication strategies for safe care including "...the use of suggestion, sweet talk, and taking direct actions without informing the other provider" (p. 20)		
Malloy, D. C., Hadjis-tavropoulos, T., McCarthy, E. F., Evans, R. J.,	Qualitative study	To explore nurses' perceptions of ethical decision making,	Four nations (Canada, Ireland, Korea, and	42 nurses of varying specialties and	Nurses stated they had to become adroit at presenting information palatably and		Subjectivity of qualitative research
Continued							

Zakus, D. H., Park, I., Williams, J. (2009)		nursing role, and ability to be heard	Australia)	educational background		politically to physicians	Social desirability bias in focus groups
Manojlovich, M., & Antonakos, C. (2008)	Non-experimental descriptive design using surveys	To investigate if specific communication elements (timeliness, openness, understanding, and accuracy) are linked to nursing satisfaction with nurse-physician communication	Convenience sample of 25 intensive care units from eight hospitals in southeast Michigan, United States	462 nurses (full or part-time)	Openness, understanding, and accuracy were communication satisfiers Number of years of nursing experience was inversely related to communication satisfaction Non-European Americans were significantly more satisfied with communication than European Americans Communication satisfaction lower in cardiac surgery intensive care units		Multidimensional nature of the communication satisfaction construct

Continued

Maxfield, D., Grenny, J., Levandero, R, & Groah, L. (2010)	Mixed method qualitative and quantitative survey using a story collector and a traditional survey sent via email	To examine communication breakdowns that are recognized but not discussed	Convenience sample of members of the American Association of Critical Care Nurses and the Association of Perioperative Registered Nurses	2383 registered nurses completed the story collector, and 4,235 registered nurses completed the traditional survey	Concerns reported by participants included shortcuts, incompetence, and disrespect; elements that may contribute to patient harm Less than one third of participants reported speaking up and sharing these concerns with the individual Nurses more often express concerns to managers rather than speaking directly to the individuals involved. Management participants in the study do not appear to reliably follow up on the individuals reported.	Silence can result in communication failures that harm patients	Use of a convenience sample Non-response bias Subjectivity of qualitative research
							Continued

Maxfield, D., Grenny, J., McMillan, R., Patterson, K., Switzler, A. (2005)	Qualitative survey using focus groups, interviews and observation	To explore concerns held by healthcare workers that are difficult to communicate and that may contribute to avoidable errors and problems	Thirteen hospitals in urban, suburban, and rural areas across the United States	1700 respondents including nurses, physicians, clinical staff, and administrators	Reticence to confront poor performance is deeply rooted in the healthcare culture	Speaking up is difficult in addressing: (1) incompetence – 72% of nurses and other clinical providers found it difficult to confront the individual (2) poor teamwork – 78% of nurses and other clinical providers found it difficult to confront the individual, and (3) disrespect – 59% of nurses and other clinical providers found it difficult to confront the individual	Failure to confront allows problems to continue and can impact patient safety	Qualitative nature of the study Social desirability bias (focus groups)
Maxfield, D. G., Lyndon, A., Kennedy, H. P.,	Quantitative online survey	To assess safety concerns among labor and delivery teams	Convenience sample of members from four	3282 participants (985 physicians 414		Silence was evident in labor and delivery teams Low percentages of professionals	A majority of participants stated that observed concerns interfered with	Use of a convenience sample Non-response bias Continued

O'Keeffe, D. F., & Zlatnik, M. G. (2013)	(shortcuts, competency and performance issues, and disrespect)	professional organizations	midwives, and 1884 nurses)	shared their concerns about patient safety with individuals involved (13% of nurses, 13% of midwives, and 9% of physicians). Primary reasons for not speaking up for all groups included: worry about future working relationships and avoidance of conflict in front of patients. For nurses, reasons also included fear of retaliation and fear of angry confrontation (based on past observations)	patient safety or harmed patients; concerns included shortcuts that could be dangerous for patients, missing competency or skill, disrespect, or performance problems such as poor attention to detail or safety.	Inability to track variety and representation of hospitals included in the sample
--	--	----------------------------	----------------------------	---	---	---

Continued

Moeidh, A. T., Shah, F. A., & Al-Matari, E. M. (2015)	Quantitative survey design	To examine the link between prosocial voice and patient safety	127 hospitals in Saudi Arabia	1793 staff workers on nursing units (the number of nurses was not described)		The researchers reported a significant relationship between prosocial voice and patient safety culture	The name, contents, and reliability of the instrument used was not stated. Use of a convenience sample Non-response bias
Moore, L., & McAuliffe, E. (2010)	Exploratory quantitative research design	To examine the experiences of those who observe and report poor care	Eight acute care hospitals in Ireland	152 nurses (all grades) working in acute care hospitals in Ireland	40% of nurses who reported the incident were dissatisfied with the response of the organization	90% of respondents stated they had observed incidents of poor care in the past six months, and 70% stated they had reported it.	Social desirability bias Continued

Nathanson, B. H., Henneman, E. A., Blonaisz, E. R., Doubleday, N. D., Lusardi, P., & Jodka, P. G. (2011)	Quantitative analysis	To measure perceptions of collaboration between nurse and resident physicians in the intensive care unit	24 bed medical/surgical intensive care unit (ICU) in the northeast part of the United States	31 nurses and 46 resident physicians	Nurses and resident physician views regarding collaboration in the ICU were very different. Nurses are much less satisfied than resident physicians		Small sample size Study conducted at only one institution
Nembhard, I. M., Labao, I., & Savage, S. (2015)	Qualitative study using in-depth interviews	To investigate the drivers of voice factors that influence voice and the purposes for which staff use voice	12 randomly sampled hospitals in the United States	99 individuals (nurses, physicians, administrators, paramedics and QI staff)	Organizational culture determined if voice was allowed, encouraged, or expected. Organizational structure (including policies and meetings) provided guidance and protection for speaking up or did not provide same	Professionals use voice to increase learning, inform others, and protect patients. These elements contribute to quality of care	Differences in cultural norms may preclude generalization outside of the U.S. Hospitals used had been identified as having need for quality improvement, and may not be a representative sample. Continued

Prati, G., & Pietrantonio, L. (2014)	Quantitative study using a questionnaire	To assess safety and teamwork attitudes.	One hospital in Italy	Surgical team members (55 surgeons and 48 O.R. nurses)	Attitudes about teamwork between surgeons and nurses in the operating room were discrepant. Surgeons viewed teamwork, communication, and organizational climate more positively	Participation of only one hospital in Italy Small sample Influence of national culture on the health system
Schwappach, D. L., & Gehring, K. (2014b)	Qualitative study using semi-structured interviews	To investigate factors that impact the ability to voice or remain silent about safety concerns	Six hospitals containing seven oncology units in Switzerland	32 physicians and nurses	Safety concerns were more often expressed to co-workers and supervisors. Risks of speaking up increased if the co-worker was not known well. Damage to relationships, presence of others, and potential humiliation of others were barriers to speaking up	Findings are related to introspections of participants, therefore, are subject to bias. Social desirability bias More nurses in the sample Continued

Tschannen, D. (2004)	Cross-sectional, nonexperimental design	To investigate nurse and physician attitudes toward teamwork, organizational commitment, and collaboration.	Two surgical units in a midwest U.S. hospital	48 nurses and 18 physicians	Team orientation and commitment to the organization are associated with higher perceptions of doctor-nurse collaboration	Small sample size Data collected in one geographic region
Yanchus, N., Derickson, R., C. Moore, S., Bologna, D., & Osatuke, K. (2014)	Qualitative methodology using interviews and a grounded theory approach	To investigate perceptions of communication in psychologically safe and unsafe clinical environments	United States Veterans' Administration Health System	641 individual clinical providers, including nurses, but not totals and types not specifically identified	Perceptions of communication differed among various provider groups	Participants were from organizations that had been identified for support and/or were problematic

Unsafe Cultural Climate

The final organizational characteristic of the nurse practice environment demonstrated in the literature and relating to nursing communication behavior and patient safety is an unsafe cultural climate. Studies demonstrating this organizational characteristic are listed in Table 2.4.

The culture of the organization determines if voice is allowed, encouraged, or expected. (Nembhard et al., 2015). Yanchus, Derickson, Moore, Bologna, and Osatuke (2014) found that employees in psychologically safe environments are encouraged to speak up. Psychological safety is defined as feeling comfortable about speaking up to improve work or report potentially dangerous situations (Rathert, Ishqaidef & May, 2009). The need for safety in speaking up was also described by Crigger and Meek (2007), who found that participants assessed if the culture of the work environment was a safe one in which to report mistakes prior to deciding to disclose personal mistakes. Similarly, Garon (2012) identified that the primary influence on speaking up is an open communication environment, and that this type of culture leads to increased patient safety. Kanerva, Kivinen, and Lammintakanen (2015) echoed that finding, as did Attree (2007), who found that nurses described the ideal organizational culture as open, with trust and confidence that concerns raised are treated professionally and viewed as constructive.

Lack of organizational response and lack of confidence in reporting were features of psychologically unsafe environments (Yanchus, Derickson, Moore, Bologna, & Osatuke, 2014). Attree (2007) found that when nurses described the culture as unresponsive, expressed concerns did not result in positive action, and organizational culture was identified as impeding the raising of concerns. In addition, Maiden, Georges, and Connelly (2011) found that blame of individuals for errors isolated nurses such that their voices were unheard. Importantly, Kirwan, Matthews, & Scott (2013) found that positive practice environments resulted in increased adverse event reporting by nurses.

The findings in this review support that the unsafe cultural climate is an organizational characteristic that exists within the nurse practice environment (care environment) and has an impact on nursing communication. How this characteristic relates to individual nursing silence or speaking up behaviors during the process of care, as well as to patient safety, is an area that needs further study.

Table 2.4.

Unsafe Cultural Climate

Author (Year)	Method	Purpose	Setting	Population/ Sample Size	Characteristics of the Nurse Practice Environment	Silence/Speak- ing Up Behaviors	Impact on Patient Safety	Limitations
Attree, M. (2007)	Qualitative design using semi- structured interviews	To study factors that influence nurses' decision- making regarding raising concerns about practice standards	3 acute care hospitals in England	142 Registered Nurses	Nurses described the culture as unresponsive; expressed concerns did not result in positive action Organizational culture identified as impeding raising concerns Nurses described the	Pressure not to speak out Fear of repercussions resulting from the raising of concerns	Obstacles to reporting must be addressed to promote patient safety, quality, and learning	Sample from three hospitals in England was not statistically representa- tive.

Continued

Edmondson, A. C. (2003)	Multiple case study design using interviews as the primary data source.	To investigate learning in interdisciplinary action teams and what team leaders do to promote speaking up	16 operating rooms at 16 hospitals across the United States.	165 participants including surgeons, anesthesiologists, nurses and other clinical and management staff.	The most effective team leaders minimized concerns about power and status differences and encouraged speaking up in order to promote learning.	Coaching by team leaders facilitated willingness to speak up and communication with others in the organization regarding change	The ability of team members to speak up with observations, questions, and concerns may influence team outcomes.	Small sample Interview measure lacked validation.
Garon, M. (2012)	Qualitative study using focus group interviews and thematic content analysis	To investigate the perceptions of nurses regarding their ability to speak up and be heard in the working environment	Variety of healthcare settings in California, United States	33 registered nurses including staff and management	The study supports the importance of the manager in establishing a culture of open communication where nurses feel valued	Nurses identified that the primary influence on speaking up is an open communication environment.	An open communication culture leads to increased patient safety	Focus group may impair openness of some participants. In-depth follow up limited by one-time focus group contact
Contained								

Ginsburg, L., Norton, P. G., Casebeer, A., & Lewis, S. (2005)	Quasi-experimental design evaluating a patient safety intervention using a control group design with pretest and posttest.	To design a patient safety training intervention and evaluate its impact on nurse leader perception of patient safety culture.	Two Canadian multi-site teaching hospitals	Three hundred and fifty-six nurses in leadership roles			Patient safety training interventions and organizational leadership support may have a great impact on fostering a culture of patient safety	Use of self-report questionnaire data may be subject to social desirability bias Findings are only Generalizable to front-line clinical nursing leaders in large acute care hospitals
Hashemi, F., Nasrabadi, A. N., & Asghari, F. (2012)	Qualitative study using a semi-structured focus group	To investigate factors associated with reporting	Hospitals and clinics affiliated with Shiraz and Tehran	115 nurses	Organizational factors that promote underreporting of errors included	Nurse factors associated with underreporting of errors included fear of legal action, job	Factors facilitating reporting of errors included a dominant supportive	Focus group setting may impair openness of some participants

Continued

		nursing errors among clinical nurses and nurse managers	Universities of Medical Sciences in Iran		intolerance of errors, inadequate or inappropriate reactions of authorities and colleagues to errors, and a blame and shame culture	loss, economic loss, loss of honor and dignity, weak knowledge base or skills, and failure to accept responsibility	culture and an anonymous error reporting system
Hughes, B., & Fitzpatrick, J. J. (2010)	Comparative descriptive design using a survey instrument	To investigate attitudes toward collaboration among nurses and physicians	100-bed acute care community hospital located in northeast United States	The sample included 118 registered nurses and 53 physicians	Organizational culture may influence the attitudes of groups toward collaboration		Community hospital findings may not be generalizable to other types of facilities Nurse and physician groups were not equal All data was not reported
Continued							

Kanerva, A., Kivinen, T., & Lammin-takanen, J. (2015)	Qualitative study using semi-structured interviews	To explore nurses' perceptions of communication elements that support patient safety in psychiatric inpatient care	Two psychiatric hospitals in Finland	26 nurses	Culture should include open discussion of patient care and practices, the opportunity for debriefing sessions, and all staff members believing they have been heard.	An open communication culture is important for patient safety.	
Kim, M. Y., Kang, S., Kim, Y. M., & You, M. (2014)	Multi-level study using a survey instrument	To understand the factors related to nurses' willingness to report near misses.	34 wards at a university hospital in Korea	489 registered nurses	Knowledge-sharing climates increased nurses' intention to report errors, even among those of a silent disposition and in settings where the quality of the relationship registered nurses and the head nurse was not high	Trust and the quality of the relationship registered nurses and the head nurse increased the intention to report errors	Use of a single hospital The culture of the country where the study occurred may have impacted the results
							Continued

Kirwan, M., Matthews, A., & Scott, P. A. (2013)	Cross-sectional quantitative study with use of a questionnaire	To investigate the relationship between the ward (unit) practice environment and specific patient safety outcomes (nurse reported patient safety levels and the number of adverse event reports)	108 general medical and surgical wards in 30 hospitals throughout Ireland.	1397 nurses		Positive practice environments result in increased adverse event reporting by nurses The ward (unit) practice environment and the proportion of nurses with degrees significantly impacted nurse reported patient safety	Omitted variables may play a greater role in explaining the associations between the variables Generalizing results to wards other than general wards may be problematic
Law, B. Y., & Chan, E. A. (2015)	Narrative inquiry	To explore the process of learning to speak up in nursing practice	Hong Kong public hospitals	18 new graduate registered nurses	Appreciative inquiry is an approach that could be used to promote positive cultural change		Purposive sampling may have impacted the results
Continued							

Leroy, H., Dierynck, B., Anseel, F., Simons, T., Halbesleben, J. R. B., McCaughey, D., . . . Sels, L. (2012)	Multi-level cross-sectional study using surveys to measure behavioral integrity, psychological safety, and priority for safety	To understand how leaders enforce safety protocols and encourage employee error reporting	54 nursing units in four Belgium hospitals	An average of 11 nurses per department responded to our survey	Leaders who follow up and are concerned about safety can expect team commitment for safety (adherence to safety protocols and willingness to admit mistakes)	Leader adherence to safety procedures demonstrates concern for safety. Employees feel safe to speak up about errors (and this has a larger effect on reported errors)	Team psychological safety reflects an environment where it is safe to admit mistakes and relates to a higher number of reported errors. Leaders play a role in fostering a safety climate and thereby improve patient safety outcomes	Cross-sectional data does not support causality Study limited to the hospital setting which impacts the extent to which findings can be generalized
Maiden, J., Georges, J. M., & Connelly, C. D. (2011)	Mixed method approach using a quantitative survey followed by a qualitative focus group	To examine relationships between nurse characteristics, perceptions about medication errors, moral distress, and compassion fatigue	Mailed survey and one-time focus group	Quantitative survey included 205 critical care nurses. The focus group included five currently practicing critical care nurses.	Culture of blame and shame for medication errors leads to unspoken violence against nurses and patients.	Current power structures and blame of individuals for errors isolate critical care nurses such that their voices go unheard. Fear prevents reporting	Medication errors cannot be reduced without contextual and cultural change	Selection bias Non-response bias

Continued

Naveh, E., Katz-Navon, T., & Stern, Z. (2006)	Quantitative design	To investigate the relationship between the climate of safety climate and error reporting readiness	Three acute care hospitals in Israel	632 hospital physicians and nurses	Willingness to report errors is associated with perceptions of the safety climate	Employees feel more confident in reporting errors when they believe the organization provides safety information and training	Readiness to report errors was measured by the number of reports, not the number of actual errors
Nembhard, I. M., & Edmondson, A. C. (2006)	Quantitative design	To explore factors that promote engagement when team status differences exist	23 neonatal intensive care units involved in quality improvement projects in the United States and Canada	1440 staff members - registered and advanced practice nurses, physicians, respiratory therapists, other health professionals	Leaders should be trained to invite feedback and comments from team members. Leadership training can improve the team climate, team engagement, and quality.		Use of only professionals working in the Neonatal Intensive Care Unit may hinder generalization to broader populations Non-response bias
Continued							

Rathert, C., Ishqaidef, G., & May, D. R. (2009)	Quantitative survey using mailed question- naires.	To investigate how work environ- ments influence psychologi- cal safety and to explore a theoretical model of patient safety, staff engage- ment, and organiza- tional commitment	Medical units of an acute care hospital in the north- west ern U.S.	252 respon- dents (87% were nurses, and 13% were allied health professionals and support personnel)	Participants who reported an environment with greater continuous quality improvement reported greater psychological safety, commitment to the organization, and patient safety	Psychological safety was defined as feeling comfortable about speaking up to improve work or report potentially dangerous situations	A continuous quality improvement climate was positively related to patient safety	The study results do not infer causality due to the cross sectional survey design. Some instruments had low reliability
Sayre, M. M., McNeese- Smith, D., Leach, L. S., & Phillips, L. R. (2012)	Quasi- experimental design	To determine if nurses' speaking up behaviors could be improved through attendance at group educational sessions	Two 300 bed acute care hospitals in the same health system	Convenience sample of 87 nurses divided into control and intervention groups		A significant difference in speaking up behaviors was found in the intervention group	Education on the importance of speaking up behaviors can improve perceptions of the ability to speak up to improve patient safety	Small sample size. More certified nurses were in the sample than non- certified nurses Continued

Yanchus, N., Derickson, R., C. Moore, S., Bologna, D., & Osatuke, K. (2014)	Qualitative methodology using interviews and a grounded theory approach	To assess perceptions of communication in psychological ly safe and unsafe clinical environments	United States Veterans' Administration Health System	41 individual clinical providers, including nurses, but no totals and types not specifically identified	Employees in psychologically safe environments reported that workplace culture encouraged speaking up	Lack of organizational response, lack of confidence in reporting were features of psychologically unsafe environments	Participants were from organizations that had been identified for support and/or were problematic
---	---	--	--	---	---	---	---

Synthesis

Behavior is a complicated concept, although it can most simply be described as a response to the environment (Merriam-Webster Online Dictionary, 2016). The studies included in this literature review, conducted globally across multiple hospital entities, illustrate the dynamic nature of behavior in response to a variety of environments. These studies make it clear that the nurse practice environment can deeply influence individual nursing behavior.

As noted by Lake (2002), the nurse practice environment of any individual hospital displays the organizational approach toward people management and problem solving in an often chaotic arena. Prior research reveals that environments characterized by collaboration and service seem to promote speaking up (Nembhard et al., 2015), while those characterized by hierarchy and conflict seem to promote constraint and silence (Attree, 2007; Beckmann and Cannella, 2015; Gardezi et al., 2009; Gillespie et al., 2010; Lyndon et al., 2012; Manasse et al., 2002; Maxfield et al., 2013).

The studies included in this review demonstrated the negative behavioral impacts that problematic nurse practice environments can promote among nurses. Several key characteristics of these environments emerged as particularly influential in nursing behavior. These characteristics included: (a) the medical hierarchy, (b) interdisciplinary diversity, (c) prosocial behavior, and (d) unsafe cultural climates. Associated with these environmental characteristics were nurse behaviors that demonstrated silence and/or constraints in communication and that had subsequent negative impacts on patient safety.

The medical hierarchy was the most prominent characteristic. It was found to foster nursing behaviors such as: (a) silence or general reticence; (b) discomfort, constraint, or caution in speaking; (c) feelings of powerlessness or of being unheard; (d) reluctance to challenge decisions; (e) complacency; (f) lack of confidence; and (g) fear (Abdi et al. 2015; Beckman & Cannella, 2015; Churchman & Doherty, 2010; Elder et al., 2008; Firth-Cozens et al., 2004; Gardezi et al. , 2009; Lee et al., 2013; Liu, Hsu, & Chen, 2015; Lyndon, 2008; Lyndon et al., 2014; Malloy et al.; 2009; Paliadelis & Cruickshank, 2008; Schwappach & Gehring, 2014a; Todorova et al., 2014; Vivian et al., 2009; Wakeam et al., 2014; Walrath, 2010; Widmark et al., 2012; Wilson et al., 2005).

