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Factors Influencing Critical Care Nurses to Speak Up When Patients are at Risk for Harm: Development of an Instrument

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FACTORS INFLUENCING CRITICAL CARE NURSES TO SPEAK UP WHEN PATIENTS ARE AT RISK FOR HARM: DEVELOPMENT OF AN INSTRUMENT

by

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Table of Contents

List of Tables

List of Figures

Abstract

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Nurses intervene in situations where patients may be at risk for harm, particularly in critical care units where risk due to severity of illness and complexity of treatment is higher. Although safety improvements have been made, nurses still report barriers to speaking-up. Improvement in skilled communication and true collaboration among health care professionals begins with assessment of the problem. Attitudes and beliefs that influence speaking-up behaviors among critical care nurses have not been well-documented. This research study utilized a mixed-method design framed by the Theory of Planned Behavior to explore factors associated with intention to speak up among critical care nurses when patients are at risk for harm. Following principal component factor analysis, total variance explained was 68.79%, Cronbach's alpha for the scale was 0.859, and values for the four sub-factors ranged between 0.750 and 0.916.

Keywords: theory of planned behavior, critical care, scale development, nurses speak up

Chapter One

Overview of the Research

According to Maslow's hierarchy of needs, safety and security are basic requirements after physiological functioning is satisfied (Maslow, 1954). Staying healthy and avoiding adverse events can be managed by most independently functioning adults, but not those hospitalized in critical care. Patients in intensive care units rely on a variety of health care personnel to not only treat their conditions, but keep them safe and prevent adverse events. Constant vigilance, frequent monitoring, management of high technology equipment, astute clinical reasoning skills, and collaborative action by the healthcare team are required in the intensive care unit (Dietz et al., 2014). Critical care nurses are at the "sharp end" of health care due to their point of care proximity to patients (Hughes, 2008) and their role as an advocate. Nurses are often the last stop between an error and an adverse event, and they need to be ready to speak up when potential harm is recognized. However, research indicates nurses do not always voice concerns at the time a patient is at risk, leaving the patient vulnerable (Eppich, 2015; Garon, 2012; Law & Chan, 2015; Maxfield, Grenny, Lavandero, & Groah, 2010; Nembhard, Labao, & Savage, 2015; Okuyama, Wagner, & Bijnen, 2014; Schwappach & Gehring, 2014; Ulrich & Kear, 2014; Weiss et al., 2014).

Patients in critical care are at risk not only from their underlying co-morbidities and organ dysfunction (Garrouste-Orgeas, et al., 2008), but also the environment in which they are treated (Garrouste-Orgeas et al., 2010. Medical errors are common,

affecting between 26.8% and 58% of patients (Garrouste-Oregas, Flaatten, & Moreno, 2015). Collaborative team-work, a positive safety climate, and supportive management are reported to affect the incidence of adverse patient events (Huang et al., 2010). According to a study of 57 ICUs and 378 patients (Steyrer, Schiffinger, Huber, Valentin, & Strunk, 2013), safety tools (e.g. bar coding and checklists) may have helped structure better environments for patient care; but overly detailed quality control tasks in the absence of a safety climate may actually augment errors in the ICU. The authors of the Steyrer et al. (2013) study suggest that a strong safety culture is the backbone of safe care in critical care.

A safety culture is the "the product of individual and group values, attitudes, perceptions, competencies and patterns of behavior that determine the commitment to, and the style and proficiency of, an organization's safety management" (International Safety Advisory Group, 1991, p. 23). Good communication and collaborative teamwork are necessary for safe, quality patient care (Khatri, Brown, & Hicks, 2009). Unfortunately, communication breakdowns have been cited as contributing to 70% of medical errors (Kohn, Corrigan, & Donaldson, 2000). Poor communication, including disruptive behaviors, disrespect, ignoring, or failure to speak up with questions or concerns contribute to an unsafe patient care environment.

According to the Institute for Healthcare Improvement (IHI), "in a culture of safety, people are not merely encouraged to work toward change; they take action when it is needed" (IHI, 2014, p.1). Action includes many of the same things that have been implemented by the airline industry–educate to minimize error, expect mistakes, empower team members to speak out, and have systems in place for situations where

mistakes are more likely to occur (Doucette, 2006; Nance, 2008). If nurses must expect errors as they are providing continuous care, they must be empowered to speak up as the last line of defense.