According to Barron and West (2005), results from studies on Magnet® hospitals in the US, suggest that strategies are needed to improve the status, authority, and position of nurses in hierarchical organizations. The ability of several of the forces of magnetism, promoted by the Magnet® Recognition Program, in addressing positional and status issues has relevance. Several forces of magnetism are directed to the structural issues inherent in hierarchical organizations: (a) leaders function as staff advocates and supporters; (b) organizational structures are generally flat, are dynamic in response to change, and feature shared decision making; (c) nurse participation and feedback is encouraged and valued; and (d) nurses have increased responsibility, authority and autonomy (ANCC, 2018). Perhaps as a result of these forces, improved outcomes for nurses and patients have been found in hospitals designated as Magnet® facilities (Kutney-Lee et al., 2015). In a study of 136 hospitals, Kutney-Lee et al. (2015)

demonstrated that Magnet® recognition was associated with significant improvements in patient and nurse outcomes and work environment quality, exceeding those of Non-Magnet® hospitals. However, other studies have not supported those findings. For example, in a comparison of Magnet® hospitals to Non-Magnet® hospitals, Trinkoff et al. (2010) found that nurses' working conditions did not vary between the two types of hospitals. In addition, Goode, Blegen, Park, Vaughn, and Spetz (2011) found that Non-Magnet® hospitals had better patient outcomes than Magnet® hospitals, as well as better staffing ratios. Additional studies performed over the years since the inception of the Magnet® program have also varied in support of the attributes promulgated by the Magnet® recognition program. These discrepancies continue to warrant further investigation (Kutney-Lee et al., 2015). While the Magnet® organizational model has been proposed as influential related to the work environment, outcomes remain inconclusive (Daniel & Regnaud, 2013). Further research is indicated to explore the structural issues noted herein and their impact on the practice environment.

The second identified characteristic from the literature review, interdisciplinary diversity, also seemed to be important in the evolution of nursing science. Interdisciplinary diversity appeared to foster a lack of collaboration and increased distance among groups (Gillespie et al., 2010; Jeffs et al., 2012; Nembhard & Edmondson, 2006; Vivian et al., 2009; Wilson et al., 2005). Leaders for the Magnet® Recognition Program recognized this issue and promoted the importance of collaboration and mutual respect within and among the disciplines. Further research will be needed to

understand the full impact of collaborative care on the evolution of silence in the nurse practice environment. Similarly, prosocial behavior, resulting from a need for affiliation, was noted in the review to foster behaviors such as: (a) the avoidance of conflict, (b) efforts to maintain and preserve relationships, and (c) worry about damaging future working relationships (Hughes & Fitzpatrick, 2010; Lyndon, 2008; Maxfield et al., 2013; Schwappach & Gehring, 2014b). The drive for collaborative care and interdisciplinary relationships among Magnet® organizations may be having an unexpected impact on these behaviors, and ultimately on patient safety.

Finally, unsafe cultural climates were noted in the literature review. These climates fostered issues such as failure to disclose errors and lack of confidence in reporting (Attree, 2007; Crigger & Meek, 2007; Maiden et al., 2011; Yanchus et al., 2014). These issues also appear to be important in the evolution of nursing silence behaviors. Since the Magnet focus on quality is expected to ameliorate this type of climate, further research in this area is also needed.

These four environmental characteristics and their concomitant behavioral impacts on nursing communication, and subsequently on patient safety, appear to be present to various degrees in a variety of nurse practice environments across the globe. However, no studies were found that specifically assessed these characteristics and/or their behavioral impacts in the two major types of nurse practice environments commonly seen in the U.S. healthcare system: Magnet® and Non-Magnet® nurse practice environments. Although a number of researchers have compared Magnet® and Non-

Magnet® nurse practice environments in terms of clinical outcomes, nursing perceptions of the nurse practice environment and patient safety, and job satisfaction, no studies were found that assessed nurse silence behaviors and their relationships to patient safety in the two environments. Understanding how these two different nursing practice environments shape motives for nursing silence behaviors could be important in unraveling why and when nurses “...withhold their opinions, their knowledge, and especially their concerns” (Knoll & van Dick, 2013, p. 350) about patient safety. According to Okuyama et al. (2014), it is expected that speaking up will have a preventive effect on errors and/or will improve deficiencies in the system. Thus, the approach an organization takes to managing the characteristics of the nurse practice environment that influence individual nursing silence behaviors may ultimately impact patient safety. The measurement of nurse silence behaviors in Magnet® and Non-Magnet® practice environments will provide evidence that may assist in changing the characteristics of the practice environment that promote problematic communication behavior.

Evidence suggests that over 400,000 patients die each year from preventable adverse events in US hospitals (James, 2013). In addition, serious non-lethal harm is even more common than lethal harm (James, 2013). Communication is a key underlying theme in these adverse events (A. Lee et al., 2014), and moreover, has been identified as a root cause of sentinel events (The Joint Commission, 2014). Although many healthcare issues can lead to patient care errors, the role that nurses play when they observe errors is

an important one in terms of protecting patients. Perhaps a better understanding of why and when nursing silence behaviors occur will help to guide the change.

Conclusion

The purpose of this review of the literature was to examine and synthesize research evidence related to the characteristics of the nurse practice environment, their relationships to nursing communication, and to patient safety. Understanding how the characteristics of the nurse practice environment influence nursing communication behaviors such as silence or speaking up is important in improving patient safety. The studies in this review demonstrate that, while there are several characteristics in the nurse practice environment that have an impact on nursing communication behaviors, deficiencies exist in the understanding of the evolution of nursing silence behaviors, as well as their relationship to patient safety.

Jeffs et al. (2012) noted that limited understanding exists as to how interactions at an organizational level influence the perceptions and responses of clinicians to patient safety events. Exploring how organizational characteristics influence nursing silence behaviors facilitates increased understanding of these events. Additionally, assessing these silence behaviors in different nurse practice environments (e.g., those in Magnet® or Non-Magnet® hospitals) provides new information about the ways in which differences in practice environments influence both nursing silence and patient safety. Exploring the links between these concepts provides new knowledge regarding the

delivery of care to patients and their families and may be important in reducing errors and improving patient safety.

CHAPTER III

PROCEDURE FOR COLLECTION AND TREATMENT OF DATA

The U.S. healthcare system today is mired with a high prevalence of preventable adverse events, defined as medical errors that cause harm to patients (James, 2013). Communication has been identified as a leading theme in these adverse events (A. Lee et al., 2014), and a major root cause of sentinel events (The Joint Commission, 2014). A review of the literature reveals several reports of silence behaviors among healthcare workers, including nurses, in relationship to medical errors and patient outcomes (Belyansky et al., 2011; Firth-Cozens et al., 2004; Lyndon, 2008; Lyndon et al., 2012; Maxfield et al., 2005; Maxfield et al., 2013; Souba et al., 2011; Sutcliffe et al., 2004). In addition, multiple studies demonstrate challenges specific to nurses in speaking up about safety concerns, including both constraints in communication and silence about observed errors (Abdi et al., 2015; Attree, 2007; Beckmann & Cannella, 2015; Canam, 2008; Churchman & Doherty, 2010; Espin et al., 2006; Elder et al., 2008; Gardezi et al., 2009; Hashemi et al., 2012; Maxfield et al., 2010). Based upon these studies, it appears that nursing care environments dominated by hierarchy, power gradients, intimidation, and conflict promote constraint and/or silence about safety concerns and errors; and environments that promote speaking up appear to be characterized by collaboration and support (Nembhard et al., 2015). However, it was not definitively known how nurses' perceptions of nurse practice environments were specifically related to silence behaviors

and patient safety, and how different nursing practice environments (such as those in Magnet® or Non-Magnet® hospitals) might relate to silence behaviors (such as preferences and motives for silence), and subsequently patient safety. In addition, since no study could be found which used the FFESS in the nursing population, a secondary purpose of this study was to examine the reliability of this scale in this particular population of hospital-employed, staff-level registered nurses.

This study examined registered nurse silence behaviors, nurse practice environments, and relationships to registered nurse perceived patient safety outcomes. This chapter presents the research methodology used for the study including (a) the research approach and design; (b) details regarding the setting, population and sample, protection of human subjects, and instruments; and (c) information about the procedures for data collection and treatment of data.

Research Design

A predictive, correlational research design was used. Non-experimental research designs are those in which data are collected without the introduction of an intervention (Polit & Beck, 2012). Another name for non-experimental research is observational research (Polit & Beck, 2012). Several variables and their relationships are described in the study through the use of the Spearman rank-order correlation, the Pearson product-moment correlation, simple linear regression, and multiple linear regression. Path analysis was also used to characterize relationships between variables. Independent variables included: (a) hospital-employed, staff-level, registered nurse perceptions of the nurse

practice environment, (b) the frequency of hospital-employed, staff-level, registered nurse preferences to remain silent regarding observed patient safety events, and (c) hospital-employed, staff-level, registered nurse overall perceptions of patient safety. Dependent variables included: (a) the frequency of hospital-employed, staff-level, registered nurse preferences to remain silent regarding observed patient safety events, (b) hospital-employed, staff-level, registered nurse overall perceptions of patient safety, and (c) hospital-employed, staff-level, registered nurse motives for silence.

Additionally, registered nurse demographic characteristics were examined and described in order to identify differences. These types of characteristics were considered extraneous or confounding variables in this study since they could influence the findings and threaten internal validity (Polit & Beck, 2012). Internal validity is the degree to which uncontrolled variables may be responsible for observed results (Polit & Beck, 2012). These uncontrolled variables included: (a) age, (b) gender, (c) estimated average years of nursing experience, and (d) nursing specialty, and (e) type of nurse practice environment (Magnet® or Non-Magnet®). While the use of a balanced design had been considered in order to ensure that the two main groups for comparison (Magnet® and Non-Magnet® nurses) had similar representation in terms of the uncontrolled variables, this type of design was not feasible due to the difference in group size (i.e., 27 Magnet nurses and 56 Non-Magnet nurses). Selection bias must, therefore, be considered in drawing conclusions from the findings. Instrumentation was a threat in this study in that the FFESS by Knoll and van Dick (2013) had not previously been used in the nursing

population and the reliability of this scale for this population was not known. However, this instrument was found to be reliable for this population in this study. Finally, history could have been a potential threat. History involves the occurrence of global events during the study that might have unintended influences on the outcome of the study (Marczyk, Matteo, & Festinger, 2005).

Threats to external validity were considered in the design of the study. External validity is the degree to which the results of the study can be generalized (Polit & Beck, 2012). Issues in this study that threatened external validity included the characteristics of the sample, the setting, the reactivity of assessment, and the instruments utilized (Polit & Beck, 2012). According to Marczyk, Matteo, and Festinger (2005), it is difficult to control for all population characteristics. A major characteristic of the sample was that participants were recruited from only two universities and were enrolled RN-BSN students. In addition, and as previously described, the use of a balanced design would have enhanced comparability among the Magnet® and Non-Magnet® nurse groups, however, it was not deemed feasible due to the difference in group size attained. In terms of settings, the conditions during completion of the questionnaires can impact the ability to generalize the findings (Marczyk et al., 2005). For this study, participants were instructed to complete the questionnaires electronically via the Internet. This method of data collection could have impacted the results due to the privacy, or lack thereof, in the setting where the Internet was utilized. The reactivity of assessment may have been a threat to external validity, in that the participants' awareness that their performance was

being measured might have caused them to respond differently than they normally would have responded (Marczyk et al., 2005). As a result of this potential issue, it was viewed as important to ensure that the participants had knowledge of the purpose of the study. This information was provided during the informed consent process.

Setting

The setting for the study was the state of Texas. The initial plan was for registered nurses in the sample to come from one or more of the following setting options:

- Option 1: Registered nurses currently employed in hospitals and enrolled in university level RN–BSN programs, in which the university provided approval for the study.
- Option 2: Registered nurses currently employed in hospitals and members of professional nursing organizations such as the Association of Women’s Health, Obstetrical, and Neonatal Nursing, the Association of Critical Care Nurses, and the Society of Pediatric Nurses, in which said organization provided approval for the study.
- Option 3: Registered nurses currently employed in hospitals in which the hospital granted approval for the study.

The initial plan was that the recruitment of registered nurses to participate in the study was to occur via email, through posted flyers, or in person, depending on the setting. This plan included that eligible registered nurse participants were to complete

participation either in-person or via the Internet using an online survey platform and database entitled PsychData. PsychData is an online survey software tool specifically designed for social science researchers to conduct secure online surveys. PsychData provides Internet security and meets IRB standards for the protection of research participants (PsychData L.L.C, 2016). Ultimately, only Option 1 was used for the recruitment of participants, because of the availability of potential participants and the ease of recruitment. The registered nurses completed participation via the Internet.

Population and Sample

The target population for the study was all English-speaking registered nurses in the United States employed in staff-level registered nurse positions in hospitals. The accessible population included English-speaking registered nurses employed in hospital staff-level positions who were simultaneously enrolled in RN-BSN university level programs, and who could complete participation electronically via the Internet.

Eligibility criteria for the convenience sample included English-speaking, licensed registered nurses who held current staff-level employment in hospitals, and who could complete the study electronically via Internet. Potential participants who were not licensed as registered nurses, who did not speak English, who were not employed in staff-level positions at hospitals, and who did not have Internet access were excluded from the sample.

The consenting process and collection of registered nurse data and study questionnaires from eligible participants occurred through the use of the PsychData

website via the Internet. All data remained confidential and no universities, professional associations, or hospitals are named in the study. Participants also remain confidential.

Participant Recruitment

Prior to participant recruitment, approval for the study was obtained from the Institutional Review Board of Texas Woman's University. The next steps were to obtain permissions from the universities selected for participation. University approvals were obtained from administrative personnel at three universities to recruit registered nurses (who were also RN-BSN students at the universities) for participation in the study. University approvals were requested via email from administrative personnel within the respective Colleges of Nursing. Once university approvals were received, the second step in recruitment began. A convenience sample of hospital-employed, staff-level, registered nurses from two of the three eligible universities was sought to obtain data from individual registered nurses. For this second step, the researcher prepared a flyer (Appendix E). The flyer was emailed to the administrative contacts who approved the study at two of the three eligible universities, along with a request for electronic distribution of the flyer to potential registered nurse participants who were enrolled in the respective university RN-BSN programs. The flyer briefly described the purpose of the study and provided the URL for the PsychData website where the questionnaires were housed. Potential participants were requested to go directly to the URL for PsychData to complete an informed consent and the questionnaires. A small incentive for participation (\$10 Target gift card) was noted in the flyer and offered for recruitment of the sample.

Recruitment was limited to two of the three eligible universities, and sampling was discontinued, due to the expense of the incentive associated with the volume of participants attained. The electronic provision of the incentive was facilitated by creating two separate surveys within PsychData. One survey contained the four anonymous research questionnaires and the other contained the identifying contact questions (participant name and address). The surveys were set so that upon completion of the anonymous research questionnaires, the participant was directed to the second survey to submit identifying contact information. The two surveys generated two separate and unlinked data files. One data file was for anonymous research data and the other was for identifying contact information. Once both surveys were completed, the incentive was mailed to the participant at the address provided in the second survey. A few participants did not provide their complete addresses; therefore, they did not receive the incentive.

Sample Size

A sample size of 67 registered nurses was the required minimum sample size based upon power analysis. However, a sample of 20 additional participants was recommended by the Texas Woman's University Center for Research Design and Analysis, due to the potential for missing and invalid data, such as dropouts, conflicting responses, and rapid completion. The final sample included 91 participants. Power is the probability of detecting a relationship between the independent and dependent variables in the study (Polit & Beck 2012). A power analysis strengthens the validity of the study's conclusion by estimating how large the sample should be (Polit & Beck,

2012). The power analysis has four components: (a) the significance criterion or alpha, (b) the sample size, (c) the effect size, and (d) the power (Polit & Beck, 2012). At least three of these components must be known to conduct the analysis (Polit & Beck, 2012). Researchers generally establish the alpha at .05 and the standard power at .80 (Polit & Beck, 2012).

The use of path analysis in this study required the use of simple linear regression and multiple linear regression. The purpose of path analysis is to examine causal relationships among variables (Polit & Beck, 2012). Both simple linear and multiple linear regression procedures were required for the path analysis. The simple linear regression procedures performed were as follows: (a) the frequency of registered nurse preference to remain silent regarding observed patient safety events regressed on registered nurse perceptions of the nurse practice environment; (b) registered nurse overall perception of patient safety regressed on registered nurse preference to remain silent; and (c) registered nurse overall perception of patient safety regressed on the registered nurse perception of the nurse practice environment. One multiple linear regression procedure was performed as follows: registered nurse overall perception of patient safety regressed on the registered nurse perception of the nurse practice environment and registered nurse preference to remain silent.

Regression is a procedure for predicting the values for a dependent variable based upon the values of one or more independent variables (Polit & Beck, 2012). Simple linear regression is the analysis of two variables that are correlated or linearly related

(Portney & Watkins, 2015). Multiple linear regression is a procedure used to establish a relationship between one dependent variable and more than one independent variable (Portney & Watkins, 2015). The multiple correlation coefficient (R) represents an index that demonstrates the strength of the relationship between several independent variables and the dependent variable, and ranges from 0 to 1 (Polit & Beck, 2012). When R is squared, it represents the proportion of variance accounted for by the combined influence of the independent variables (Polit & Beck, 2012). Generalizations regarding regression results require that certain assumptions are met such as: (a) there are two measures for each subject; (b) the data is interval, ratio, or ordinal; (c) the sample is representative of the population; (d) the variables involved have a normal distribution; (e) the relationships between independent variables and the dependent variable are linear; and (f) the variables are normally distributed with no major outliers (Munro, 2005). All variables analyzed using regression in this study were at the interval or ordinal level. Linearity was discerned by means of Q-Q plots, and outliers were determined using boxplots. The results of all statistical analyses are displayed in data tables.

For multiple regression, the effect size is the value of the multiple correlation coefficient squared (R^2). Conventional effect size values are .02 for small effects, .13 for medium effects, and .30 for large effects (Polit & Beck, 2012). For this study, the alpha was set at 0.5, the power at .80, and the effect size at 0.13. Based upon Table 18.4 in Polit and Beck (2012), the estimated sample size was 67, resulting in a 5% chance of a Type I error, and a 20% chance of a Type II error. Staff at the Texas Woman's

University Center for Research Design and Analysis recommended an increase in the sample size by 20 additional participants, due to potential for missing and invalid data. The final sample included 91 participants.

Delimitations

This study was confined to the state of Texas. The sample was restricted to only English-speaking hospital-employed staff-level, registered nurses who had Internet access.

Protection of Human Subjects

Before beginning the study, approval was obtained from IRB of Texas Woman's University and from the universities used for the study. This approval was accomplished to ensure that all participants had rights to freedom from harm and discomfort, self-determination, freedom from coercion to participate, fair treatment, and privacy. Individuals interested in participating in the study utilized the Internet to access the Psychdata website where they were provided informed consent that included the nature and purpose of the study. Appropriate human subject protection information included the reason participation was being requested, the alternatives to participation, the risks of participation, the benefits of participation, the costs of participation, and the privacy and security of information provided. Upon accessing the Psychdata website, participants viewed an informed consent page. Participant completion of the informed consent page on the PsychData website was required prior to continuance to the four research questionnaires. At the end of the PsychData informed consent page, participants viewed

the following: *If you agree with these statements and consent to participate, please click on the “Continue” button below.* Clicking of the “Continue” button by the participant indicated informed consent, and allowed the participant to continue to the research questionnaires.

The confidentiality of participants was facilitated by creating two separate surveys within PsychData. The first survey contained the four anonymous research questionnaires and the second contained the identifying contact questions (participant name and address), so that the incentive could be provided. The surveys were set so that upon completion of the anonymous research questionnaires, the participant would be directed to the second survey to submit identifying contact information. The two surveys generated two separate and unlinked data files. The first data file was for anonymous research data and the second data file was for identifying contact information. All data collected in the second file were de-identified to ensure confidentiality, after provision of the incentive and completion of the study. The de-identified database will be stored in a computer in the researcher’s home office in a secured environment.

Prior to data collection, participants were given information regarding the purpose of the study. After completion of the study, the overall results will be shared with participants upon email request to the researcher. A concern of participants may have been emotional distress based upon participation in the study. Participants may have also experienced anxiety based upon the questions related to silence. Although the researcher

was not notified of any emotional distress or anxiety among participants, these issues were considered in the analysis of data, summary of findings, and implications.

Instrumentation

Each instrument used in the study is described herein, with statements provided regarding what is known about their respective reliability and validity. Reliability demonstrates the consistency and accuracy of the instrument's measurement, while validity demonstrates the degree to which the instrument measures what it is supposed to measure (Polit & Beck, 2012).

In terms of reliability, all instruments are reported with an alpha reliability estimate (α), or Cronbach's alpha. This coefficient alpha represents the internal consistency of the instrument as an index that estimates the ability of the instrument to reliably measure an attribute (Polit & Beck, 2012). The normal range is between 0 and 1.00, with a higher value reflective of higher internal consistency (Polit & Beck, 2012). Therefore, an estimate of .80 means that the instrument has high internal consistency (Polit & Beck, 2012).

The validity of an instrument can be established through a process of evidence building that supports that it measures what it is supposed to measure. Validity can be evidenced in a number of ways such as through face, content, construct, or criterion related validity or through the testing of hypothesized relationships (Polit & Beck, 2012).

Practice Environment Scale of the Nursing Work Index

Registered nurse perceptions of the nurse practice environment were measured by registered nurse responses on the PESNWI (see Appendix B). This scale was developed by Lake (2002) to examine registered nurse perceptions of the characteristics of the registered nurse work setting that facilitate or constrain professional nursing practice. Five areas are measured by the scale including: (a) nurse participation in hospital affairs; (b) nursing foundations for quality of care; (c) nurse manager ability, leadership, and support of nurses; (d) staffing and resource adequacy; and (e) collegial nurse-physician relations (Lake, 2002). The PESNWI contains 31 questions, with the responses for each question consisting of a 4-point Likert scale with categories of: (a) strongly agree, (b) agree, (c) disagree, and (d) strongly disagree (Lake, 2002). Strongly agree is coded 4 and strongly disagree is coded 1. Summative scores range from 31 to 124 (E. Lake, personal communication, April 23, 2014). Means are derived for each of five subscales. Practice environments are classified as favorable if four or five subscales have means greater than 2.5 and unfavorable if none or one of the subscales has a mean of 2.5 or less (Lake & Friese, 2006).

The samples used to develop the instrument included nurses working in Magnet® and Non-Magnet® hospitals across the country (Lake, 2002). Internal consistency for the scale was evaluated through the use of the Cronbach's alpha (Lake, 2002). The Cronbach's alpha (α) scores for the PESNWI range from .71 to .84 for the five subscales

and .82 for the composite (Lake, 2002). Construct validity of the scale was supported through the use of the known groups approach and exploratory factor analysis.

Four Forms of Employee Silence Scale

Registered nurse self-identification of the frequency of preferences to address or to remain silent about observed patient safety events, as well as registered nurse motives to remain silent about observed patient safety events were measured by the FFESS, by Knoll and van Dick (2013), as seen in Appendix C. The FFESS was developed and tested by Knoll and van Dick to determine how distinct employee motives contribute to the occurrence of silence in organizations (Knoll and van Dick, 2013). The sample used to develop the original scale included 184 female and male participants (72% female, 28% male) who studied psychology at a German distant learning institution, in addition to their regular employment (Knoll & van Dick, 2013). The survey included employees in non-management, lower level management, and middle management positions (Knoll & van Dick, 2013). Knoll & van Dick (2013) identified the motives for silence as: (a) acquiescent silence in which the individual believes his or her opinion is not valued, (b) quiescent silence in which the individual is fearful, (c) prosocial silence in which the individual values affiliation and social relationships, and (d) opportunistic silence in which the individual is seeking self-advantage. The FFESS consists of 18 questions and four subscales that are designed to differentiate these four motives for silence (Knoll & van Dick, 2013). The introductory information which sets the stage for scale completion has been modified slightly from the original with the permission of the author (M. Knoll,

personal communication, March 27, 2014). This modification was important to make the scale more relevant for the U.S. nursing population. Modifications from the original scale also included the replacement of the term *misbehavior* with the term *patient safety event* in Questions 1 and 2, to make the questions more relevant to the nursing population. A *patient safety event* is defined as “... any type of error, mistake, incident, accident, or deviation, regardless of whether or not it results in patient harm” (AHRQ, 2017, para. 1). This modification was also approved by the author (M. Knoll, personal communication, October 24, 2014). Question 1 on the instrument deals with the frequency with which *patient safety events* are observed. Question 2 deals with the frequency with which *patient safety events* are addressed, while Question 3 deals with the frequency of registered nurse preferences to remain silent regarding observed *patient safety events*. The responses on Questions 1, 2, and 3 consist of 4-point Likert scales with categories ranging from 1 (*no, never*) to 4 (*yes, many times*). A higher mean for Question 2 indicates more frequently identified preferences to address observed *patient safety events*. A higher mean for Question 3 indicates more frequently identified preferences to remain silent about observed *patient safety events*. The responses on Questions 4 through 18 consist of a 7-point Likert scale with categories ranging from 1 (*never*) to 7 (*very frequently*). Summative scores for Questions 4 through 18 range from 15 to 105. A higher overall mean and higher subscale means indicate more frequently identified motives for silence (M. Knoll, personal communication, April 24, 2014).

Internal consistency for the scale was evaluated through the use of the Cronbach's alpha (Knoll & van Dick, 2013). The Cronbach's alpha (α) scores for the four subscales within the FFESS range from .80 to .89 (Knoll & van Dick, 2013).

The authors of the FFESS established the validity of the scale through the use of a construct validation process suggested by Borsboom, Mellenbergh, and Van Heerden (2004). The authors first used exploratory factor analysis to group together related variables (Knoll & van Dick, 2013). Next, as suggested by Borsboom et al. (2004), the authors tested several hypotheses to provide theoretical explanations of the processes underlying the measurement outcomes (Knoll & van Dick, 2013). The hypotheses pertained to the antecedents, correlates, and consequences of each of the four forms of silence (Knoll & van Dick, 2013). The majority of the hypotheses were confirmed, and provided validation of previous findings (Knoll & van Dick, 2013).

The Hospital Survey on Patient Safety

The PPSS of the Hospital Survey on Patient Safety (AHRQ, 2017), as shown in Appendix D, was used to measure the overall perception of patient safety among registered nurses regarding the hospital work area /unit where they work. Responses for the overall perception of patient safety were collected on four questions with each question using a 5-point Likert scale consisting of categories ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). Registered nurse overall perception of patient safety was measured by the mean of scores on the four questions. The higher the mean, the higher the overall perception of patient safety (AHRQ, 2017).

The development of this instrument was funded by the Agency for Healthcare Research and Quality (AHRQ, 2017). The sample included 1,437 hospital staff (in a variety of job classifications and units) from 21 U.S. hospitals located in varied geographic locations (AHRQ, 2017). Internal consistency for the scale was evaluated through the use of the Cronbach's alpha (AHRQ, 2017). The Cronbach's alpha (α) for the PPSS of the Hospital Survey on Patient Safety is .74 for the overall perception of safety. Although Polit and Beck (2012) recommend a Cronbach's alpha of .80, they state that reliability coefficients in the range of .70 may be satisfactory for group level comparisons. Portney and Watkins (2015) also note that several sources suggest that a scale with a moderate correlation between .70 and .90 is preferable; if the correlation is too low, different traits are being measured, and if it is too high the items are most likely redundant.

Construct validity of the entire Hospital Survey on Patient Safety was supported through the use of an exploratory factor analysis (AHRQ, 2017). Exploratory factor analysis confirmed the existence of multiple dimensions that fell into distinct factors, and was followed by confirmatory factor analysis (AHRQ, 2017). Additionally, composite and inter-correlations were evaluated; inter-correlations all fell within the expected moderate to high range from .23 to .60 (AHRQ, 2017). This score range indicated that none of the dimensions appeared to measure the same concepts that comprise the construct (AHRQ, 2017).

Demographic Profile

The instruments utilized in this study also included a researcher developed Demographic Profile (see Appendix A). The Demographic Profile was used to collect the demographic characteristics used to describe the sample. These characteristics included (a) age, (b) gender, (c) estimated average years of nursing experience, (d) nursing specialty, and (e) type of nurse practice environment. Study participants clicked on labeled categories or filled in blanks to complete the Demographic Profile via Psychdata and the Internet.

Data Collection

Prior to data collection, permission was obtained from the IRB of Texas Woman's University. Agency permissions for the study were next requested via email from College of Nursing administrative personnel at the respective universities. Once these permissions were received, email requests were sent to these administrative contacts requesting electronic distribution of the flyer to potential registered nurse participants who were also RN-BSN students at the respective universities (see Appendix E). The flyer briefly described the purpose of the study and provided the URL for the PsychData website where the questionnaires were housed. Potential participants were requested to go directly to the URL for PsychData to complete an informed consent and the questionnaires. A small incentive for participation (\$10 Target gift card) was offered and noted in the flyer. The provision of the incentive was facilitated by creating two separate surveys within PsychData. One survey contained the four anonymous research

questionnaires and the other contained the identifying contact questions (participant name and address). The surveys were set so that upon completion of the anonymous research questionnaires, the participant was directed to the second survey to submit identifying contact information. The two surveys generated two separate and unlinked data files. One data file was for anonymous research data and the other was for identifying contact information. Once both surveys were completed, the incentive was mailed to the participant at the address provided in the second survey.

Potential participants who met eligibility criteria and agreed to participate completed the study via the Internet. They were requested to go directly to the URL for PsychData to complete eligibility criteria, informed consent, and the research questionnaires. Eligibility criteria for the sample included licensed, registered nurses who had current staff-nurse level employment in hospitals. Potential participants who were not licensed as registered nurses and not employed at hospitals were excluded from the sample. Eligible registered nurse participants were provided with the contents of the informed consent process, along with human subject protection information. They had to indicate at the bottom of the consent form that they were or were not willing to participate before being allowed access to a Demographic Profile and the three study questionnaires. Once consent was obtained, the participant was able to access and complete the Demographic Profile (see Appendix A), the Practice Environment Scale of the Nursing Work Index (see Appendix B), the Four Forms of Employee Silence Scale (see Appendix C), and the Perception of Patient Safety Subscale of the Hospital Survey

on Patient Safety (see Appendix D). Completion of the information by participants took an average of 19 minutes.

Following completion of the questionnaires, electronic participants were automatically directed to a second survey area to submit the identifying contact information needed for provision of the incentive. The two surveys generated two separate and unlinked data files. One data file was for anonymous research data and the other was for identifying contact information. The time period for data collection was approximately four months.

Treatment of Data

All data were analyzed using the Statistical Package for the Social Sciences (SPSS) version 25. The results of the statistical analyses are displayed using data tables. The treatment of data had four parts: (a) the description of the demographic characteristics of the sample; (b) the examination of the relationships between the variables; (c) an examination of findings related to the research questions and hypotheses; and (d) the application of path analysis to the hypothesized model described in Figure 1.1. Missing data were assessed for each variable and examined to determine if patterns existed. There were no missing data, therefore, no treatment for missing data was required.

Descriptive statistics such as frequency distributions and measures of central tendency were used to describe the demographic characteristics of the sample. Demographic characteristics described included: (a) age, (b) gender, (c) estimated

average years of nursing experience, (d) nursing specialty, and (e) type of nurse practice environment where employed. Relationships between variables were examined through the use of crosstabulation, independent and paired samples *t*-tests, and Spearman's rank-order correlation. Primary analyses related to the research questions and hypotheses were conducted using Spearman's rank-order correlation, Pearson's product-moment correlation, simple linear regression, multiple regression, and path analysis. Path analysis utilizes regression to study causal patterns among variables (Polit & Beck, 2012). Table 3.1, entitled *Study Variables and Statistics for Primary Analyses*, lists the independent and dependent variables used for the primary analyses, their levels, the measurement used, the potential range of scores, and the statistical tests used. Variables were labeled as independent and dependent and exogenous and endogenous for organizational and evaluative purposes.

Spearman's rank-order correlation (Spearman's rho) is a correlation coefficient measured on the ordinal scale, while Pearson's product-moment correlation (Pearson's *r*) is a correlation coefficient measured on an interval or ratio scale (Polit & Beck, 2012). Both Spearman's rho and Pearson's *r* indicate the magnitude of a relationship between variables. A correlation coefficient of 1 represents a perfect positive relationship, of 0 represents no relationship, and of -1 represents a perfect negative relationship (Polit & Beck, 2012). The interpretation of Spearman's rho is similar to that of Pearson's *r* (Polit & Beck, 2012). Several assumptions must be met to properly perform the Pearson's *r*: (a) data for each variable is at the interval or ratio level, (b) the variables are normally

distributed, (c) there are not any significant outliers, and (d) there is a linear relationship between the variables (Polit & Beck, 2012). All variables analyzed using the Pearson's r in this study were at the interval level.

Regression is a procedure for predicting the values for a dependent variable based upon the values of one or more independent variables (Polit & Beck, 2012). Simple linear regression is the analysis of two variables that are correlated or linearly related (Portney & Watkins, 2015). Multiple linear regression is a procedure used to establish a relationship between one dependent variable and more than one independent variable (Portney & Watkins, 2015). The multiple correlation coefficient (R) represents an index that demonstrates the strength of the relationship between several independent variables and the dependent variable, and ranges from 0 to 1 (Polit & Beck, 2012). When R is squared, it represents the proportion of variance accounted for by the combined influence of the independent variables (Polit & Beck, 2012). Generalizations regarding regression results require that certain assumptions are met such as: (a) there are two measures for each subject; (b) the data is ordinal, interval, ratio; (c) the sample is representative of the population; (d) the variables involved have a normal distribution; (e) the relationships between independent variables and the dependent variable are linear; and (f) the variables are normally distributed with no major outliers (Munro, 2005). All variables analyzed using regression in this study were at the ordinal or interval level. Linearity was discerned by means of Q-Q plots, and outliers were determined using boxplots.

The Cronbach's alpha was the statistical test used to determine the reliability of the FFESS for use in the nursing population. The Cronbach's alpha is an index that "...estimates the internal consistency of a composite measure composed of several subparts....." (Polit & Beck, 2012, p. 724). Cronbach's alpha, also called coefficient alpha, measures the extent to which the items in the instrument reliably measure the attribute of study (Polit & Beck, 2012). Cronbach's alpha is interpreted using values ranging between .00 and 1.00, with higher values indicative of higher internal consistency (Polit & Beck, 2012). Acceptable values of alpha range from 0.70 to 0.95 (Tavakol & Dennick, 2011).

Table 3.1.

Study Variables and Statistics for Primary Analyses

Independent Variable Name	Independent Variable Level	Dependent Variable Name	Dependent Variable Level	Measurement	Range of Scores	Statistic
Hospital-employed, staff-level Registered Nurse Perceptions of Nurse Practice Environment	Interval	Frequency of Registered Nurse Preferences to Remain Silent Regarding Observed Patient Safety Events	Ordinal	Spearman's rank-order correlation	-1.00 to 1.00	Spearman's rho (p)
Silence Subscales	Interval	Hospital-employed, staff-level Registered Nurse Perceptions of Nurse Practice Environment	Interval	Pearson's product-moment correlation	-1.00 to 1.00	Pearson's r
Registered Nurse Overall Perception of Patient Safety	Interval	Frequency of Registered Nurse Preferences to Remain Silent Regarding Observed Patient Safety Events	Ordinal	Spearman's rank-order correlation	-1.00 to 1.00	Spearman's rho (p)
						Continued

Hospital-employed, staff-level, Registered Nurse Perceptions of Nurse Practice Environment	Interval	Registered Nurse Overall Perception of Patient Safety	Interval	Pearson's product-moment correlation	-1.00 to 1.00	Pearson's r
Hospital-employed, staff-level, Registered Nurse Perceptions of Nurse Practice Environment (exogenous)	Interval	Frequency of Registered Nurse Preferences to Remain Silent Regarding Observed Patient Safety Events (endogenous)	Ordinal	Simple linear regression	.00 to 1.00	R^2
Frequency of Registered Nurse Preferences to Remain Silent Regarding Observed Patient Safety Events (exogenous)	Ordinal	Registered Nurse Overall Perceptions of Patient Safety (endogenous)	Interval	Simple linear regression	.00 to 1.00	R^2
Continued						

Hospital-employed, staff-level, Registered Nurse Perceptions of the Nurse Practice Environment (exogenous)	Interval	Registered Nurse Overall Perceptions of Patient Safety (endogenous)	Interval	Simple linear regression	.00 to 1.00	R^2
Hospital-employed, staff-level, Registered Nurse Perceptions of the Nurse Practice Environment (exogenous) and Frequency of Preferences to Remain Silent (exogenous)	Interval and Ordinal	Registered Nurse Overall Perceptions of Patient Safety (endogenous)	Interval	Multiple regression Path analysis	.00 to 1.00	R^2
The Four Forms of Employee Silence Scale				Reliability	.00 to 1.00	Cronbach's alpha

Summary

This chapter presented the procedures performed for the collection and treatment of data for the study. A predictive, correlational research design was used. Elements described included the setting; the population and sample, including participant recruitment, sample size, and delimitations; the protection of human subjects, the instruments used; the techniques for data collection; and the statistical procedures for data analysis.

CHAPTER 1V

ANALYSIS OF DATA

The primary purpose of this study was to assess how the nursing practice environment influences silence and patient safety. Assessing practice environments in terms of silence behaviors and their relationships to patient safety facilitates increased understanding of nurses' preferences and motives for choosing silence in different practice environments. This new evidence may provide clues as to factors in the care environment that might be revised to improve patient care and ultimately patient outcomes. A secondary purpose of this study was to assess the reliability of the FFESS in the nursing population. This chapter provides a brief review of the design of the study and of each instrument used for data collection, information regarding data preparation, a description of the sample, a presentation of the specific findings of the study, and a summary of all findings.

Research Design

A predictive, correlational research design was used for this study. Several variables and their relationships were examined in the analysis. Independent variables included hospital-employed, staff-level, registered nurse perceptions of the nurse practice environment, and the frequency of hospital-employed staff-level, registered nurse preferences to remain silent regarding observed patient safety events. Dependent variables included the frequency of hospital-employed, staff-level, registered nurse

preferences to remain silent regarding observed patient safety events, and hospital- employed, staff level, registered nurse overall perceptions of patient safety. Additionally, registered nurse demographic characteristics for participants in the study were examined.

Instruments

Several instruments were used to collect data from participants. These instruments included the Demographic Profile, the Practice Environment Scale of the Nursing Work Index (PESNWI), the Four Forms of Employee Silence Scale (FFESS), and the Perception of Patient Safety Subscale (PPSS) of the Hospital Survey on Patient Safety. The Demographic Profile, shown in Appendix A, is a researcher developed tool that was used to collect the demographic characteristics of the sample. The characteristics examined included: (a) age, (b) gender, (c) estimated average years of nursing experience, (d) nursing specialty, and (e) type of nurse practice environment.

The PESNWI, as seen in Appendix B, measured registered nurse perceptions of the nurse practice environment (Lake, 2002). This scale includes five subscales: (a) nurse participation in hospital affairs; (b) nursing foundations for quality of care; (c) nurse manager ability, leadership, and support of nurses; (d) staffing and resource adequacy; and (e) collegial nurse-physician relations (Lake, 2002). The Cronbach's alpha of this instrument ranges from .71 to .84 for the five subscales and .82 for the composite (Lake, 2002). In this study, the Cronbach's alpha ranged from .807 to .880 for the five

subscales and .945 for the composite. Values above .70 are considered acceptable and indicate the instrument has internal consistency (Tavakol & Dennick, 2011).

The FFESS, as seen in Appendix C, measured registered nurse self-identification of the frequency of preferences to address or to remain silent about observed patient safety events, as well as registered nurse motives to remain silent about observed patient safety events (Knoll & van Dick, 2013). This scale consists of four subscales designed to differentiate the four motives for silence: (a) acquiescent silence in which the individual believes his or her opinion is not valued, (b) quiescent silence in which the individual is fearful, (c) prosocial silence in which the individual values affiliation and social relationships, and (d) opportunistic silence in which the individual is seeking self-advantage (Knoll & van Dick, 2013). The Cronbach's alpha scores for the four subscales range from .80 to .89 (Knoll & van Dick, 2013). For the nursing population in this study, the Cronbach's alpha scores for the four subscales ranged from .708 to .932 and .938 was the composite. Values above .70 are considered acceptable and indicate the instrument has internal consistency (Tavakol & Dennick, 2011).

The PPSS of the Hospital Survey on Patient Safety, as shown in Appendix D, measured the overall perception of patient safety among registered nurses regarding the hospital work area/unit where they work (AHRQ, 2017). The Cronbach's alpha for this subscale is .74 for the overall perception of safety (AHRQ, 2017). For this study, the Cronbach's alpha for the subscale was .718. Values above .70 are considered acceptable and indicate the instrument has internal consistency (Tavakol & Dennick, 2011).

Data Preparation

A total of 91 registered nurses completed participation in the study. Prior to the analysis of the study data, a data preparation process was completed which included assessments for invalid and missing data. The data were assessed for invalid data including duplicates; non-consenters; cases that did not meet the inclusion criteria of the study, participants dropping from the survey after 50% completion; participants dropping from the survey after 65% completion; participant completion of the survey too rapidly; or participant provision of conflicting responses. In two cases (2.2%), participants did not designate employment at either a Magnet® or a Non-Magnet® hospital. Magnet® or a Non-Magnet® hospital designation was needed in order to address the research questions. In three cases (3.3%), participants dropped off after 65% completion of the survey. Three additional cases (3.3%) were also found where participants provided conflicting answers. Conflicting answers occurred when participants reported that they had never observed a patient safety event in the past six months, yet they had either spoken up to address a patient safety event in the past six months or preferred to remain silent. The 8 total cases (8.8%) were designated as invalid cases and removed from the sample, resulting in a total of 83 remaining cases (91.2% of the initial sample). No missing data were noted in the sample.

Preliminary Analysis

Description of the Sample

The accessible population for the study included English-speaking registered nurses employed in hospital staff-nurse positions who participated electronically via the Internet. The registered nurses were simultaneously enrolled in a university level RN-BSN program. The consenting process and collection of data and study questionnaires from eligible participants occurred through the use of the PsychData website. The final sample included 83 registered nurses.

Descriptive statistics for the four categorical demographic variables for the study are presented in Table 4.1. As shown, categorical demographic variables included: (a) gender, (b) nursing specialty, (c) patient safety event observed in the past six months, and (d) patient safety event addressed in the past six months. The most common gender for participants was female at 96.4% of the sample. Only three males were included in the sample (3.6%). The most frequent nursing specialty in the sample was the adult nursing specialty (including medical-surgical specialties and intensive care) at 62.7%. Other specialties included neonatal/pediatrics at 16.9%, obstetric/women's health at 12%, mental health at 1.2%, and miscellaneous specialties at 7.2%.

Participants were asked to report observation of patient safety events in the past six months. A patient safety event was defined as any type of error, mistake, incident, accident, or deviation, regardless of whether or not it results in patient harm (AHRQ, 2017). Approximately 91.5 % of participants reported they had observed a patient safety

event one or more times in the past six months, while 8.4% reported they had never observed a patient safety event in the past six months.

Participants were also asked to report how often they addressed patient safety events in the past six months. Approximately 78.2% of the participants reported they had addressed a patient safety event one or more times in the past six months, while 21.7% reported they had never addressed a patient safety event in the past six months. Table 4.1 presents the frequencies and percentages for the categorical demographic variables including (a) gender, (b) nursing specialty, (c) patient safety event observed in the past six months, and (d) patient safety event addressed in the past six months.