Studies addressing barriers and facilitators for nurses in speaking up to prevent patient error have been conducted (Eppich, 2015; Nembhard et al., 2015; Okuyama et al., 2014; Wakefield, McLaws, Whitby, & Patton, 2010; Weiss et al., 2014), but there has not been a study involving critical care nurses in the United States (US) that is based on a theoretical framework. Safety questionnaires and hospital work environment surveys (e.g. American Association of Critical Care Nurses (AACN) Critical Care Nurse Work Environment Survey, 2006; Hospital Survey on Patient Safety Culture, 2004) that evaluate communication, collaboration, team work**,** and safety culture have provided tremendous insight into adverse event interruption by nurses (Sorra & Nieva, 2004; Ulrich & Kear, 2014; Ulrich, Lavandero, Woods, & Early, 2014) . However, these surveys have not provided an in-depth evaluation of nurses' intentions to speak up in high risk areas where patients are most vulnerable to harm. Assessments are necessary, particularly in critical care areas, to evaluate the current status of patient safety culture, identify strengths and weakness, evaluate trends, examine the impact of interventions, and compare results to truly improve safe patient care (Ulrich & Kear, 2014). This research attempts to delineate what critical care nurses perceive are the most important influencing factors for speaking up at the time patients are at risk for harm.

Purpose of the Study

The purpose of this study was to explore the usefulness of a Theory of Planned Behavior-based (TPB) questionnaire to assess critical care nurses intentions to speak up

when a patient is at risk for harm. In addition, the contribution of attitudes, subjective norms, perceived behavioral control, and general intention were examined. Finally, an instrument to assess speaking up intent was developed for use in future studies. This was accomplished through a mixed method, sequential, exploratory design that utilized results from a two-round Delphi study on facilitators and barriers to speaking up to enrich development of a questionnaire based on published guidelines for TPB questionnaires (Ajzen, 2015; Francis et al., 2004). The model of embedding qualitative descriptive components in quantitative study has been used in instrument development by many nurse researchers (Polit & Beck, 2012).

Participants were critical care staff nurses who were either members of the AACN, or they accessed an internet survey though AACN social media–Facebook, or they received an email from an AACN member. Internet surveys avoid interviewer bias in the collection of data, and they offer the participant anonymity in providing information on sensitive topics such as acting to prevent patient harm (Polit & Beck, 2012). However, in the Delphi round one survey participants were asked to provide an email address to the primary investigator (PI) to clarify responses to open-ended questions so only confidentiality was ensured.

Protection of Human Subjects

The study was initially approved by the Institutional Review Board (IRB) from the University of Texas at Tyler (Appendix A). Following review of the approved IRB, abstracts, and questionnaires used in the study, authorization was granted by Linda Bell, MSN, RN, Clinical Practice Specialist at the AACN to request participants through the AACN's online *Critical Care ENewsline* and the AACN Facebook webpage. AACN

chapter members were also contacted by email and provided a link to the *Critical Care ENewsline* webpage and Qualtrics survey. Participants were given information on inclusion/exclusion criteria, purpose of the study and voluntary nature, participant expectations, benefits, risks, an option to not participate or stop at any time, and notice that submission of answers indicated consent to participate. Identifying information was kept confidential and computer data files were shared with only two dissertation committee researchers. Data files were kept on secured, password-protected computers. The researcher was available by phone or email to answer questions. Selected participants were emailed to clarify answers to some responses from study one.