Table 4.1.

Frequencies and Percentages for Categorical Demographic Variables

Variable	Frequency	Percent	Valid Percent	Cumulative Percent
Gender				
Female	80	96.4	96.4	96.4
Male	3	3.6	3.6	100.0
Total	83	100.0	100.0	
Nursing Specialty				
Adult	52	62.7	62.7	62.7
Obstetric/Women's Health	10	12.0	12.0	74.7
Neonatal/Pediatric	14	16.9	6.9	91.6
Mental Health	1	1.2	1.2	92.8
Other	6	7.2	7.2	100.0
Total	83	100.0	100.0	

Table 4.1. (continued)

Frequencies and Percentages for Categorical Demographic Variables

Variable	Frequency	Percent	Valid Percent	Cumulative Percent
Patient Safety Event Observed Last Six Months				
No, never	7	8.4	8.4	8.4
Yes, one time	30	36.1	36.1	44.6
Yes, a few times	40	48.2	48.2	92.8
Yes, many times	6	7.2	7.2	100.0
Total	83	100.0	100.0	
Patient Safety Event Addressed Last Six Months				
No, never	18	21.7	21.7	21.7
Yes, one time	26	31.3	31.3	53.0
Yes, a few times	30	36.1	36.1	89.2
Yes, many times	9	10.8	10.8	100.0
Total	83	100.0	100.0	

Descriptive statistics for the continuous demographic variables in the study are shown in Table 4.2. Continuous demographic variables included age and years of nursing experience. The minimum age for participants in the sample was 22 years and the maximum age was 59 years. The mean age was 33.33 years. In terms of years of nursing experience, the minimum was less than one year and the maximum was 36 years. The mean number of years of experience was 6.21 years. However, when examined for normality, there were three outliers present in the years of nursing experience frequency

distribution. When these three outliers were removed from the distribution, no more outliers were detected and the graphs improved in shape. However, the Shapiro-Wilk remained significant at $p < .001$, and the Kolmogorov-Smirnov remained significant at $p < .001$, indicating the distribution was not normal. Therefore, the sample may not have been representative of the larger nursing population. The minimum number of years of experience with outliers removed was less than one year, and the maximum was 23 years. The mean number of years of experience was 5.24 years.

Table 4.2.

Means and Standard Deviations for Continuous Demographic Variables

Variable	N	Minimum	Maximum	Mean	Standard Deviation
Age	83	22	59	33.33	8.138
Years of Nursing Experience	83	0	36	6.21	7.048
Years of Nursing Experience (Outliers Removed)	80	0	23	5.24	4.965
Valid N	80				

Table 4.3 presents categorical independent variables for the study. These variables included the nurse practice environment and the preference to remain silent. The nurse practice environment was designated as either Magnet® or non-Magnet®. Of the 83 participants, 27 (32.5%) were employed in a Magnet® hospital and 56 (67.5%) were employed in a Non-Magnet® hospital. In terms of a preference to remain silent

about observed safety events, 48.2% of participants stated they never preferred to remain silent, while 51.8% reported a preference to remain silent one or more times.

Table 4.3.

Frequencies and Percentages for Categorical Independent Variables

Variable	Frequency	Percent	Valid Percent	Cumulative Percent
Nurse Practice Environment				
Magnet® (Current Designation)	27	32.5	32.5	32.5
Non-Magnet® (Current Designation)	56	67.5	67.5	100.0
Total	83	100.0	100.0	
Preference to Remain Silent				
No, never	40	48.2	48.2	48.2
Yes, one time	23	27.7	27.7	75.9
Yes, a few times	15	18.1	18.1	94.0
Yes, many times	5	6.0	6.0	100.0
Total	83	100.0	100.0	

Table 4.4 displays means and standard deviations for the continuous subscales used in the study including the PESNWI subscales, the FFESS subscales, and the PPSS. The PESNWI contains five subscales: (1) staffing and resource adequacy; (2) collegial nurse-physician relations; (3) nurse manager ability, leadership, and support; (4) nursing foundations for quality of care; and (5) nurse participation in hospital affairs. According to Lake and Friese (2006), practice environments are classified as favorable if four or five subscales have means greater than 2.5 and unfavorable if none or one of the subscales has a mean of 2.5 (Lake & Friese, 2006). Scores on these subscales ranged from a minimum

score of 1 to a maximum score of 4. Since the mean scores on the five subscales ranged from 2.6536 to 3.1000, the practice environments were classified as favorable. All frequency distributions but one were normally distributed. When the frequency distribution for the Collegial Nurse Physician Relation subscale was examined for normality, one outlier was present. When this outlier was removed from the distribution, the minimum score was 1.67, the maximum score was 4.00, and the mean was 3.1179. While the graphs improved in shape, three more outliers were detected when the outlier was removed, the Shapiro-Wilks remained significant at $p < .001$ and the Kolmogorov-Smirnov remained significant at $p < .001$, indicating that the distributions were not normal. Therefore, the sample may not have been representative of the larger nursing population.

The FFESS contains four subscales measuring motives for silence including quiescent silence, prosocial silence, acquiescent silence, and opportunistic silence. Scores on these subscales ranged from a minimum score of 1.00 to a maximum score of 7.00 with means ranging from 1.8394 to 2.9036. Higher subscale means indicate that the motive for silence is present to a greater degree (M. Knoll, personal communication, April 24, 2014). Means for the subscales in this sample indicated that the motive with the highest presence was quiescent silence, followed by prosocial silence, acquiescent silence, and opportunistic silence, respectively.

The PPSS is a four-question subscale of the Hospital Survey on Patient Safety from AHRQ (2017). Scores on this subscale ranged from a minimum score of 1.00 to a

maximum score of 5.00 with a mean of 3.2952. A higher mean score for the subscale indicates a higher overall perception of patient safety (AHRQ, 2017). Scores ranging from 3.00 to 4.00 indicate agreement that the work area/unit is perceived as safe.

Table 4.4.

Means and Standard Deviations for Continuous Subscales

Variable	N	Minimum	Maximum	Mean	Standard Deviation
PESNWI Subscales					
Staffing and Resource Adequacy	83	1.25	4.00	2.6536	.66584
Collegial Nurse Physician Relations	83	1.00	4.00	3.0924	.64668
Collegial Nurse Physician Relations (Outlier Removed)	82	1.00	4.00	3.1179	.60716
Nurse Manager Ability, Leadership, and Support	83	1.00	4.00	2.8373	.68247
Nursing Foundations for Quality of Care	83	1.00	4.00	3.1000	.51177
Nurse Participation in Hospital Affairs	83	1.00	4.00	2.8401	.61606
FFESS Subscales					
Quiescent Silence	83	1.00	7.00	2.9036	1.66058
Prosocial Silence	83	1.00	7.00	2.8233	1.70551
Acquiescent Silence	83	1.00	7.00	2.8112	1.78839
Opportunistic silence	83	1.00	5.00	1.8394	1.06351
Overall Perception of Patient Safety Subscale	83	1.50	5.00	3.2952	.83934
Valid N	82				

Relationships between Independent Variables

Using Pearson's chi-square and Cramer's V tests, crosstabulations were performed to examine the relationship between registered nurse preferences to remain silent and type of nurse practice environment (Magnet® and Non-Magnet®). As shown in Table 4.5, the relationship was not significant, $\chi^2(1) = 2.408, p > .05$, Cramer's $V = .171$. There was no significant difference between the two groups in the frequencies of preferences to remain silent.

Table 4.5.

Frequencies and Percentages for Preference to Remain Silent by Nurse Practice Environment

Variable	<u>Magnet®</u>		<u>Non-Magnet®</u>		X^2	p	Cramer's V
	n	%	n	%			
Preference to Remain Silent					2.408	.492	.171
No, never	10	37.0 ^a	30	53.6 ^a			
Yes, one time	10	37.0 ^a	13	23.2 ^a			
Yes, a few times	5	18.5 ^a	10	17.9 ^a			
Yes, many times	2	7.4 ^a	3	5.4 ^a			

Note. Each subscript letter denotes a subset of nurse practice environment categories whose column proportions do not differ significantly from each other at the .05 level.

Independent samples t -tests were conducted to examine differences on the perception of the nurse practice environment by type of nurse practice environment (Magnet® and Non-Magnet®). As shown in Table 4.6, there was a significant difference

in perceptions of the nurse practice environment in the two different practice environments, and the magnitude of the difference between the groups, represented by the effect size (d), was moderate. Registered nurses working as staff nurses in Magnet® hospitals had significantly more favorable perceptions of the nurse practice environment ($M = 3.1399$, $SD = .43766$) than did registered nurses working as staff nurses in Non-Magnet® hospitals ($M = 2.8224$, $SD = .50869$, $p = 0.007$ (equal variances assumed), $d = 0.669117$).

Table 4.6.

Means and Standard Deviations for Perception of the Nurse Practice Environment by Nurse Practice Environment

Variable by Nurse Practice Environment	n	M	SD	t	p	d
Perception of the Nurse Practice Environment*				2.783	0.007	0.669117
Magnet®	27	3.1399	.43766			
Non-Magnet®	56	2.8224	.50869			

Equal variances are assumed based upon Levene's test results*

Spearman's rank-order correlation was conducted to examine the relationship between registered nurse preference to remain silent and registered nurse perception of the nurse practice environment. The results revealed a significant negative relationship ($p < .05$) between preference to remain silent and the perception of nurse practice environment, indicating that the less favorable the perception of the nurse practice

environment, the more frequent the preference to remain silent. This finding included all registered nurses in the study. Further detail of relationship between these variables is shown in Table 4.7.

Table 4.7.

Spearman's Correlation between Preference to Remain Silent and Perception of the Nurse Practice Environment

Variable	Perception of the Nurse Practice Environment
Preference to Remain Silent	-.226*

* $p < .05$

Relationships between Silence Scales

Paired sample t -tests were conducted to compare the means of the FFESS subscales. Paired samples t -tests revealed that registered nurse scores on the opportunistic motive for silence subscale were significantly lower ($M = 1.8394$, $SD = 1.06351$) than were registered nurse scores on the quiescent motive for silence subscale ($M = 2.9036$, $SD = 1.66058$), $t = 7.068$, $p < .001$, the acquiescent motive for silence subscale ($M = 2.8112$, $SD = 1.78839$), $t = 6.364$, $p < .001$, and the prosocial motive for silence subscale ($M = 2.8233$, $SD = 1.70551$), $t = 6.032$, $p < .001$. The details are displayed in Table 4.8.

Table 4.8.

Means and Standard Deviations for Silence Scales (Paired Samples Statistics and Tests)

Variables	N	Mean	Standard Deviation	<i>t</i>	<i>p</i>
Pair 1				0.522	0.603
Quiescent Silence	83	2.9036	1.66058		
Prosocial Silence	83	2.8233	1.70551		
Pair 2				0.598	0.551
Quiescent Silence	83	2.9036	1.66058		
Acquiescent Silence	83	2.8112	1.78839		
Pair 3				7.068	0.000
Quiescent Silence	83	2.9036	1.66058		
Opportunistic Silence	83	1.8394	1.06351		
Pair 4				0.056	0.955
Prosocial Silence	83	2.8233	1.70551		
Acquiescent Silence	83	2.8112	1.78839		
Pair 5				6.032	0.000
Prosocial Silence	83	2.8233	1.70551		
Opportunistic Silence	83	1.8394	1.06351		
Pair 6				6.364	0.000
Acquiescent Silence	83	2.8112	1.78839		
Opportunistic Silence	83	1.8394	1.06351		

Relationship between Nurse Practice Environment and Continuous Dependent Variables

Independent samples *t*-tests were conducted to examine differences on the silence variables by type of nurse practice environment (Magnet® and Non-Magnet®). As shown in Table 4.9, there were no significant differences between Magnet® and Non-Magnet® environments on the silence variables, and the magnitudes of the differences between the groups, represented by the effect sizes (*d*), were small. Registered nurses working in Magnet® hospitals had no significant differences from registered nurses working in Non-Magnet® hospitals on the overall employee silence scale as well as on each motive for silence subscale. In Magnet® hospitals, the most prevalent motives for silence were prosocial and acquiescent, followed by quiescent and opportunistic silence. In Non-Magnet® hospitals, the most prevalent forms of silence were quiescent and acquiescent, followed by prosocial and opportunistic. The largest difference between Magnet® and Non-Magnet® nurses related to the differences between the means for prosocial silence.

Table 4.9.

Means and Standard Deviations for Continuous Dependent Variables by Nurse Practice Environment

Variable by Nurse Practice Environment	<i>n</i>	<i>M</i>	<i>SD</i>	<i>t</i>	<i>p</i>	<i>d</i>
Employee Silence Scale*				0.642	0.523	0.145345
Magnet®	27	2.8247	1.47598			
Non-Magnet®	56	2.6274	1.22755			
Quiescent Silence*				0.038	0.970	0.008805
Magnet®	27	2.9136	1.70868			
Non-Magnet®	56	2.8988	1.65257			
Acquiescent Silence*				0.491	0.625	0.116668
Magnet®	27	2.9506	1.69641			
Non-Magnet®	56	2.7440	1.84225			
Prosocial Silence**				0.958	0.344	0.236258
Magnet®	27	3.1111	2.06311			
Non-Magnet®	56	2.6845	1.50477			
Opportunistic Silence*				0.807	0.422	0.186847
Magnet®	27	1.9753	1.11296			
Non-Magnet®	56	1.7738	1.04274			

Equal variances assumed reported*

Equal variances not assumed reported**

Primary Analyses

Research Question 1

Simple linear regression analysis and Spearman's rank-order correlations were the statistical tests conducted to examine the relationships between perceptions of the nurse practice environment and preferences to remain silent regarding observed patient safety events.

Hypothesis 1A. This hypothesis was stated as follows: hospital-employed, staff-level, registered nurses' perceptions of the nurse practice environment will have a direct relationship to the frequency of their preferences to remain silent regarding observed patient safety events. In the linear regression analysis, the predictor was the perception of the nurse practice environment and the dependent variable was the frequency of preferences to remain silent (see Table 4.10). This hypothesis was validated and the direct relationship was supported. The path was significant, $F(1, 81) = 6.291, p < .05$, and accounted for 7.2% of the variance. The results indicate that the perception of the nurse practice environment was a significant negative predictor of the preference to remain silent ($Beta = -0.268, p < .05$). Therefore, a less favorable perception of the nurse practice environment was associated with a more frequent preference to remain silent.

Table 4.10.

Summary of Linear Regression Model Predicting Preference to Remain Silent from Perception of the Nurse Practice Environment

Dependent Variable	Unstandardized		Standardized	<i>t</i>	<i>p</i>
	B	SE	Beta		
Preference to Remain Silent					
Perception of the Nurse Practice Environment (Predictor)	-0.498	0.198	-0.268	-2.508	0.014

Note. Model Predicting Preference to Remain Silent, $F(1, 81) = 6.291, p = .014$, Adj. $R^2 = 0.061$.

Hypothesis 1B. This hypothesis was stated as follows: hospital-employed, staff-level, registered nurses' perceptions of both Magnet® and Non-Magnet® nurse practice environments will be negatively correlated with the frequency of their preferences to remain silent. Spearman's correlations were conducted to examine the relationships between the perception of the nurse practice environment and the preference to remain silent among registered nurses working as staff nurses in both Magnet® and Non-Magnet® hospitals. The results revealed weak negative correlations between the perception of the nurse practice environment and the preference to remain silent, indicating that the less favorable the perception is of the nurse practice environment, the more frequent is the preference to remain silent. This negative correlation was significant for registered nurses working in Non-Magnet hospitals ($p = 0.043$). This hypothesis was validated. Further detail of the relationship between these variables is shown in Table 4.11.

Table 4.11.

Spearman's Correlation between Perception of the Nurse Practice Environment and the Preference to Remain Silent

Variables	Preference to Remain Silent
Perception of the Nurse Practice Environment	
Magnet®	- 0.299
Non-Magnet®	- 0.271*

*Correlation is significant at the 0.05 level (2 tailed).

Research Question 2

Simple linear regression analysis and Spearman's rank-order correlations were the statistical tests conducted to examine the relationships between preferences for silence and perceptions of patient safety.

Hypothesis 2A. The second hypothesis was stated as follows: hospital-employed, staff-level, registered nurses' preferences to remain silent will have a direct relationship to their perceptions of patient safety. In this linear regression analysis, the predictor was the preference to remain silent and the dependent variable was the perception of the patient safety (see Table 4.12). This hypothesis was not validated, and a direct relationship between registered nurses' preferences to remain silent and their perceptions of patient safety was not supported. The path was not significant, $F(1, 81) = 1.629$, $p > .05$, and accounted for 2% of the variance. The results indicated that the preference to remain silent was not a significant predictor of the overall perception of patient safety ($Beta = -0.140$, $p = 0.206$).

Table 4.12.

Summary of Linear Regression Model Predicting Perception of Patient Safety from Preference to Remain Silent

Dependent Variable	Unstandardized		Standardized	<i>t</i>	<i>p</i>
	B	SE	Beta		
Perception of Patient Safety					
Preference to Remain Silent (Predictor)	-0.126	0.098	-0.140	-1.276	0.206

Note. Model Predicting Perception of Patient Safety, $F(1, 81) = 1.629$, $p = .206$, Adj. $R^2 = 0.008$.

Hypothesis 2B. This hypothesis was as follows: hospital-employed, staff-level, registered nurses' perceptions of patient safety in both Magnet® and Non-Magnet® environments will be negatively related to their preferences to remain silent. Spearman's correlations were conducted to examine the relationships between perception of patient safety and the preference to remain silent among registered nurses working as staff nurses in both Magnet® and Non-Magnet® hospitals. This hypothesis was validated. The results revealed a weak negative correlation between the perception of patient safety and the preference to remain silent, indicating that a less favorable perception of patient safety is related to a more frequent preference to remain silent. This negative correlation was significant for registered nurses working in Magnet® hospitals ($p = 0.040$). Further detail of relationship between these variables is shown in Table 4.13.

Table 4.13.

Spearman's Correlation between Perception of Patient Safety and Preference to Remain Silent

Variable	Preference to Remain Silent
Perception of Patient Safety	
Magnet®	- 0.398*
Non-Magnet®	- 0.044

*Correlation is significant at the 0.05 level (2-tailed).

Research Question 3

Linear and multiple regression analyses and Pearson's product-moment correlations were the statistical tests conducted to explore the relationships between perceptions of nurse practice environment and perceptions of patient safety.

Hypothesis 3A. This hypothesis was as follows: hospital-employed, staff-level, registered nurses' perceptions of the nurse practice environment will have a direct relationship to their overall perceptions of patient safety. In this linear regression analysis, the predictor was the perception of the nurse practice environment and the dependent variable was the perception of patient safety (see Table 4.14). The hypothesis was validated, direct relationship was supported, and the path was significant, $F(1, 81) = 24.420$, $p < 0.01$, and accounted for 23.2% of the variance. The results indicated that the perception of the nurse practice environment was a significant positive predictor of the perception of patient safety ($Beta = 0.481$, $p < 0.01$). Therefore, a more favorable

perception of the nurse practice environment was associated with a higher perception of patient safety.

Table 4.14.

Summary of Linear Regression Model Predicting Perception of Patient Safety from Perception of the Nurse Practice Environment

Dependent Variable	Unstandardized		Standardized	<i>t</i>	<i>p</i>
	B	SE	Beta		
Perception of Patient Safety					
Perception of the Nurse Practice Environment (Predictor)	0.797	0.161	0.481	4.942	0.000

Note. Model Predicting Perception of Patient safety, $F(1, 81) = 24.420$, $p = .000$, Adj. $R^2 = 0.222$.

Hypothesis 3B. This hypothesis was stated as follows: hospital-employed, staff-level, registered nurses' perceptions of the nurse practice environment will have indirect relationships with their preferences to remain silent and their overall perceptions of patient safety. In this linear regression analysis, the predictors were the preference to remain silent and the perception of the nurse practice environment and the dependent variable was the perception of the patient safety (see Table 4.15). This hypothesis was not validated, and an indirect relationship between registered nurses' perceptions of the nurse practice environment, their preferences to remain silent, and their perceptions of patient safety was not supported. The results indicated that the perception of the nurse

practice environment and the preference to remain silent together were not significant predictors of the perception of patient safety ($Beta = -0.012, p > .05$).

Table 4.15.

Summary of Multiple Linear Regression Model Predicting Perception of Patient Safety from Perception of the Nurse Practice Environment and Preference to Remain Silent

Predictors of Patient Safety	Unstandardized		Standardized	<i>t</i>	<i>p</i>
	B	SE	Beta		
Perception of the Nurse Practice Environment	0.792	0.169	0.478	4.699	0.000
Preference to Remain Silent	- 0.011	0.091	- 0.012	- 0.118	0.906

Note. Model Predicting Perception of Patient Safety, $F(2, 80) = 12.068, p = .000$, Adj. $R^2 = 0.213$.

Hypothesis 3C. This hypothesis was stated as follows: hospital-employed, staff-level, registered nurses' perceptions of the nurse practice environment will be positively related to their perceptions of patient safety. Pearson's product-moment correlations were conducted to examine the relationship between the perception of the nurse practice environment and the perception of patient safety among registered nurses working as staff nurses in both Magnet® and Non-Magnet® hospitals. As shown in Table 4.16, the results revealed that in both Magnet® and Non-Magnet® hospitals, more favorable perceptions of the nurse practice environment were significantly related to higher perceptions of patient safety. The hypothesis was validated. In Magnet® hospitals,

moderately strong positive correlations were noted for the overall perception of the nurse practice environment ($r = .564$), and all subscales, with the exception of the nurse participation in hospital affairs subscale, which had a weak positive correlation ($r = 0.333$). Several relationships were significant at either the $p < .05$ or $p < .01$ levels. In Non-Magnet® hospitals, moderately strong positive correlations were noted for the overall perception of the nurse practice environment ($r = .412$), and the nursing foundations of quality of care subscale ($r = .448$). Two subscales had weak positive correlations: the staffing and resource adequacy subscale ($r = .336$) and the nurse participation in hospital affairs subscale ($r = .303$). The remaining subscales had very weak positive correlations. Several relationships were significant at either the $p < .05$ or $p < .01$ levels.

Table 4.16.

Pearson's Correlation between Perception of Nurse Practice Environment and Perception of Patient Safety

Variables	N	Perception of Patient Safety
Perception of the Nurse Practice Environment		
Magnet®	27	0.564**
Non-Magnet®	56	0.412**
Staffing and Resource Adequacy		
Magnet®	27	0.459*
Non-Magnet®	56	0.336*
Collegial Nurse Physician Relations		
Magnet®	27	0.453*
Non-Magnet®	56	0.066
Collegial Nurse Physician Relations (OR)		
Magnet®	27	0.453*
Non-Magnet®	56	0.113
Nurse Manager Ability, Leadership, and Support		
Magnet®	27	0.429*
Non-Magnet®	56	0.385**
Nursing Foundations for Quality of Care		
Magnet®	27	0.595**
Non-Magnet®	56	0.448**
Nurse Participation in Hospital Affairs		
Magnet®	27	0.333
Non-Magnet®	56	0.303*

** Correlation is significant at the 0.01 level (2-tailed)

*Correlation is significant at the 0.05 level (2 tailed)

Research Question 4

Pearson's product-moment correlations were conducted to explore the relationships between perceptions of nurse practice environment and motives for silence.

Hypothesis 4. This hypothesis was stated as follows: hospital-employed, staff-level, registered nurses' perceptions of both Magnet® and Non-Magnet® nurse practice environments will be negatively related to their motives for silence. Pearson's product-moment correlations were conducted to examine the relationship between the four motives for silence (quiescent silence, acquiescent silence, prosocial silence, and opportunistic silence) with the perception of nurse practice environment among registered nurses working as staff nurses in both Magnet® and Non-Magnet® hospitals. As shown in Table 4.17, a less favorable perception of the nurse practice environment was associated with increases in all motives for silence in Magnet® hospitals. The hypothesis was validated. Moderately strong negative correlations were noted for quiescent silence ($r = -.415$) and acquiescent silence ($r = -.420$), while weaker negative correlations were noted for prosocial silence ($r = -0.221$), and opportunistic silence ($r = -0.113$). In Non-Magnet® hospitals, a less favorable perception of the nurse practice environment was also associated with increases in all motives for silence. A moderately strong negative correlation was noted for acquiescent silence ($r = -.581$), while weaker negative correlations were noted for quiescent silence ($r = -.320$), prosocial silence ($r = -0.020$), and opportunistic silence ($r = -0.243$). In addition, relationships were significant for quiescent and acquiescent motives for silence in both Magnet® and Non-Magnet® environments.

Table 4.17.

Pearson's Correlation between Silence Subscales with Perception of Nurse Practice Environment

Variables	Perception of Nurse Practice Environment
Quiescent Silence	
Magnet®	- 0.415*
Non-Magnet®	- 0.320*
Acquiescent silence	
Magnet®	- 0.420*
Non-Magnet®	- 0.581**
Prosocial Silence	
Magnet®	- 0.221
Non-Magnet®	- 0.020
Opportunistic Silence	
Magnet®	- 0.113
Non-Magnet®	- 0.243

** Correlation is significant at the 0.01 level (2-tailed)

*Correlation is significant at the 0.05 level (2 tailed)

Research Question 5

The use of the FFESS in the nursing population was examined for reliability (Cronbach's alpha of at least .70). As shown in Table 4.18, the full scale and all four subscales (i.e., quiescent, acquiescent, prosocial, and opportunistic) were found to be reliable.

Table 4.18.

Summary of Reliability for the Four Forms of Employee Silence Scale

Scale or Subscale	Cronbach's Alpha
Employee Silence Scale	.938
Quiescent Silence Subscale	.883
Acquiescent Silence Subscale	.919
Prosocial Silence Subscale	.932
Opportunistic Silence Subscale	.708

Hypothesized Model – Path Analysis Findings

Hypothesized relationships between the variables were predicted in the original model, as shown in Figure 4.1. The model predicted direct relationships (paths) between perceptions of the nurse practice environment and preferences to remain silent, perceptions of the nurse practice environment and overall perceptions of patient safety, and preferences to remain silent and overall perceptions of patient safety. An indirect relationship (path) was also predicted between perceptions of the nurse practice environment, preferences to remain silent, and overall perceptions of patient safety.

Figure 4.1. Hypothesized Relationships Among Perceptions

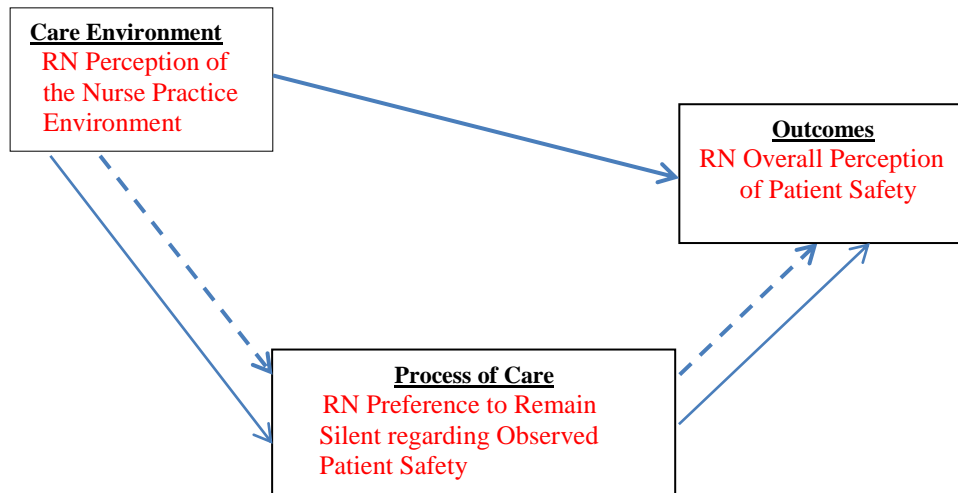


Figure 4.1. Model depicting hypothesized relationships among perceptions. The red items inside the boxes represented the major variables for the study. The solid blue lines and arrows indicate predicted direct relationships. Registered Nurse Perception of the Nurse Practice Environment was predicted to have a direct relationship with both Registered Nurse Preference to Remain Silent regarding Observed Patient Safety Events and Registered Nurse Overall Perception of Patient Safety. The process of care was predicted to have a direct relationship with the Overall Perception of Patient Safety. The dashed blue lines and arrows indicated indirect relationships. Registered Nurse Perception of the Nurse Practice Environment and Registered Nurse Preference to Remain Silent regarding Observed Patient Safety Events were predicted to have indirect relationships with Registered Nurse Overall Perception of Patient Safety.

The findings for the hypotheses are shown in Figure 4.2. Direct relationships (paths) were validated between the perception of the nurse practice environment and preferences for silence, and between the perception of the nurse practice environment and perceptions of patient safety. A direct relationship was not validated between the preference to remain silent and the overall perception of patient safety. In addition, the indirect relationships (paths) were not validated between the perceptions of the nurse

practice environment and preferences to remain silent with the overall perceptions of patient safety. Therefore, the model did not fit and was not validated. Significant predictors for all paths were needed for validation of the overall model.

Figure 4.2. Hypothesized Relationships Among Perceptions - Findings

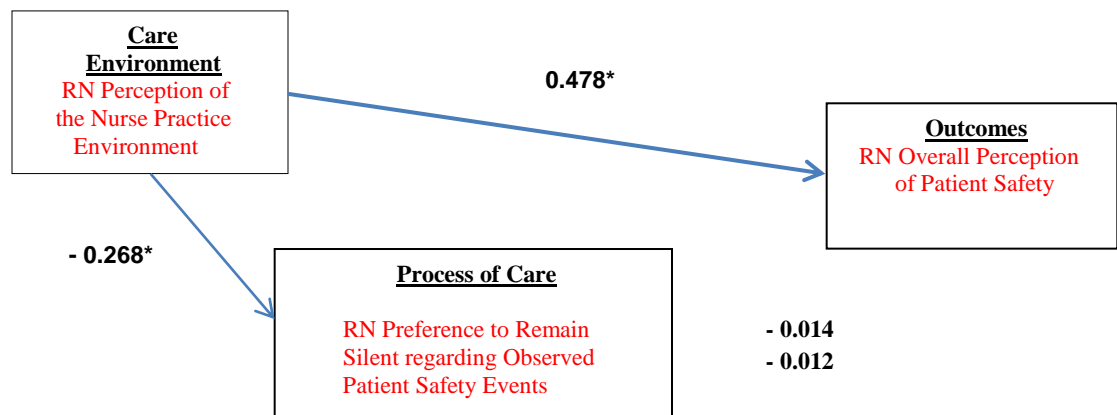


Figure 4.2. Model depicting findings regarding hypothesized relationships among perceptions. The items inside the boxes represent the major variables for the study (in red). The solid blue lines and arrows indicate direct relationships. RN Perception of the Nurse Practice Environment has a direct relationship to both RN Preference to Remain Silent regarding Observed Patient Safety Events and RN Overall Perception of Patient Safety, and these relationships were validated. The perception of the NPE was a significant predictor of both the preference to remain silent and the perception of patient safety. RN Perception of the Nurse Practice Environment and RN Preference to Remain Silent regarding Observed Patient Safety Events do not have an indirect relationship to RN Overall Perception of Patient Safety. The standardized betas for the paths are indicated. Asterisks (*) indicate significant relationships.

Summary of the Findings

This chapter provided a brief review of the design of the study and the instruments used for data collection, information regarding data preparation, a description of the sample, and a presentation of the specific findings of the study. The primary

purpose of this study was to assess how the nursing practice environment influences silence and patient safety. A secondary purpose of this study was to assess the reliability of the FFESS in the nursing population. The study included 83 registered nurses working as staff nurses in either Magnet® or Non-Magnet® hospitals. The nurses participating were largely female and working in adult care areas.

There were multiple findings related to the influence of the nursing practice environment on silence and patient safety. Over 50% of registered nurses participating in the study reported a preference to remain silent one or more times regarding an observed patient safety event in the last six months. However, no difference was found between the Magnet® and Non-Magnet® groups in the frequency of preferences to remain silent. Additionally, there were no significant differences found between Magnet® and Non-Magnet® groups on the silence variables, including in the overall employee silence scale as well as in each motive for silence subscale. However, in both practice environments, a less favorable perception of the nurse practice environment was associated with increases in all motives for silence.

Interestingly, there was a significant difference noted in perceptions of the nurse practice environment among nurses in the two practice environments. Registered nurses working as staff nurses in Magnet® facilities had significantly more favorable perceptions of the nurse practice environment than did registered nurses working as staff nurses in Non-Magnet® facilities. The results also revealed a significant negative relationship between the preference to remain silent and the perception of nurse practice

environment, indicating that the less favorable the perception of the nurse practice environment, the more frequent the preference to remain silent. This finding included all registered nurses in the study. A similar finding in a separate correlational analysis was that there was negative correlation between the perception of the nurse practice environment and the preference to remain silent, indicating that the more favorable the perception is of the nurse practice environment, the less frequent is the preference to remain silent. In this subsequent analysis, this negative correlation was significant only for registered nurses working in Non-Magnet® facilities.

The results revealed a negative correlation between the perception of patient safety and the preference to remain silent, indicating that a more favorable the perception of patient safety is related to a less frequent preference to remain silent. This finding was true for both Magnet® and Non-Magnet® nurses. The results also indicated that among both Magnet® and Non-Magnet® nurses, more favorable perceptions of the nurse practice environment were associated with higher perceptions of patient safety.

The hypothesized model for the study was not validated. While the results indicated that for all registered nurses, the perception of the nurse practice environment was a significant predictor of both the preference to remain silent and the perception of patient safety, the preference to remain silent was neither a direct nor an indirect significant predictor of the perception of patient safety. Therefore, the overall model did not fit.

Finally, the FFESS was examined for reliability in the nursing population. This scale had not previously been utilized among nurses. Both the overall scale and the four subscales were examined, and all scales were found to be reliable.

CHAPTER V

SUMMARY OF THE STUDY

Healthcare in the U.S. today is performed in a technically complex, rapidly changing system plagued by a high prevalence of medical errors that can cause harm to patients (James, 2013). Communication is often a theme in these adverse events (A. Lee et al. 2014), and studies suggest that hesitancy in speaking up may be a contributing factor (Okuyama et al., 2014). As the largest group of healthcare providers, nurses play a crucial role in communication (Huber, 2010), and in protecting patients from harm. The willingness of nurses to speak up about medical errors, versus a propensity to remain silent, impacts the delivery of safe patient care (Maxfield et al., 2010).

Silence has been documented in a variety of industries and disciplines, including healthcare and nursing (Belyansky et al., 2011; Firth-Cozens et al., 2004; Knoll & van Dick, 2013; Lyndon, 2008; Lyndon et al., 2012; Maxfield et al., 2005; Maxfield et al., 2013; Souba et al., 2011; Sutcliffe et al., 2004). Multiple studies specific to nursing indicate challenges in speaking up about safety concerns (Abdi et al., 2015; Attree, 2007; Beckmann & Cannella, 2015; Canam, 2008; Churchman & Doherty, 2010; Espin et al., 2006; Elder et al., 2008; Gardezi et al., 2009; Hashemi et al., 2012; Maxfield et al., 2010). The nursing care environments described in these studies appear to promote constraint in communication and/or silence about safety concerns and errors (Nembhard et al., 2015). In the context of the nurse practice environment, nursing silence is

conceptualized as an inability, unwillingness, or hesitance in communicating about issues that can lead to poor patient outcomes (Maxfield et al., 2010; Okuyama et al., 2014). The nursing practice environment of any individual hospital demonstrates the way in which the work is managed and problems are solved (Lake, 2002). Management approaches may range from those with a focus on bureaucracy and control to those based upon collegiality and professionalism (Lake, 2002). These dissimilar management approaches may influence individual registered nurse behavior. Prior to this study, no evidence was found regarding the influence of nursing practice environments on nursing silence behaviors, as described by Knoll and van Dick (2013), and on patient safety.

Additionally, no evidence was found regarding the measurement of silence behaviors in different types of practice environments (such as in Magnet® and Non-Magnet® hospitals). Consequently, examining these nurse practice environments through the development and testing of several research questions and hypotheses was important in determining their impact on nursing silence, and ultimately, on patient safety. For these reasons, the primary purpose of this study was to examine how the nursing practice environment influences silence and patient safety. In addition, a secondary purpose of the study was to test the reliability of the FFESS, a major instrument used in the study, and one which previously had not been utilized in the nursing population.

This chapter presents a summary regarding how the study was done relative to the associated research questions and hypotheses; a discussion of the findings of the study as

related to prior research in the area, as well as to the theoretical framework; the conclusions and implications of the study; and the recommendations for further study.

Summary

The relationships of the nurse practice environment to nursing silence and patient safety were investigated through the development and testing of multiple research questions and hypotheses designed to achieve the primary and secondary purposes of the study. The following five research questions were examined:

- How do hospital-employed, staff-level, registered nurses' perceptions of nurse practice environments relate to the frequency of their preferences to remain silent regarding observed patient safety events?
- How do the frequencies of hospital-employed, staff-level, registered nurses' preferences for silence in nurse practice environments relate to their perceptions of patient safety?
- How do hospital-employed, staff-level, registered nurses' perceptions of nurse practice environments relate to their perceptions of patient safety?
- How do hospital-employed, staff-level, registered nurses' perceptions of nurse practice environments relate to their motives for silence?
- What is the reliability of the Four Forms of Employee Silence Scale?

The frequency of preferences to remain silent and the motives for silence were variables in the study and were based on the work of Knoll and van Dick (2013). Knoll and van Dick (2013) viewed silence as a multidimensional construct influenced by the

organizational environment. Knoll and van Dick (2013) developed the FFESS to assess preferences for silence, as well as the four specific dimensions for silence behavior, which they identified as motives for silence. The motives included: a) acquiescent silence, in which the individual believes his or her opinion is not valued; (b) quiescent silence, in which the individual is fearful; (c) prosocial silence, in which the individual values affiliation and social relationships; and (d) opportunistic silence, in which the individual is seeking self-advantage (Knoll & van Dick, 2013).

Additional variables were used to assess the relationships of the nursing practice environment to nursing silence and patient safety: hospital-employed, staff-level, registered nurses' perceptions of the nurse practice environment and their overall perceptions of patient safety. Perceptions of the nurse practice environment were assessed through use of the PESNWI by Lake (2002). Hospital-employed staff-level registered nurses' perceptions of patient safety were assessed through use of the PPSS (AHRQ, 2017).

A hypothesized model based on the process of care and outcomes model by Lucero et al. (2009) was also developed. The following four hypotheses also addressed the primary purpose of the study and were used to test the hypothesized model:

- Hospital-employed, staff-level, registered nurses' perceptions of the nurse practice environment will have a direct relationship to the frequency of their preferences to remain silent regarding observed patient safety events

- Hospital-employed, staff-level, registered nurses' preferences for silence will have a direct relationship with their perceptions of patient safety
- Hospital-employed, staff-level, registered nurses' perceptions of the nurse practice environment will have a direct relationship to their overall perceptions of patient safety
- Hospital-employed, staff-level, registered nurses' perceptions of the nurse practice environment will have an indirect relationship to their overall perceptions of patient safety

The process of care and outcomes model (Lucero et al., 2009) served as the theoretical framework for the study (see Figure 1.1). This model depicts inter-relationships between the process of care, the environment, patient factors, and outcomes (Lucero et al., 2009). According to Lucero et al. (2009), the care environment, the process of care, and patient factors directly relate to outcomes. In addition, the process of care includes nursing and medical care activities and communication (Lucero et al., 2009). The hypothesized model, based upon the process of care and outcomes model, depicted nursing silence behavior within the context of the process of care as a multidimensional construct, influenced by both nursing and organizational characteristics, and subsequently having a direct influence on patient and organizational outcomes. As described in the analysis of data in Chapter 4, the hypothesized model was not validated. This issue will be further addressed in the discussion of findings section within this chapter.

Finally, the reliability of a major instrument employed in the study (the FFESS) was assessed for use in the nursing population. This assessment was the secondary purpose of the study.

The study sample included 83 participants. Most participants were female, at 96.4% of the sample. The mean age for participants was 33.33 years. The mean number of years of nursing experience was 5.24 years. The nursing specialties of participants were the adult nursing specialty (62.7%), neonatal/pediatrics (16.9%), obstetric/women's health (12%), mental health (1.2%), and miscellaneous specialties (7.2%). Participants were asked to report observation of patient safety events, such as errors, mistakes, accidents, or deviations in the past six months. Over 91% of participants reported they had observed a patient safety event one or more times in the past six months, while approximately 8% reported they had never observed a patient safety event in the past six months. In terms of a preference to remain silent about observed safety events, 48.2% of participants stated they never preferred to remain silent, while 51.8% reported a preference to remain silent one or more times. Finally, of the 83 registered nurse participants in the study, 27 (32.5%) were employed in a Magnet® hospital and 56 (67.5%) were employed in a Non-Magnet® hospital.

Four instruments were used in the study to collect data from participants. These instruments included the Demographic Profile (a researcher developed tool designed to collect the demographic characteristics of the sample), the PESNWI by Lake (2002), the FFESS by Knoll and van Dick (2013) and the PPSS subscale of the Hospital Survey on

Patient Safety developed by AHRQ (2017). The PESNWI (Lake, 2002), as seen in Appendix B, was used to measure registered nurse perceptions of the nurse practice environment. This scale included five subscales: (a) nurse participation in hospital affairs; (b) nursing foundations for quality of care; (c) nurse manager ability, leadership, and support; (d) staffing and resource adequacy; and (e) collegial nurse-physician relations (outlier removed) (Lake, 2002). For this study, the overall scale was found to be highly reliable with a Cronbach's alpha of .945. The subscales had Cronbach's alpha scores ranging from .807 to .880 for the five subscales.

The FFESS, as seen in Appendix C, was used to measure registered nurse self-identification of the frequency of preferences to address or to remain silent about observed patient safety events, as well as registered nurse motives to remain silent about observed patient safety events (Knoll & van Dick, 2013). Motives assessed included (a) acquiescent silence, (b) quiescent silence, (c) prosocial silence, and (d) opportunistic silence. For the nursing population in this study, the Cronbach's alpha scores for the four subscales ranged from .708 to .932 and .938 was the composite.

The PPSS shown in Appendix D, was used to measure the overall perception of patient safety among registered nurses regarding their hospital work areas. For this study, the Cronbach's alpha for the subscale was .718.

In summary, two purposes were achieved by this study: an examination of the influence of the nursing practice environment on silence and patient safety, and an assessment of the reliability of the FFESS for use in the nursing population. The sample

appears to have been adequate and the instruments used in the study were reliable. The results of the study indicated that several relationships exist between the variables, and that the FFESS is a reliable instrument for use in the nursing population.

Discussion of the Findings

This study examined silence behaviors among registered nurses through the use of parametric and non-parametric statistics. Registered nurse perceptions about the nursing practice environment and their overall perceptions of patient safety were also integrated into the research questions and hypotheses. The theoretical framework for the study was the process of care and outcomes model by Lucero et al. (2009), as shown in Figure 1.1. A hypothesized model, based upon this framework, was also tested in the study. This chapter presents a discussion of the findings of the study related to prior research in the area, as well as to the theoretical framework and hypothesized model.