Introduction of Articles

The first manuscript "Factors Influencing Critical Care Nurses to Speak Up to Prevent Patient Harm: A Delphi Study" is the qualitative component of a mixed methods study that was based on published guidelines for TPB questionnaire development (Ajzen, 2015; Francis et al., 2004). The two-round Delphi study obtained free-text responses from critical care nurses on beliefs associated with attitudes (ATT), subjective norms (SN), and perceived behavioral control (PBC) related to speaking up when patients are at risk for harm. Nurses were asked to describe advantages and disadvantages, important persons or groups who would approve or disapprove, and factors that would enable or make it difficult to speak up when a potential adverse patient event is recognized. Thematic content analyses provided categories for the most commonly occurring themes. These themes were evaluated in Delphi round two by critical care nurses to arrive at consensus agreement and subsequent ranking of themes. Themes were compared to the extant literature and reported as contextual factors that influence the intention to speak up

among critical care nurses according to the TPB. Themes were used in a subsequent quantitative study to develop a speaking up intention questionnaire that included the perspective of critical care staff nurses in the US.

The second manuscript "Critical Care Nurses Speak Up to Prevent Patient Harm: A Scale Based on the Theory of Planned Behavior" is a report of a quantitative study that utilized principal component factor analysis (PCA) in the development of a tool assessing intention to speak up among critical care nurses. Variables from the TPB (ATT, SN, PBC, and general intention to speak up) were used in factor analysis to analyze a 55-item questionnaire. Measures of validity, reliability, and explained variance provided psychometric properties of the study. The results were compared to current literature on speaking up studies, assessments of safety culture, and ethical issues associated with nurses voicing concerns as patient advocates.

Chapter Two

Influencing Factors among Critical Care Nurses for Speaking Up to Prevent Patient Harm: A Delphi Study

Abstract

Problem: No previous studies based on the Theory of Planned Behavior that identify factors that influence speaking up by critical care nurses when patients are at risk for harm were identified. Critically ill patients are at greater risk by virtue of the severity of their illness, complexity of care, and multi-professional treatment. This risk can be mitigated by nurses who recognize the advantages of speaking up at critical times and identify mechanisms to overcome barriers.

Objectives: Using the Theory of Planned Behavior, determine the perceptions of critical care nurses regarding the advantages, resources, and barriers to speaking up behaviors.

Proposition: A theory-based framework used widely in research on health professional behavior could provide a foundation for future study of factors that influence speaking up and help determine important interventions to improve speaking up behaviors that affect patient safety.

Methods: Critical care nurses nationwide participated in a two-round Delphi internet study to determine consensus of beliefs for speaking up when patients are at risk for harm. Following thematic analysis of free-text responses, the top three consensus statements for advantages of speaking up were advocating, safeguarding, and providing timely intervention to protect the patient. Team members were ranked highest as a resource for support. The leading barriers included potential conflicts among the patient, family, and the staff; inexperience in nursing; an unsupportive management; and fear of confrontation or retaliation.

Keywords: Delphi, planned behavior theory, speaking up, critical care

Since the release of *To Err is Human* (Donaldson, Corrigan, & Kohn, 2000) improvement in patient safety initiatives has become more of an emphasis, but preventable patient harm continues to result in four to eight million occurrences each year (James, 2013). According to Pardis et al. (2014), the focus of improvement in quality and safety issues in intensive care units (ICU) should shift attention from technical and technological fixes to improved inter-professional care and the context in which patient care occurs. Even though patient treatment in the ICU is dependent on high technology and complex systems, care is delivered by teams of professionals who must interact collaboratively. Communication breakdowns in healthcare (including written, verbal, and nonverbal exchanges of information) have been described as a major patient safety issue (Okuyama, Wagner, & Bijnen, 2014; Ulrich & Kear, 2014). Honest mistakes and misunderstandings are inevitable (Reason & Hobbs, 2003), but failing to speak up is an insidious problem that has been plaguing healthcare (Eppich, 2015). The following discussion focuses on definitions, background, attitudes, influence of social support, barriers, and facilitators related to speaking up behavior by nurses. Attitudes, subjective norms, and perceived behavioral control (factors that make it easier or harder to engage in a behavior) are identified by Ajzen (1991) as important contributors of behavioral intent and action.