There were several important findings in the study related to its primary purpose which was to examine the influence of the nursing practice environment on silence and patient safety. First, and most importantly, the study validated the existence of silence behaviors in current nursing practice environments. Although silence behaviors were noted among both Magnet® and Non-Magnet® registered nurse groups, no significant differences were noted between the two groups in terms of the frequency of preferences to remain silent, or in the motives for silence. For the two groups taken together, quiescent silence was the most common motive for silence, and opportunistic silence was the least frequent motive for silence. However, when the groups were separated, the most

prevalent motives for silence among nurses working in Magnet® hospitals were prosocial and acquiescent motives for silence, while for those in Non-Magnet® hospitals, the most prevalent motives for silence were quiescent and acquiescent motives.

Additional findings were related to the perception of the nurse practice environment and the frequency of preferences to remain silent. Among all nurses, the less favorable the perception of the nurse practice environment, the more frequent was the preference to remain silent. This finding was significant for Non-Magnet® nurses. Additionally, as will be noted in a subsequent discussion of the hypothesized model in this study, results indicated that the perception of the nurse practice environment was a significant predictor of the preference to remain silent. A less favorable perception of the nurse practice environment was also associated with increases in all motives for silence. These relationships were significant for quiescent and acquiescent motives for silence in both Magnet® and Non-Magnet® environments.

Interestingly, registered nurses working as staff nurses in Magnet® hospitals had significantly more favorable perceptions of the nurse practice environment than those in Non-Magnet® hospitals. There were also noteworthy findings related to registered nurse perceptions of the nurse practice environment and their overall perceptions of patient safety. More favorable perceptions of the nurse practice environment were associated with higher overall perceptions of patient safety. In fact, as will be noted in a subsequent discussion of the hypotheses of this study, registered nurse perception of the nurse practice environment was a significant predictor of the perception of patient safety.

Finally, a less favorable the perception of patient safety was related to a more frequent preference to remain silent. This negative correlation was significant for nurses working in Magnet® hospitals. However, the preference to remain silent was not a significant predictor of the perception of patient safety, as will be noted in a subsequent discussion of the hypotheses of this study.

The presence of registered nurse silence regarding observed patient safety events in current nursing practice environments (both Magnet® and Non-Magnet®), is documented in this study. When queried regarding silence about observed patient safety events, 51.8% of registered nurse participants reported a preference to remain silent one or more times in the past six months. This finding is consistent with the findings of prior research in which silence and/or lack of speaking up was demonstrated (Abdi et al., 2015; Attree, 2007; Beckmann & Cannella, 2015; Canam, 2008; Churchman & Doherty, 2010; Crigger & Meek, 2007; Elder et al., 2008; Espin et al., 2006; Firth-Cozens et al., 2004); Gardezi et al., 2009; Hashemi et al., 2012; Liu et al., 2015; Lyndon et al., 2012; Maxfield et al., 2010; Maxfield et al., 2013; Schwappach & Gehring, 2014a; Schwappach & Gehring, 2014b; Vivian et al., 2009). These earlier studies, as well as the results of this current study, support that there is continuing work to do in assessing, understanding, and creating environments where registered nurses feel comfortable and confident in expressing concerns and in speaking up regarding observed errors.

Surprisingly, there were no significant differences between registered nurses in Magnet® and Non-Magnet® groups in terms of the frequency of preferences to remain

silent about observed patient safety events (per crosstabulations), or in the overall employee silence scale and motives for silence subscales (per independent samples *t*-tests). These findings are intriguing in light of the purpose of the Magnet® program which is to promote patient care quality and nursing excellence in service delivery (ANCC, 2016). Magnet® organizations are promoted as those which foster collaborative relationships, participation, and feedback (ANCC, 2016), all of which would seem to indicate that silence behaviors should be less frequent in these types of organizations. Yet, these behaviors were found in both Magnet® and Non-Magnet® groups, with no significant differences between the two. These findings make it important to consider why significant differences in the two groups were not found. It is noteworthy that the outcomes of other studies of the Magnet® program have also varied in support of the values promoted by the Magnet® recognition program, including issues related to working conditions, patient outcomes, and staffing ratios (Goode et al., 2011; Trinkoff et al., 2010). This type of variation may have also been the case in this study.

It is also interesting to note, that when the Magnet® and Non-Magnet® groups were combined and paired sample *t*-tests were conducted, means revealed that the most common motive for silence among all registered nurses was quiescent silence, followed closely by prosocial silence and acquiescent silence, while opportunistic silence was the least frequent motive for silence. However, when registered nurses were divided into Magnet® and Non-Magnet® groups (using an independent samples *t*-test), the most

prevalent motives for silence were prosocial and acquiescent among Magnet® nurses, and quiescent and acquiescent among Non-Magnet® nurses.

Although as previously stated, there were not significant differences between the Magnet® and Non-Magnet® groups, a deeper review of this discrepancy is indicated, since the most prevalent motives for silence were not the same. The findings are thought provoking, particularly for Magnet® nurses, for whom prosocial silence was the most prevalent form. The essence of prosocial silence is that individuals withhold information because they value affiliation and social relationships (Knoll & van Dick, 2013). The underlying motive for silence in this case is cooperation based upon concern for others (Van Dyne et al., 2003), therefore, it is possible that the collaborative relationships promoted by the Magnet® philosophy lead individuals toward prosocial silence behaviors resulting from needs for affiliation. Consequently, these nurses are more prone to withhold information because they value social relationships. Indeed, prosocial behavior, defined by Eisenberg and Mussen (1989) as voluntary action taken to benefit or help individuals or groups (as cited in Flynn, Ehrenreich, Beron, & Underwood, 2015), was identified through the review of literature as a key organizational characteristic of the nurse practice environment.

According to Flynn, Ehrenreich, Beron, and Underwood (2015), prosocial behavior has been associated with many positive individual qualities, including empathy, agreeableness, and acceptance by peers. Examples of prosocial behavior abound in the literature. For example, in studying silence among labor and delivery teams, Maxfield et

al. (2013) found that a primary reason cited for not speaking up about errors among nurses, midwives, and physicians included concerns about future working relationships. Lyndon (2008) also noted that clinicians described efforts to preserve relationships with colleagues by avoiding conflicts, decreasing interactions, and failing to mention problems or report incidents, while Schwappach and Gehring (2014b) reported that damage to relationships was a barrier to speaking up about safety concerns. These and other studies are examples that reflect the values placed on social relationships in the working environment.

While importance of civility and teamwork cannot be over emphasized, the pendulum should not swing such that affiliations become the cause of less frequent reporting when errors are observed. Perhaps prosocial behavior between and among colleagues in the nurse practice environment is important in the evolution of nursing silence among Magnet® nurses, even more so than among Non-Magnet® nurses. A further examination of differences between Magnet® and Non-Magnet® nurses on the collegial nurse physician subscale of the PESNWI, in relationship to silence behaviors, could also provide further insight into these relationship aspects. In addition, examining how these needs for affiliation ultimately relate to individual nursing silence behaviors, as well as to patient safety, is an area that continues to need further study.

On the other hand, quiescent silence was the motive for silence more prevalently seen among Non-Magnet® nurses. In quiescent silence, individuals are more likely to withhold information based upon the need for self-protection (Knoll & van Dick, 2013),

with fear as the motive (Pinder & Harlos, 2001). As noted in the literature review, fear is often associated with hierarchical environments, and the medical hierarchy was identified in the literature review as the most prominent organizational characteristic of the nurse practice environment. Numerous studies cited nursing difficulties in addressing higher hierarchical levels (Abdi et al., 2015; Churchman and Doherty, 2010; Firth-Cozens et al., 2004; Liu et al., 2015; Malloy et al., 2009; Schwappach & Gehring, 2014a). Perhaps the organizational structures of Non-Magnet® hospitals more likely lead individuals toward quiescent silence behaviors. Consequently, these nurses are more prone to withhold information due to fear. Further studies to determine if this behavior is significantly more common among Non-Magnet® nurses would be helpful to support or refute this finding.

Lastly, the motive for silence that was secondarily prevalent in both environments was acquiescent silence. In this form of silence, individuals withhold information because they believe their opinions are not valued (Morrison & Milliken, 2000). Tolerance of the status quo is the motive in this case (Pinder & Harlos, 2001). These findings also supplement prior research in the area. As noted in the literature review, feelings of lack of value are often associated with hierarchical environments, and hierarchy was identified in the literature review as the most prominent organizational characteristic of the nurse practice environment. For example, in a study by Wilson et al. (2005), nurses reported not feeling valued for input in decision making. Similarly, Malloy et al. (2009) found that nurses believed that they lacked the power to speak up or

believed that their opinions would not be accepted. Newton et al. (2012) noted that nurses described actions to voice their concerns, but received little attention. Finally, Paliadelis and Cruickshank (2008) reported that participants felt unheard, especially in relationship to decision making.

It is also possible that the organizational structures of both Magnet® and Non-Magnet® hospitals influence nurses toward acquiescent silence behaviors. As a result, these nurses are more likely to withhold information due to the belief that their opinions are not valued. Further study of this motive for silence in relationship to the nurse practice environment and patient safety would foster greater knowledge of the impact it has on patient care outcomes. Overall, organizational solutions to address each type of motive will require specific applications. Exploring ways to better understand and address each motive and its environment will increase speaking up behaviors and ultimately, improve care for patients.

Spearman's correlations were used to examine relationships between the perception of the nurse practice environment and preference to remain silent in two separate non-parametric analyses. In the first analysis, for all nurses in the study, there was a significant but weak negative correlation ($p < .05$) between the preference to remain silent and the perception of nurse practice environment, indicating that the less favorable the perception of the nurse practice environment, the more frequent the preference to remain silent. In the second analysis, which separated the Magnet® and Non-Magnet® groups, the results revealed weak negative correlations, in both groups,

between the perception of the nurse practice environment and the preference to remain silent, again indicating that the less favorable the perception of the nurse practice environment, the more frequent the preference to remain silent. This negative correlation was significant for registered nurses working in Non-Magnet® hospitals ($p = 0.043$). The findings of a subsequent linear regression analysis also supported that the perception of the nurse practice environment was a significant predictor of the preference to remain silent.

Similarly, parametric analysis (Pearson's correlation) revealed that a less favorable perception of the nurse practice environment was associated with increases in all motives for silence. Relationships were significant for quiescent and acquiescent motives for silence among both Magnet® and Non-Magnet® nurses. Correlations were moderately strong for the perception of the nurse practice environment related to the quiescent and acquiescent motives for silence among Magnet® nurses. Among Non-Magnet® nurses, correlations were weak related to quiescent silence, and moderately strong related to acquiescent silence. As previously stated, in quiescent silence, individuals withhold information based upon the need for self-protection (Knoll & van Dick, 2013), with fear as the key motive for silence. The literature review supports that withholding information based upon fear is not an uncommon occurrence (Attree, 2007; Crigger & Meek, 2007; Hashemi et al., 2012; Maxfield et al., 2013).

Similarly, instances of acquiescent silence were also quite frequently noted in the review of literature (Malloy et al., 2009; Paliadelis & Cruickshank, 2008; Todorova et al.,

2014; Vivian et al., 2009; Widmark et al., 2012; Wilson et al., 2005). In acquiescent silence, individuals withhold information because they believe their opinions are not valued (Morrison & Milliken, 2000); they simply tolerate the status quo and view their circumstances as normal (Pinder & Harlos, 2001). The findings for both Magnet® and Non-Magnet® groups that a less favorable perception of the nurse practice environment was associated with a more frequent preference to remain silent, as well as with an increase in motives for silence, while only slightly different across the analyses, are remarkable. The results indicate the important role of the nurse practice environment in allowing and promoting the identification of errors related to patient care and patient safety.

Furthermore, this important role of the nurse practice environment was again emphasized in the finding that registered nurse perceptions of the nurse practice environment were significantly different in the two different practice environments (Magnet® and Non-Magnet®). Registered nurses working as staff nurses in Magnet® hospitals had significantly more favorable perceptions of the nurse practice environment than did those in Non-Magnet® hospitals. As Lake (2002) noted, the nursing practice environment of any individual hospital is demonstrative of how it approaches problem solving and managing work in a complex environment. In a bureaucratic management approach, controls through hierarchy and rule enforcement are stressed, while in a professional management approach, collegiality among professionals and nursing decision-making authority are promoted (Lake, 2002). While assumptions cannot be

made, the four major organizational characteristics emanating from the literature (the medical hierarchy, interdisciplinary diversity, prosocial behavior, and the unsafe cultural climate) must be considered as sources for the differences in perceptions.

Issues that have been previously documented as related to the medical hierarchy characteristic include authority gradients (Abdi et al., 2015; Churchman & Doherty, 2010; Elder et al., 2008; Liu et al., 2015; Lyndon, 2008; Malloy et al., 2009; Schwappach, & Gehring, 2014a), feelings of powerlessness (Malloy et al., 2009; Paliadelis & Cruickshank, 2008; Todorova et al., 2014; Wakeam et al., 2014; Widmark et al., 2012), and disruptive behaviors (Beckmann & Cannella, 2015; Walrath et al., 2010; Walrath et al., 2013). Issues of interdisciplinary diversity were reflected in prior studies concerning professional identity (Espin et al., 2006; Lyndon et al., 2012; Nembhard & Edmondson, 2006; Vivian et al., 2009; Wilson et al., 2005), professional discourse (Canam, 2008), individual vigilance (Jeffs et al., 2012; Schwappach & Gehring, 2014b), and differing perceptions of patient safety among the professions (Listyowardojo et al., 2011; Lyndon et al., 2012; Naveh et al., 2006; Prati & Pietrantoni, 2014). Prosocial behavior was reflected in concerns about future working relationships (Elder et al., 2008; Lyndon, 2008; Maxfield et al., 2010; Maxfield et al., 2013; Moore & McAuliffe, 2010; Schwappach & Gehring, 2014), and differing perceptions of collaboration and teamwork among nurses and physicians (Abdi et al., 2015; Hughes & Fitzpatrick, 2010; Nathanson et al., 2011; Prati & Pietrantoni, 2014). Finally, issues regarding the unsafe cultural climates have been previously documented in terms of psychological safety (Crigger &

Meek, 2007; Garon, 2012; Yanchus et al., 2014), and open communication environments (Attree, 2007; Kanerva et al., 2015; Kirwan, Matthews, & Scott, 2013).

This present study supplements previous findings regarding Magnet® and Non-Magnet® groups in terms of the practice environment. Further research is indicated to discover the reasons for the perceptual differences among the two nursing groups. Comparison of the five PESNWI subscales (staffing and resource adequacy; collegial nurse physician relations, nurse manager ability, leadership, and support; nursing foundations for quality of care; and nurse participation in hospital affairs) between the Magnet® and Non-Magnet® groups could provide additional information as to the reasons for the differences noted between the two overall PESNWI scales.

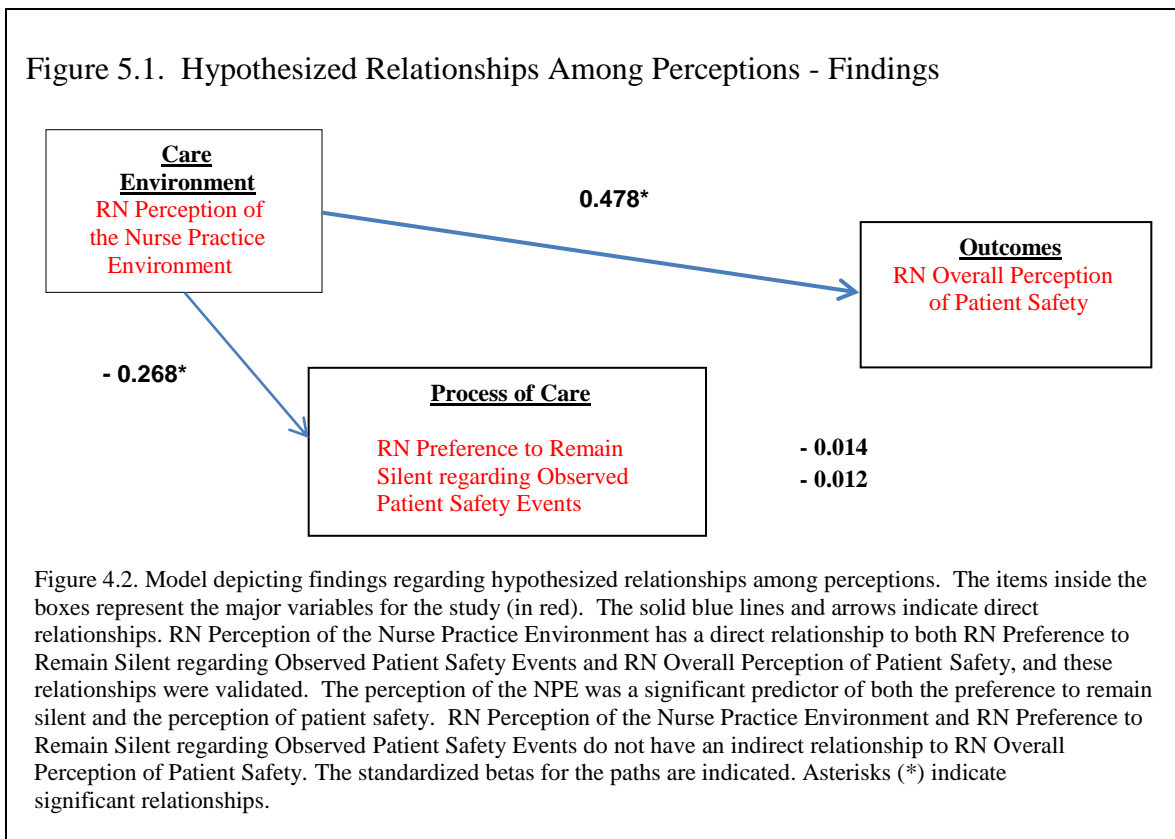
There were several significant findings in the study related to patient safety. Pearson's correlations revealed that more favorable perceptions of the nurse practice environment were associated with higher perceptions of patient safety. In fact, as will be noted in a subsequent discussion of the hypotheses of this study, the perception of the nurse practice environment was a significant predictor of the perception of patient safety. The Pearson's correlational analyses were significant for both Magnet® and Non-Magnet® nurses at the .01 level. For Magnet® nurses, moderately strong positive correlations were noted for the overall perception of the nurse practice environment ($r = .564$), and all subscales, with the exception of the nurse participation in hospital affairs subscale, which had a weak positive correlation ($r = 0.333$). Several relationships were significant at the $p < .05$ level (including staffing and resource adequacy; collegial nurse

physician relations (OR); and nurse manager ability, leadership, and support subscales). The foundations of quality care subscale was significant at the $p < .01$ level. Among Non-Magnet® nurses, moderately strong positive correlations were noted for the overall perception of the nurse practice environment ($r = .412$), and the nursing foundations of quality of care subscale ($r = .448$). The staffing and resource adequacy subscale ($r = .336$) and the nurse participation in hospital affairs subscale ($r = .303$) both had weak positive correlations. The remaining subscales had very weak positive correlations. Several relationships were significant at the $p < .05$ level: staffing and resource adequacy and nurse participation in hospital affairs subscales. The foundations of quality care and the nurse manager ability, leadership, and support subscales were significant at the $p < .01$ level. The major subscale difference between the two groups pertained to the collegial nurse physician relations (OR) subscale, which was moderately correlated with patient safety among Magnet® nurses and only weakly correlated with patient safety among Non-Magnet® nurses. Since more favorable perceptions of collegial nurse physician relations (OR) were more strongly correlated with higher perceptions of patient safety among Magnet®, as opposed to Non-Magnet® nurses, an examination of the differences in this subscale in relationship to silence behaviors is further supported. The roles and relationships of collegiality, prosocial silence behaviors, and patient safety should be considered. Examining these relationships and the impact of needs for affiliation could provide new insights into environmental issues that influence how patients receive care.

In another examination of patient safety, Spearman's correlations revealed that a less favorable perception of patient safety was related to a more frequent preference to remain silent. This negative correlation was significant for Magnet® nurses. This finding is supported by the literature surrounding the safety culture climate that has been previously documented. According to Nembhard et al. (2014), the culture of an organization determines if voice is allowed, encouraged, or expected. Environments that are characterized by psychological safety, where individuals feel comfortable about speaking up to improve work or to report potentially dangerous situations (Rathert et al., 2009), and openness in communication, lead to increased patient safety (Garon, 2012). Interestingly, however, the preference to remain silent was not a significant predictor of the perception of patient safety, as will be noted in the following discussion of the hypotheses of this study.

Four hypotheses based upon the process of care and outcomes model by Lucero, Lake, and Aiken (2009) were predicted in this study. Both simple linear regression and multiple regression analyses were used to determine the validity of the predictions. Figure 5.1 details the findings of these analyses. Regarding the first hypothesis, the results of the first simple linear regression analysis indicated that the perception of the nurse practice environment was a significant predictor of the preference to remain silent. This path was validated and the relationship was direct. For the second hypothesis, the results of the second simple linear regression analysis indicated that the preference to remain silent was not a significant predictor of the overall perception of patient safety.

This path was not validated and the relationship was not indirect. For the third hypothesis, the results indicated that the perception of the nurse practice environment was a significant predictor of the perception of patient safety. This path was validated and the relationship was direct. Lastly, a multiple linear regression analysis was conducted.



While the perception of the nurse practice environment was a significant predictor of the perception of patient safety, the preference to remain silent was not a significant predictor of the perception of patient safety. The preference to remain silent was, therefore, not a mediator. Since all four hypotheses (paths) were needed for validation of the model, the hypothesized model did not fit and needs revision.

The secondary purpose of the study was to assess of the reliability of the FFESS for use in the nursing population. Cronbach's alpha was utilized to determine the reliability of the FFESS in the nursing population. The instrument was found to be reliable.