Background and Significance

Speaking Up in Healthcare

The benefit of having multiple eyes and ears to interrupt potentially negative events was recognized by the Department of Homeland Security (2010) when it began its

campaign "If You See Something, Say Something™. The philosophy behind this campaign is that everyone is a partner in the safety of the community. In healthcare, the patient cannot always recognize potential hazards or speak up to avert impending harm. Patients who are critically ill are especially vulnerable and must rely on members of the health care team to be their advocate. In healthcare, speaking up can be defined as "the raising of concerns by healthcare professionals for the benefit of patient safety and quality care upon recognizing or becoming aware of the risk or deficient actions of others within health care teams in a hospital environment" (Okuyama et al., 2014, p. 1). Speaking up is an important communication tool in a culture of safety that involves assertiveness, clarity, transparency (Garon, 2012), and a focus on the best interests of the patient. The importance of speaking up in organizations is not new, but has received increasing attention because it is an important part of effective team communication and collaboration (Ballangrud, Hall-Lord, Persenius, & Hedelin, 2014). Ascertaining reasons why some nurses speak up and others choose silence has been the focus of a number of research studies in recent years.

Attitudes

Attitudes (beliefs about the consequences of a behavior [Ajzen, 1991]) can affect whether the nurse perceives an advantage or disadvantage to speaking up. According to Weaver, Dy, and Rosen (2014), the influence of healthcare provider attitudes are important factors in clinical team effectiveness that promote patient safety and reduce harm. Nurses are taught the Florence Nightingale Pledge (ANA, 2015a) that includes the statement "I…devote myself to the welfare of those committed to my care." Advocating for patient safety is part of the ethical code for nurses (ANA, 2015b). Even though

speaking up when patients are at risk for harm is a professional responsibility, clinicians evaluate the benefits and costs before engaging in this behavior (Schwappach & Gehring, 2014).

A number of studies identify positive outcomes and advantages of speaking up. Qualitative studies have identified the following benefits from healthcare workers speaking up: protecting patients from injury (Swappach & Gehring, 2014), informing others and supporting policies (Nembhard, Labao, & Savage, 2015), and advocating for patients (Garon, 2012). In a quantitative study of 5,294 clinical and managerial healthcare staff, Wakefield, Mc Laws & Whitby, & Patton (2010) reported that belief in the positive outcome of preventative safety behaviors (i.e. behavior will improve patient safety) was a significant predictor of patient safety behavioral intent (i.e. reporting incidents or speaking up when a colleague makes an error) ($p< 0.0001$). In a study of 125 labor and delivery staff, Lyndon et al. (2012) found that speaking up was more likely to occur when staff perceived the advantage of interrupting an event that was likely to cause serious patient harm.

In contrast, some studies reported that speaking up during patient safety issues is neither easy nor beneficial. Garon (2012) found that nurses had low confidence that confronting others would do any good. Other studies (Jackson et al., 2014; Maxfield et al., 2010) reported some nurses being anxious and fearful of speaking up because of disrespect, threats, anger, repercussions, and stress. In the Maxfield et al. (2010) study of over 2,000 nurses, 58% (n = 1,403) of the nurses said they had been in situations where they did not feel safe to speak up, or they were unable to get others to listen; and 17%

said they were in this situation at least a few times a month. Disadvantages to speaking up can become difficult barriers for nurses to overcome.

Social Influences

Norms regarding what constitutes an unsafe situation and social support (e.g. perceived support from co-workers, other health professionals, and management) may determine whether a nurse speaks up when a patient is at risk for harm. In a qualitative study of 12 RNs, Churchman and Doherty (2010) found that hierarchical structures and gender roles influenced whether nurses questioned physician practices. However, more recent research on collaborative teams in healthcare indicates that professionals working together with a common goal were more likely to "flatten hierarchies of control to achieve greater respect and foster open communication" (Ballangrud, Hall-Lord, Persenius, & Hedelin, 2014, p. 186). Nembhard, Labao, & Savage (2015) reported that individuals within an established team created a sense of safety, efficacy and legitimacy resulting in an increased willingness to speak up. Garon (2012) found that peers and managers could either encourage or dissuade a nurse from speaking up. In the Garon study, comments from focus groups included "…the staff feels open to speak, but yet there is a lot of stifling…. You speak…and then there is an intimidating factor and then people start shutting down" (Garon, 2012, p. 367).