Conclusions and Implications

Previous research studies have identified key characteristics of the nurse practice environment and the existence of constraints and difficulties in speaking up among registered nurses. The results of this present study are consistent with those findings. Over half of the registered nurses in this study reported varying frequencies of preferences to remain silent regarding observed patient safety errors. As a result, this study provides continuing evidence of the existence of silence behaviors among registered nurses working in both Magnet® and Non-Magnet® environments. The present study further advances the understanding of silence behaviors in relationship to registered nurse perceptions of the nurse practice environment and registered nurse perceptions of patient safety. In addition, this study also provides an increased understanding of silence behaviors among nurses working in Magnet® and Non-Magnet® nurse practice environments by identifying the motives underlying these behaviors. The following conclusions are based upon the findings of this study:

- Characteristics of the nurse practice environment are critical in allowing and promoting nurses to speak up about errors.

- Nurse perception of the nurse practice environment is a predictor of both nursing silence and patient safety among all nurses.
- Magnet® practice environments do not differ from Non-magnet® practice environment in terms of silence behaviors related to the observation of errors.
- Results suggest that feelings of fear and lack of value exist among nurses in both Magnet® and Non-Magnet® organizations.
- Despite the promotion of collaborative relationships, participation, and feedback by Magnet® organizations, these activities do not seem to result in less frequent silence behaviors among registered nurses working in these organizations. Needs for social affiliation may also be a factor in silence behaviors seen among Magnet® nurses.
- The Four Forms of Employee Silence Scale should be used in nurse practice environments to assess nursing silence behaviors.

Based upon these conclusions, the following implications are derived:

- There is still a limited understanding of registered nurse motives for silence in both Magnet® and Non-Magnet® nurse practice environments, and of the ways in which these environments separately influence these motives.
- Innate nursing characteristics should also be considered in the evolution of silence behaviors.

- Greater attention is needed toward developing specific organizational solutions, strategies, and tools in practice and through research that can address the most prevalent registered nurse motives for silence.
- More attention should be directed toward the development of educational strategies to teach nurses and nursing students about silence behaviors, their motives, and their relationship to the practice environment.

Several limitations affect the generalizability of this study to a broader population of registered nurses. First, the small sample size impacts the ability to generalize. The sample may not have been representative of the larger target population of registered nurses. This issue could result in an inability to find differences in the sample when they exist in the population. Secondly, a convenience sample was used to recruit potential participants based upon their affiliation with and attendance at educational institutions. Participants were recruited from RN-BSN programs at two universities. These types of nurses may have had priorities and experiences different from those of the general nursing population. Third, an incentive of \$10 was offered for completion of participation. The use of an incentive may have influenced participants' rationales for completing the study. Fourth, registered nurses who volunteered to participate in the study may have more concerns about silence in the nurse practice environment than those who chose not to participate. Fifth, the sizes of the Magnet® and Non-Magnet® groups for the study were discrepant. The use of a balanced design had been considered in order to ensure that the two main groups for comparison (Magnet® and Non-Magnet® nurses)

had similar representation in terms of the uncontrolled variables. However, this type of design was not feasible due to the sample size of 83 participants and the differences in group sizes (i.e., 27 Magnet® nurses and 56 Non-Magnet® nurses). These five issues represent the possible existence of selection bias in this study. In addition, social desirability bias may have also been present among participants in this study. Because of the sensitive nature of the study, participants may have provided answers to questions about silence that were more socially acceptable.

Recommendations for Further Study

The nurse practice environment is a complex one where nursing silence behaviors continue to exist. The involvement of all healthcare professionals is needed to assess, understand, and create nurse practice environments where registered nurses feel comfortable and confident in expressing concerns and in speaking up regarding observed patient safety events. A variety of approaches, strategies, and systems will be needed and must be developed by nurse clinicians, leaders, educators, and researchers. The following recommendations for further study are made in order to fulfill these activities:

- Utilizing the FFESS, devise a larger scale study to further explore silence behaviors (preferences and motives) with equivalent Magnet® and Non-Magnet® RN groups, due to the discordant group sizes used in this study
- Examine specific nurse characteristics such as age, years of experience, educational background, and/or specialty to determine differences in preferences and motives for silence among nurses.

- Compare the personality characteristics of RN's (such as assertiveness, empathy, agreeableness, etc.) to the existence of preferences and motives for silence.
- Explore nurse practice environment organizational strategies, solutions, and tools that could be implemented to address specific motives for silence. Exploring methods to better understand and address each motive and its environment could increase nurse speaking up behaviors, and ultimately, increase safety for patients.
- Investigate RN perceptions of collaborative relationships in Magnet® hospitals compared to the prevalence of prosocial silence behaviors and needs for affiliation. Better understanding of nurses' needs for affiliation and how they relate to individual nursing silence behaviors, as well as to patient safety, could improve care for patients.
- Explore the roles and relationships of collegiality, prosocial behavior, prosocial silence, and patient safety. Examining these relationships could provide new insights into environmental issues that influence the care patients receive.
- Examine the organizational structures and policies of Non-Magnet® hospitals, due to the prevalence of quiescent silence behaviors among Non-Magnet® hospital nurses.
- Analyze the organizational structures and policies of both Magnet® and Non-Magnet® hospitals due to the prevalence of acquiescent silence behaviors among these nurses.
- Develop educational strategies to teach nurses and nursing students about the various silence behaviors, their motives, and their relationship to the practice environment.

Summary

The primary purpose of this study was to explore how the nursing practice environment influences silence and patient safety. The secondary purpose of the study was to test the reliability of the Four Forms of Employee Silence Scale (FFESS), an instrument that previously had not been utilized in the nursing population. These purposes were achieved. It is clear that silence plays a role in the nurse practice environment. What remains is for nurse clinicians, administrators, educators, and researchers to continue efforts to assess, understand, and create nurse practice environments that will provide safe passage for nurses, as well as for their patients.

REFERENCES

- Abdi, Z., Delgoshaei, B., Ravaghi, H., Abbasi, M., & Heyrani, A. (2015). The culture of patient safety in an Iranian intensive care unit. *Journal of Nursing Management*, 23(3), 333–345. doi:10.1111/jonm.12135
- Agency for Healthcare Research and Quality. (2017). *Hospital survey on patient safety culture*. Retrieved from <https://www.ahrq.gov/professionals/quality-patient-safety/patientsafetyculture/hospital/index.html>
- Ajeigbe, D. O., McNeese-Smith, D., Leach, L. S., & Phillips, L. R. (2013). Nurse-physician teamwork in the emergency department: Impact on perceptions of job environment, autonomy, and control over practice. *Journal of Nursing Administration*, 43(3), 142–148. doi:10.1097/NNA.0b013e318283dc23.
- Ajken, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50, 179–211. doi:10.1016/0749-5978(91)90020-T
- American Nurses' Credentialing Center. (2018). *Forces of magnetism*. Retrieved from <https://www.nursingworld.org/organizational-programs/magnet/history/forces-of-magnetism/>
- American Nurses' Credentialing Center. (2016). *Magnet recognition program overview*. Retrieved from <https://www.nursingworld.org/organizational-programs/magnet/>
- Attree, M. J. (2007). Factors influencing nurses' decisions to raise concerns about care quality. *Nursing Management* 15, 392–402. Retrieved from

<https://psnet.ahrq.gov/resources/resource/5516>

Balakas, K., Sparks, L., Steurer, L., & Bryant, T. (2013). An outcome of evidence-based practice education: Sustained clinical decision-making among bedside nurses.

Journal of Pediatric Nursing, 28(5), 479–485. doi:10.1016/j.pedn.2012.08.007

Barron, D. & West, E. (2005). Leaving nursing: An event-history analysis of nurses' careers. *Journal of Health Services Research & Policy*, 10(3), 150-157.

Retrieved from <https://doi.org/10.1258/1355819054338924>

Beckmann, C. A., & Cannella, B. L. (2015). Factors related to intimidation during oxytocin administration. *The Journal of Perinatal & Neonatal Nursing*, 29(4),

305–314. doi:10.1097/JPN.0000000000000134

Behavior. (2016). In *Merriam-Webster's online dictionary*. Retrieved from

www.merriam-webster.com/dictionary/behavior

Belyansky, I., Martin, T. R., Prabhu, A.S., Tsirlina, V.B., Howley, L.D., Phillips, R.,....

Stefanidis, D. (2011). Poor resident-attending intraoperative communication may compromise patient safety. *Journal of Social Research* 171(2), 386–94.

doi:10.1016/j.jss.2011.04.011

Borsboom, D., Mellenbergh, G.J., & van Heerden, J. (2004). The concept of validity.

Psychological Review 111(4), 1061–1071. doi:10.1037/0033-295X.111.4.1061

Bridges, R., Sherwood, G., & Durham, C. (2014). Measuring the influence of a mutual support educational intervention within a nursing team. *International Journal of*

Nursing Sciences 1(1), 15–22. doi.org/10.1016/j.ijnss.2014.02.013

- Canam, C. J. (2008). The link between nursing discourses and nurses' silence: Implications for a knowledge-based discourse for nursing practice. *Advances in Nursing Science*, 31(4), 296–307. doi:10.1097/01.ANS.0000341410.25048.d8
- Churchman, J.J., & Doherty, C. (2010). Nurses' views on challenging doctors' practice in an acute hospital. *Nursing Standard* 24(40), 42–47. doi:10.7748/ns2010.06.24.40.42.c7830
- Committee on the Work Environment for Nurses and Patient Safety, Institute of Medicine. (2004). In A. Page (Ed.), *Keeping patients safe: Transforming the work environment of nurses*. Washington, D.C.: The National Academies Press.
- Crigger, N. J., & Meek, V. L. (2007). Toward a theory of self-reconciliation following mistakes in nursing practice. *Journal of Nursing Scholarship*, 39(2), 177–183. doi:10.1111/j.1547-5069.2007.00164.x
- Daniel, O. D., & Regnaud, J. (2013). Do magnet-accredited hospitals show improvements in nurse and patient outcomes compared to non-magnet hospitals: A systematic review protocol. *JBI Database of Systematic Reviews & Implementation Reports*, 11(11), 125–140. doi:10.11124/jbisrir-2013-1155.
- Donabedian, A. (2005). Evaluating the quality of medical care. *The Milbank Quarterly* 83(4), 691–729. Reprinted from Donabedian, A. (1966). *The Milbank Memorial Fund Quarterly*, 44(3), 166–203. doi:10.1111/j.1468-0009.2005.00397.x
- Dunn, E.J., Mills, P.D., Neily, J., Crittenden, M.D., Carmack, A.L., & Bagian, J.P.

- (2007). Medical team training: Applying crew resource management in the veterans' health administration. *The Joint Commission Journal on Quality and Patient Safety*, 33(6), 317–325. Retrieved from <https://psnet.ahrq.gov/resources/resource/5365>
- Edmondson, A. C. (2003). Speaking up in the operating room: How team leaders promote learning in interdisciplinary action teams. *Journal of Management Studies*, 40(6), 1419–1452. doi:10.1111/1467-6486.00386
- Edwardson, S.R. (2007). Conceptual frameworks used in funded nursing health service research projects. *Nursing Economics*, 25(4), 222–227. Retrieved from <http://www.ncbi.nlm.nih.gov/pubmed/17847658>
- Elder, N.C., Brungs, S.M., Nagy, M., Kudel, I., & Render, M.L. (2008). Nurses' perceptions of error communication and reporting in the intensive care unit. *Journal of Patient Safety*, 4(3), 162–168. doi:10.1097/PTS.0b013e3181839b48
- Espin, S., Lingard, L., Baker, G., & Regehr, G. (2006). Persistence of unsafe practice in everyday work: An exploration of organization and psychological factors constraining safety in the operating room. *Quality and Safety in Health Care*, 15(3), 165–170. Retrieved from <http://dx.doi.org/10.1136%2Fqshc.2005.017475>
- Espin, S., Wickson-Griffiths, A., Wilson, M., & Lingard, L. (2010). To report or not to report: A descriptive study exploring ICU nurses' perceptions of error and error reporting. *Intensive and Critical Care Nursing*, 26(1), 1–9. Retrieved from <http://dx.doi.org/10.1016/j.iccn.2009.10.002>

- Firth-Cozens, J.F., Redfern, N., & Moss, F. (2004). Confronting errors in patient care: The experiences of doctors and nurses. *Clinical Risk* 10(5), 184–190.
doi:10.1258/1356262041591195
- Flynn, E., Ehrenreich, S. E., Beron, K. J., & Underwood, M. K. (2015). Prosocial behavior: Long-term trajectories and psychosocial outcomes. *Social Development* 24(3), 462–482. doi:10.1111/sode.12100
- Gardezi, F., Lingard, L., Espin, S., Whyte, S., Orser, B., & Baker, G.R. (2009). Silence, power and communication in the operating room. *Journal of Advanced Nursing*, 65(7), 1390–1399. Retrieved from
<http://dx.doi.org/10.1111%2Fj.1365-2648.2009.04994.x>
- Garon, M. (2012). Speaking up, being heard: Registered nurses' perceptions of workplace communication. *Journal of Nursing Management*, 20(3), 361–371.
doi:10.1111/j.1365-2834.2011.01296.x.
- Gillespie, B.M., Chaboyer, W., Longbottom, P., & Wallis, M. (2010). The impact of organizational and individual factors on team communication in surgery: A qualitative study. *International Journal of Nursing Studies*, 47(6), 732–741. doi: 10.1016/j.ij.nurstu.2009.11.001
- Ginsburg, L., Norton, P. G., Casebeer, A., & Lewis, S. (2005). An educational intervention to enhance nurse leaders' perceptions of patient safety culture. *Health Services Research*, 40(4), 997–1020. doi:10.1111/j.1475-6773.2005.00401.x

- Goode, C.J., Blegen, M.A., Park, S.H., Vaughn, T., & Spetz, J. (2011). Comparison of patient outcomes in magnet and non-magnet hospitals. *The Journal of Nursing Administration* 41(12), 517–523. doi:10.1097/NNA.0b013e3182378b7c
- Hashemi, F., Nasrabadi, A., & Asghari, F. (2012). Factors associated with reporting nursing errors in Iran: A qualitative study. *BMC Nursing* 11(20), 1–8. doi: 10.1186/1472-6955-11-20.
- House of Lords, Parliament, United Kingdom, Science and Technology Committee. (2011, July 11), Second Report. Behaviour change. Retrieved from <https://publications.parliament.uk/pa/ld201012/ldselect/ldsctech/179/17906.htm>
- Huber, D. L. (2010). *Leadership & nursing care management*. Maryland Heights, MD: Saunders Elsevier.
- Hughes, B., & Fitzpatrick, J. J. (2010). Nurse-physician collaboration in an acute care community hospital. *Journal of Interprofessional Care*, 24(6), 625–632. doi: 10.3109/13561820903550804.
- International Council of Nurses. (2006). The global nursing shortage: Priority areas for intervention. Retrieved from http://www.icn.ch/images/stories/documents/publications/GNRI/The_Global_Nursing_Shortage-Priority_Areas_for_Intervention.pdf
- James, J.T. (2013). A new, evidenced based estimate of patient harms associated with hospital care. *Journal of Patient Safety* 9(3), 122–128. doi: 10.1097/PTS.0b013e3182948a69

- Jeffs, L. P., Lingard, L., Berta, W., & Baker, G. R. (2012). Catching and correcting near misses: The collective vigilance and individual accountability trade-off. *Journal of Interprofessional Care* 26(2), 121–126. doi:10.3109/13561820.2011.642424
- Kanerva, A., Kivinen, T., & Lammintakanen, J. (2015). Communication elements supporting patient safety in psychiatric inpatient care. *Journal of Psychiatric and Mental Health Nursing* 22(5), 298–305. doi:10.1111/jpm.12187
- Kim, M. Y., Kang, S., Kim, Y. M., & You, M. (2014). Nurses' willingness to report near misses: A multilevel analysis of contributing factors. *Social Behavior and Personality: An International Journal*, 42(7), 1133–1146. doi: 10.2224/sbp.2014.42.7.1133
- Kirwan, M., Matthews, A., & Scott, P. A. (2013). The impact of the work environment of nurses on patient safety outcomes: A multi-level modelling approach. *International Journal of Nursing Studies*, 50(2), 253–263. Retrieved from <http://dx.doi.org/10.1016/j.ijnurstu.2012.08.020>
- Knoll, M., & van Dick, R. (2013). Do I hear the whistle...? A first attempt to measure four forms of employee silence and their correlates. *Journal of Business Ethics*, 113, 349–362. doi:10.1007/s10551-012-1308-4
- Kutney-Lee, A., Stimpfel, A. W., Sloane, D. M., Cimiotti, J. P., Quinn, L.W., & Aiken, L. H. (2015). Changes in patient and nurse outcomes associated with magnet hospital recognition. *Medical Care*, 53(6), 550–557. doi:10.1097/MLR.0000000000000355

- Lachman, V.D. (2008). Whistleblowers: Troublemakers or virtuous nurses? *MedSurg Nursing* 17(2), 126–134. Retrieved from <http://www.nursingworld.org/Document/Vault/Ethics/Whistleblowers-.pdf>
- Lake, E.T. (2002). Development of the practice environment scale of the nursing work index. *Research in Nursing & Health*, 25, 176–188. doi:10.1002/nur.10032
- Lake, E. T., & Friese, C.R. (2006). Variations in nursing practice environments. *Nursing Research*, 55(1), 1–9. Retrieved from <http://www.ncbi.nlm.nih.gov/pubmed/16439923>
- Law, B. Y., & Chan, E. A. (2015). The experience of learning to speak up: A narrative inquiry on newly graduated registered nurses. *Journal of Clinical Nursing*, 24, 1837-1848. doi:10.1111/jocn.12805
- Lee A., Mills, P.D., Neily, J., & Hemphill, R.R. (2014). Root cause analysis of serious adverse events among older patients in the Veterans Health Administration. *Joint Commission Journal of Quality and Patient Safety* 40(6), 253–262. Retrieved from [http://dx.doi.org/10.1016/S1553-7250\(14\)40034-5](http://dx.doi.org/10.1016/S1553-7250(14)40034-5)
- Lee, C. T., Doran, D. M., Tourangeau, A. E., & Fleshner, N. E. (2014). Perceived quality of interprofessional interactions between physicians and nurses in oncology outpatient clinics. *European Journal of Oncology Nursing*, 18(6), 619–625. doi: 10.1016/j.ejon.2014.06.004
- Lee, H. Y., Hsu, M., Li, P., & Sloan, R. S. (2013). ‘Struggling to be an insider’: A

- phenomenological design of new nurses' transition. *Journal of Clinical Nursing*, 22(5-6), 789–797. doi:10.1111/j.1365-2702.2012.04189.x
- Leroy, H., Dierynck, B., Anseel, F., Simons, T., Halbesleben, J. R., McCaughey, D., Sels, L. (2012). Behavioral integrity for safety, priority of safety, psychological safety, and patient safety: A team-level study. *Journal of Applied Psychology*, 97(6), 1273–1281. doi:10.1037/a0030076
- Levitis, D. A., Lidicker, W. Z., & Freund, G. (2009). Behavioural biologists don't agree on what constitutes behaviour. *Animal Behaviour*, 78(1), 103–110. doi:10.1016/j.anbehav.2009.03.018
- Listyowardojo, T. A., Nap, R. E., & Johnson, A. (2011). Variations in hospital worker perceptions of safety culture. *International Journal for Quality in Health Care*, doi:10.1093/intqhc/mzr069
- Liu, Y., Hsu, H., & Chen, H. (2015). Staff nurse decisional involvement: An internet mixed-method study in Taiwan. *Journal of Nursing Management*, 23(4), 468–478. doi:10.1111/jonm.12154
- Lucero, R. J., Lake, E.T., & Aiken, L.H. (2009). Variations in nursing care quality across hospitals. *Journal of Advanced Nursing*, 65(11), 2299–2310. Retrieved from <http://dx.doi.org/10.1111%2Fj.1365-2648.2009.05090.x>
- Lyndon, A. (2008). Social and environmental conditions creating fluctuating agency for

safety in two urban academic birth centers. *Journal of Obstetrical, Gynecological, and Neonatal Nursing*, 37, 13–23. doi:10.1111/j.1552-6909.2007.00204.x

Lyndon, A., Johnson, C., Bingham, D., Napolitano, P.G., Joseph, G., Maxfield, D.G., O’Keeffe, D.F. (2015). Transforming communication and safety culture in intrapartum care: A multi-organization blueprint. *Journal of Obstetrical, Gynecological, and Neonatal Nursing*, 44, 341–349. doi:10.1111/1552-6909.12575

Lyndon, A., Sexton, J.B., Simpson, K.R., Rosenstein, A., Lee, K.A., & Wachter, R. M. (2012). Predictors of likelihood of speaking up about safety concerns in labour and delivery. *British Medical Journal of Quality and Safety* 21(9), 791–799. doi: 10.1136/bmjqs-2010-050211

Lyndon, A., Zlatnik, M.G. Maxfield, D., Lewis, A., McMillan, C., and Kennedy, H.P. (2014). Contributions of clinical disconnections and unresolved conflict to failures in intrapartum safety. *Journal of Obstetric, Gynecologic & Neonatal Nursing* 43, 2–12. doi:10.1111/1552-6909.12266

Maiden, J., Georges, J. M., & Connelly, C. D. (2011). Moral distress, compassion fatigue, and perceptions about medication errors in certified critical care nurses. *Dimensions of Critical Care Nursing: DCCN*, 30(6), 339–345. doi: 10.1097/DCC.0b013e31822fab2a

Malloy, D. C., Hadjistavropoulos, T., McCarthy, E. F., Evans, R. J., Zakus, D. H.,

- Park, I., . . .Williams, J. (2009). Culture and organizational climate: Nurses' insights into their relationship with physicians. *Nursing Ethics*, 16(6), 719–733.
<https://doi.org/10.1177/0969733009342636>
- Manasse, H.R., Turnbull, J.E., & Diamond, L.H. (2002). Patient safety: Review of the contemporary American experience. *Singapore Medical Journal*, 43(5), 254–262.
 Retrieved from <https://www.ncbi.nlm.nih.gov/pubmed/12188079>
- Manias, E., & Street, A. (2000). Legitimation of nurses' knowledge through policies and protocols in clinical practice. *Journal of Advanced Nursing*, 32(6), 1467.
 Retrieved from <https://www.ncbi.nlm.nih.gov/pubmed/11136415>
- Manojlovich, M., & Antonakos, C. (2008). Satisfaction of intensive care unit nurses with nurse-physician communication. *Journal of Nursing Administration*, 38(5), 237-243. doi:10.1097/01.NNA.0000312769.19481.18
- Marczyk, G., Matteo, D., & Festinger (2005). *Essentials of research design and methodology*. Hoboken: John Wiley & Sons, Inc..
- Maxfield, D., Grenny, J., Lavandero, R., & Groah, L. (2010). *The silent treatment – Why safety tools aren't enough to save lives*. Provo, UT: Vital Smarts. Retrieved from www.silenttreatmentstudy.com
- Maxfield, D., Grenny, J., McMillan, R., Patterson, K., & Switzler, A. (2005). *Silence kills—The seven crucial conversations for healthcare*. Provo, UT: VitalSmarts.
 Retrieved from <http://www.silenttreatmentstudy.com/silencekills/SilenceKills.pdf>
- Maxfield, D.G., Lyndon, A., Kennedy, H.P., O'Keefe, D. F., & Zlatnik, M.G. (2013).

- Confronting safety gaps across labor and delivery teams. *American Journal of Obstetrics and Gynecology* 209(5), 402–408. doi:10.1016/j.ajog.2013.07.013. Epub 2013 Jul 17.
- Milliken, F.J., & Morrison, E.W. (2003). Shades of silence: Emerging themes and future directions for research on silence in organizations. *Journal of Management Studies*, 40(6), 1563–1568. doi:10.1111/1467-6486.00391
- Mitchell, P.H., Ferketich, S., & Jennings, B.M. (1998). Quality health outcomes model. *Image: Journal of Nursing Scholarship*, 30(1):43–6. Retrieved from <https://www.ncbi.nlm.nih.gov/pubmed/9549940>
- Moeidh, A. T., Shah, F. A., & Al-Matari, E. M. (2015). The relationship between prosocial voice and the patient safety culture in the Saudi public hospitals. *Asian Social Science*, 11(16), 267. Retrieved from <http://doi.org/10.5539/ass.v11n16p267>
- Moore, L., & McAuliffe, E. (2010). Is inadequate response to whistleblowing perpetuating a culture of silence in hospitals? *Clinical Governance*, 15(3), 166–178. doi:10.1108/14777271011063805
- Morrison, E.W., & Milliken, F.J. (2000). Organizational silence: A barrier to change and development in a pluralistic world. *Academy of Management Review*, 25(4), 706–725. doi:10.2307/259200
- Munro, B. H. (2005). Statistical methods for health care research. Philadelphia, PA: Lippincott Williams & Wilkins.

- Nathanson, B. H., Henneman, E. A., Blonaisz, E. R., Doubleday, N. D., Lusardi, P., & Jodka, P. G. (2011). How much teamwork exists between nurses and junior doctors in the intensive care unit? *Journal of Advanced Nursing*, 67(8), 1817–1823. doi:10.1111/j.1365-2648.2011.05616.x
- National Aeronautics and Space Administration. (2003). *Report of the Columbia Accident Investigation Board, 1*, 1–248. Retrieved from http://www.nasa.gov/columbia/home/CAIB_Vol1.html
- Naveh, E., Katz-Navon, T., & Stern, Z. (2006). Readiness to report medical treatment errors: The effects of safety procedures, safety information, and priority of safety. *Medical Care*, 44(2), 117–123. Retrieved from <http://www.ncbi.nlm.nih.gov/pubmed/16434910>
- Nembhard, I. M., & Edmondson, A. C. (2006). Making it safe: The effects of leader inclusiveness and professional status on psychological safety and improvement efforts in health care teams. *Journal of Organizational Behavior*, 27(7), 941–966. doi:10.1002/job.413
- Nembhard, I. M., Labao, I., & Savage, S. (2015). Breaking the silence: Determinants of voice for quality improvement in hospitals. *Health Care Management Review*, 40(3), 225–236. doi:10.1097/HMR.0000000000000028
- Newton, L., Storch, J. L., Makaroff, K. S., & Pauly, B. (2012). "Stop the noise!" from voice to silence. *Nursing Leadership (Toronto, Ontario)*, 25(1), 90–104. doi:10.12927/cjnl.2012.22828

- Okuyama, A., Wagner, C., & Bijnen, B. (2014). Speaking up for patient safety by hospital-based health care professionals: A literature review. *BMC Health Services Research* 14(61), 1–8. doi:10.1186/1472-6963-14-61
- Pacheco, D.C., Moniz, A., and Caldeira, S. (2015). Silence in organizations and psychological safety: A literature review. *European Scientific Journal, suppl. Special Edition* (August), 1857–7881. Retrieved from <https://www.researchgate.net/publication/318702204>
- Paliadelis, P., & Cruickshank, M. (2008). Using a voice-centered relational method of data analysis in a feminist study exploring the working world of nursing unit managers. *Qualitative Health Research*, 18(10), 1444–1453. doi: 10.1177/1049732308322606
- Pinder, C.C., & Harlos, K.P. (2001). Employee silence: Quiescence and acquiescence as responses to perceived injustice. In G.R. Ferris (Ed.), *Research in Personnel and Human Resources Management*, 20, (pp. 331–369). Bradford, England: Emerald Group Publishing Limited.
- Polit, D. F., & Beck, C.T. (2012). *Nursing research: Generating and assessing evidence for nursing practice* (9th ed.). Philadelphia, PA: Wolters Kluwer.
- Portney, L.G., & Watkins, M.P. (2015). *Foundations of clinical research: Applications to practice*. Philadelphia, PA: F.A. Davis Company.
- Prati, G., & Pietrantoni, L. (2014). Attitudes to teamwork and safety among Italian

- surgeons and operating room nurses. *Work: A Journal of Prevention, Assessment and Rehabilitation* 49, 669–677. doi:10.3233/WOR-131702
- Pronovost, P. (2010). *The science of safety*. Retrieved from www.youtube.com/watch?v=GOJJHHm7lnM
- PsychData L.L.C. (2016). *Security statement*. Retrieved from <https://www.psychdata.com/content/security.asp>
- Rathert, C., Ishqaidaf, G., & May, D. R. (2009). Improving work environments in health care: Test of a theoretical framework. *Health Care Management Review*, 34(4), 334–343. doi:10.1097/HMR.0b013e3181abce2b.
- Riley, R. G., & Manias, E. (2006). Governance in operating room nursing: Nurses' knowledge of individual surgeons. *Social Science & Medicine*, 62(6), 1541–1551. doi: 10.1016/j.socscimed.2005.08.007
- Rodgers, B.L. (2005). *Developing nursing knowledge: Philosophical traditions and influences*. Philadelphia, PA: Lippincott, Williams & Wilkins.
- Sayre, M. M., McNeese-Smith, D., Leach, L. S., & Phillips, L. R. (2012). An educational intervention to increase "speaking-up" behaviors in nurses and improve patient safety. *Journal of Nursing Care Quality*, 27(2), 154–160. doi:10.1097/NCQ.0b013e318241d9ff
- Schwappach, D. L., & Gehring, K. (2014a). Silence that can be dangerous: A vignette study to assess healthcare professionals' likelihood of speaking up about safety concerns. *PloS One*, 9(8), e104720. doi:10.1371/journal.pone.0104720

- Schwappach, D. L., & Gehring, K. (2014b). Trade-offs between voice and silence: A qualitative exploration of oncology staff's decisions to speak up about safety concerns. *BMC Health Services Research*, 14(1), 303. doi:10.1186/1472-6963-14-303
- Souba, W., Way, D., Lucey, C., Sedmak, D., & Notestine, M. (2011). Elephants in academic medicine. *Academic Medicine* 86(12), 1492–1499. doi: 10.1097/ACM.0b013e3182356559
- Sutcliffe, K.M., Lewton, E., & Rosenthal, M.M. (2004). Communication failures: An insidious contributor to medical mishaps. *Academic Medicine*, 79(2), 186–194. doi:10.1097/ACM.0b013e3182356559
- Tavakol, M., & Dennick, R. (2011). Making sense of Cronbach's alpha. *International Journal of Medical Education* 2, 53–55. doi:10.5116/ijme.4dfb.8dfd
- The Joint Commission (2014). *Sentinel event data root causes by event type 2004 –2014*. Retrieved from http://www.jointcommission.org/assets/1/18/Root_Causes_by_Event_Type_2004-2Q_2014.pdf
- Todorova, I. L. G., Alexandrova-Karamanova, A., Panayotova, Y., & Dimitrova, E. (2014). Organizational hierarchies in Bulgarian hospitals and perceptions of justice. *British Journal of Health Psychology*, 19(1), 204–218. doi:10.1111/bjhp.12008
- Trinkoff, A., Johantgen, M., Storr, C., Han, K., Liang, Y., Gurses, A., & Hopkinson, S.

- (2010). A comparison of working conditions among nurses in Magnet and non-Magnet hospitals. *Journal of Nursing Administration*, 40(7/8), 309–315.
doi:10.1097/NNA.0b013e3181e93719
- Tschannen, D. (2004). The effect of individual characteristics on perceptions of collaboration in the work environment. *Medsurg Nursing*, 13(5), 312–318.
Retrieved from <http://www.ncbi.nlm.nih.gov/pubmed/15587130>
- Van Dyne, L., Ang, S., & Botero, I.C. (2003). Conceptualizing employee silence and employee voice as multidimensional constructs. *Journal of Management Studies*, 40(6), 1359–1391. Retrieved from <http://dx.doi.org/10.1111/1467-6486.00384>
- Vivian, L., Marais, A., McLaughlin, S., Falkenstein, S., & Argent, A. (2009). Relationships, trust, decision-making and quality of care in a paediatric intensive care unit. *Intensive Care Medicine*, 35(9), 1593–8. doi:10.1007/s00134-009-1551-z
- Wakeam, E., Hyder, J. A., Ashley, S. W., & Weissman, J. S. (2014). Barriers and strategies for effective patient rescue: A qualitative study of outliers. *Joint Commission Journal on Quality and Patient Safety*, 40(11), 503–503. Retrieved from [https://doi.org/10.1016/S1553-7250\(14\)40065-5](https://doi.org/10.1016/S1553-7250(14)40065-5)
- Walrath, J. M., Dang, D., & Nyberg, D. (2010). Hospital RNs' experiences with disruptive behavior: A qualitative study. *Journal of Nursing Care Quality*, 25(2), 105–116. doi:10.1097/NCQ.0b013e3181c7b58e
- Walrath, J. M., Dang, D., & Nyberg, D. (2013). An organizational assessment of

- disruptive clinician behavior: Findings and implications. *Journal of Nursing Care Quality*, 28(2), 110–121. doi:10.1097/NCQ.0b013e318270d2ba
- Whittemore, R. & Knofl, K. (2005). The integrative review: Updated methodology. *Journal of Advanced Nursing* 52(5), 546–553. doi:10.1111/j.1365-2648.2005.03621.x
- Widmark, C., Tishelman, C., Gustafsson, H., & Sharp, L. (2012). Information on the fly: Challenges in professional communication in high technological nursing. A focus group study from a radiotherapy department in Sweden. *BMC Nursing*, 11(1), 10–18. doi:10.1186/1472-6955-11-10
- Wilson, V. J., McCormack, B. G., & Ives, G. (2005). Understanding the workplace culture of a special care nursery. *Journal of Advanced Nursing*, 50(1), 27–38. doi: 10.1111/j.1365-2648.2004.03346.x
- Yanchus, J., Nancy, Derickson, R., C. Moore, S., Bologna, D., & Osatuke, K. (2014). Communication and psychological safety in veteran's health administration work environments. *Journal of Health Organization and Management*, 28(6), 754–776. doi:10.1108/JHOM-12-2012-0241
- Zeltser, M.V., & Nash, D.B. (2010). Approaching the evidence basis for aviation derived teamwork training in medicine. *American Journal of Medical Quality*, 25(1) 13–23. Retrieved from <https://doi.org/10.1177/1062860609345664>

APPENDIX A
Demographic Profile

Appendix A

Demographic Profile

INSTRUCTIONS: The survey below contains questions on basic information. Please answer as honestly as possible.

All information will remain confidential.

1. Age

2. Gender

_____ Male

_____ Female

3. Estimated Average Years of Nursing Experience:

4. Nursing Specialty

_____ Adult (including Medical-Surgical specialties and intensive care)

_____ Obstetric/Women's Health

_____ Neonatal/Pediatric

_____ Mental Health

_____ Other

5. Type of Nurse Practice Environment

_____ Magnet® (current designation)

_____ Non-Magnet® (current designation)

APPENDIX B

Practice Environment Scale of the Nursing Work Index

Appendix B

Practice Environment Scale of the Nursing Work Index

For each item below, please indicate the extent to which you agree that the item is present in your current job.

Indicate your degree of agreement by circling the appropriate number.

	Strongly Agree	Agree	Disagree	Strongly Disagree
1. Adequate support services allow me to spend time with my patients.	4	3	2	1
2. Physicians and nurses have good working relationships.	4	3	2	1
3. A supervisory staff that is supportive of the nurses.	4	3	2	1
4. Active staff development or continuing education programs for nurses.	4	3	2	1
5. Career development/clinical ladder opportunity.	4	3	2	1
6. Opportunity for staff nurses to participate in policy decision.	4	3	2	1
7. Supervisors use mistakes as learning opportunities, not criticism.	4	3	2	1
8. Enough time and opportunity to discuss patient care problems with other nurses.	4	3	2	1
9. Enough registered nurses to provide quality patient care.	4	3	2	1

10.	A nurse manager who is a good manager and leader.	4	3	2	1
11.	A chief nursing officer who is highly visible and accessible to staff.	4	3	2	1
12.	Enough staff to get the work done.	4	3	2	1
13.	Praise and recognition for a job well done.	4	3	2	1
14.	High standards of nursing care are expected by the administration.	4	3	2	1
15.	A chief nursing officer equal in power and authority to other top-level hospital executives.	4	3	2	1
16.	A lot of teamwork between nurses and physicians.	4	3	2	1
17.	Opportunities for advancement.	4	3	2	1
18.	A clear philosophy of nursing that pervades the patient care environment.	4	3	2	1
19.	Working with nurses who are clinically competent.	4	3	2	1
20.	A nurse manager who backs up the nursing staff in decision making, even if the conflict is with a physician.	4	3	2	1
21.	Administration that listens and responds to employee concerns.	4	3	2	1
22.	An active quality assurance program.	4	3	2	1

23.	Staff nurses are involved in the internal governance of the hospital (e.g. practice and policy committees).	4	3	2	1
24.	Collaboration (joint practice) between nurses and physicians.	4	3	2	1
25.	A preceptor program for newly hired RN's.	4	3	2	1
26.	Nursing care is based on a nursing, rather than a medical model.	4	3	2	1
27.	Staff nurses have the opportunity to serve on hospital and nursing committees.	4	3	2	1
28.	Nursing administrators consult with staff on daily problems and procedures.	4	3	2	1
29.	Written, up-to-date nursing care plans for all patients.	4	3	2	1
30.	Patient care assignments that foster continuity of care, i.e., the same nurse cares for the patient from one day to the next.	4	3	2	1
31.	Use of nursing diagnoses.	4	3	2	1

From: Lake, E.T. (2002). Development of the practice environment scale of the nursing work index. *Research in Nursing & Health* 25(3), 176-188 (with permission).

APPENDIX C

Four Forms of Employee Silence Scale

Appendix C

Four Forms of Employee Silence Scale

Registered nurses sometimes face problems in the clinical environment surrounding the promotion of patient safety. They may think that their colleagues behave in ways that put patients at risk. For example, colleagues might fail to utilize proper hand washing or aseptic technique, might take unsafe shortcuts, or might provide incompetent care. Some nurses may voice their concerns and try to change these situations, whereas others will remain silent. I am interested in whether you have noticed these situations in the past and whether you spoke up to someone who could change the situation, or tended to remain silent.

In answering the questions below, please utilize the following definition of a *patient safety event*: “any type of error, mistake, incident, accident, or deviation, regardless of whether or not it results in patient harm” (Association of Healthcare Research and Quality, 2017, para 1).

Please circle your answers.

	No, never	Yes, one time	Yes, a few times	Yes, many times
1. Have you observed such a <i>patient safety event</i> in the last six months?	1	2	3	4
2. During the last six months, how often have you addressed such a <i>patient safety event</i> to someone who was able to change the situation?	1	2	3	4
3. How often did you prefer to remain silent?	1	2	3	4

With the questions below, I want to understand what motivates you to remain silent in situations in which colleagues behave in ways that put patients at risk. Please circle your answers.

	Never	Very Rarely	Rarely	From Time to Time	Occasionally	Frequently	Very Frequently
4. I remain silent because of fear of negative consequences.	1	2	3	4	5	6	7
5. I remain silent to not make me vulnerable in the face of colleagues or superiors.	1	2	3	4	5	6	7
6. I remain silent because I do not want to embarrass others.	1	2	3	4	5	6	7
7. I remain silent because I do not want to hurt the feelings of colleagues or superiors.	1	2	3	4	5	6	7
8. I remain silent to avoid conflicts.	1	2	3	4	5	6	7
9. I remain silent because of bad experiences I've had with speaking up on critical issues in the past.	1	2	3	4	5	6	7
10. I remain silent because I will not find a sympathetic ear, anyway.	1	2	3	4	5	6	7

11.	I remain silent because nothing will change, anyway.	1	2	3	4	5	6	7
12.	I remain silent because others say nothing, too.	1	2	3	4	5	6	7
13.	I remain silent because my superiors are not open to proposals, concerns, or the like.	1	2	3	4	5	6	7
14.	I remain silent because of concerns that others could take advantage of my ideas.	1	2	3	4	5	6	7
15.	I remain silent because that would have led to do avoidable additional work.	1	2	3	4	5	6	7
16.	I remain silent because I do not want others to get into trouble.	1	2	3	4	5	6	7
17.	I remain silent because I fear disadvantages from speaking up.	1	2	3	4	5	6	7
18.	I remain silent to not give away my knowledge advantage.	1	2	3	4	5	6	7

APPENDIX D

Perception of Patient Safety Subscale of the Hospital Survey on Patient Safety

Appendix D

Hospital Survey on Patient Safety

This survey asks for your opinions about patient safety issues and medical error. If you do not wish to answer a question, or if a question does not apply to you, you may leave your answer blank.

- **“Patient safety”** is defined as the avoidance and prevention of patient injuries or adverse events resulting from the processes of health care delivery.

Perception of Patient Safety Subscale

Please indicate your agreement or disagreement with the following statements about your work area/unit. Please circle your answer.

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
1. It is just by chance that more serious mistakes don't happen around here.	1	2	3	4	5
2. Patient safety is never sacrificed to get more work done.	1	2	3	4	5
3. We have patient safety problems on this unit.	1	2	3	4	5
4. Our procedures and systems are good at preventing errors from happening.	1	2	3	4	5

APPENDIX E

Study Flyer for Internet Participants

Appendix E

Study Flyer for Internet Participants

Dear Potential Nursing Research Participant,

I am a doctoral student in Nursing Science at Texas Woman's University. I am conducting a study to examine registered nurses' perceptions of different nursing practice environments and patient safety and how these topics relate to speaking up or remaining silent about observed patient safety events.

Eligible participants for the study include registered nurses who are currently employed full time in hospitals in staff level positions.

If you are eligible and interested in participating, please go to the following URL: *(provide PsychData URL to the study)*. At this web address, you will be provided with additional information regarding the study, as well as with procedures to consent to participation in the study. Completion of the consent and questionnaires will take approximately 30 minutes. All information provided by participants will remain confidential.

*A \$10 gift Target gift card will be provided to participants who complete the study.

Thank you for your consideration,

Jane Kosarek
Doctoral Student
Texas Woman's University

APPENDIX F

Institutional Review Board Approval Letter



Institutional Review Board
Office of Research and Sponsored Programs
P.O. Box 425619, Denton, TX 76204-5619
940-898-3378
email: IRB@twu.edu
<http://www.twu.edu/irb.html>

DATE: April 13, 2017

TO: Ms. Jane Kosarek
Nursing

FROM: Institutional Review Board (IRB) - Denton

Re: *Approval for Relationships of the Nursing Practice Environment, Nursing Silence Behaviors, and Nurse Perceived Patient Safety (Protocol #: 19497)*

The above referenced study has been reviewed and approved by the Denton IRB (operating under FWA00000178) on 4/13/2017 using an expedited review procedure. This approval is valid for one year and expires on 4/13/2018. The IRB will send an email notification 45 days prior to the expiration date with instructions to extend or close the study. It is your responsibility to request an extension for the study if it is not yet complete, to close the protocol file when the study is complete, and to make certain that the study is not conducted beyond the expiration date.

If applicable, agency approval letters must be submitted to the IRB upon receipt prior to any data collection at that agency. A copy of the approved consent form with the IRB approval stamp is enclosed. Please use the consent form with the most recent approval date stamp when obtaining consent from your participants. A copy of the signed consent forms must be submitted with the request to close the study file at the completion of the study.

Any modifications to this study must be submitted for review to the IRB using the Modification Request Form. Additionally, the IRB must be notified immediately of any adverse events or unanticipated problems. All forms are located on the IRB website. If you have any questions, please contact the TWU IRB.

cc. Dr. Anita Hufft, Nursing
Dr. Vicki Zeigler, Nursing
Graduate School