Negative social influences may be enough to silence the nurse who has good intentions, but who cannot act accordingly. In a study of 32 physicians and nurses, Schwappach and Gehring (2014) reported that 20 respondents said they wanted to avoid exposure or humiliation of their co-worker by speaking up in front of them to team members or patients. Erosions of patient trust and endangering the caregiver-patient

relationship were concerns. Finally, one third of participants expressed fears of provoking an immediate negative reaction, being labeled as difficult, and adversely affecting working relationships. Nurses with less experience may be particularly susceptible to remaining silent to avoid defensive repercussions from more established staff (Law & Chan, 2015). A small qualitative study ($N = 9$) found that hierarchical structures are currently breaking down and health care worker collaborative relationships have improved, but that groups still prefer to communicate within their own profession (Lancaster, Kolakowsky-Hayner, Kovacich, & Greer-Williams, 2015).

Factors that Facilitate or Inhibit Perceived Behavioral Control

The literature on nurses speaking up in the hospital environment includes references to both internal and external resources (i.e. factors that make it easier or harder to speak up). Internal resources, such as communication skills, were reported to be influenced by culture, language, and upbringing (Garon, 2012). Nembhard et al. (2015) reported that managers believe personality types affect whether health professionals voice concerns. In addition, tenure (length of employment), profession type (e.g. physicians, nurses), and position (e.g. managers, staff nurses) may influence the likelihood that speaking up will occur. Therefore, those who have more experience, knowledge, and perceived power are more likely to be vocal about concerns. Maxfield et al. (2010) found that nurses who were successful in speaking up used the following interpersonal skills when confronting others: being positive, developing good relationships, collecting and using facts, avoiding accusations, minimizing defensiveness, and diffusing anger.

External forces in the workplace can empower nurses or dissuade them from speaking out. Henneman et al. (2010) reported that nurses who used external resources

(e.g. patient information and plan of care, policies, procedures, standards, chain of command) found it easier to speak up about potential medical errors. According to Nembhard et al. (2015) leader supportiveness and policies that provide guidance and protection for speaking up were also important. Garon (2012) found that managers, administration and peers were important influences, but that an organizational culture (shared beliefs and values) that promotes openness signaled whether speaking up was allowed, supported, and encouraged. An organization that tolerates silencing others, or rude and disruptive behavior, will negatively impact patient safety; but a culture that promotes open communication can enhance the psychological safety that encourages speaking up to protect patients from harm (Eppich, 2015).

Theory of Planned Behavior Framework for Analyzing Speaking Up Factors

Future research needs to build from studies on shared beliefs, social factors that influence them, and the intention to speak up within work groups (Frazier & Fainshmidt, 2012; Morrison, 2014), especially groups in healthcare where there are greater hierarchical differences (Botero & Van Dyne, 2009). The TPB (Ajzen, 1991) offers a framework to capture beliefs about attitudes, social influences, and perceptions of control in a situation. It has been used in numerous studies evaluating behavioral intentions of healthcare professionals (Hanbury, Wallace, & Clark, 2011); Kam, 2012; Knowles et al., 2015; White et al., 2015). Qualitative (Garon, 2012; Rainer, 2015), and quantitative studies (Lyndon, 2012; Weiss, 2014) have been conducted on predictors for speaking up among health care professionals. However, few studies have used a theoretical model as a guide, and no study used the TPB to delineate factors associated with nurses speaking up in the critical care environment.

TPB questionnaires incorporate qualitative interviews of respondents to provide a more thorough analysis of the three main constructs: attitude (ATT), subjective norms (SN), and perceived behavioral control (PBC) (Francis et al., 2004). The ATT construct consists of advantages and disadvantages to speaking up behaviors. Social influences (SN) evaluate important people or groups of people who would approve or disapprove of a behavior. Perceived barriers or facilitators (PBC) focus on what respondents think would make it easier or more difficult to engage in a behavior. Contextual, qualitative data using the TPB can be used in a future quantitative study to enhance understanding of TPB variables (Ajzen, 2015a; Francis et al., 2004). In addition, identification of beliefs can inform future interventions that are designed to modify a nurse's behavior through a change in existing beliefs (Ajzen, 2015b).

Research Questions

The primary question sought to ascertain beliefs of critical care Registered Nurses (RN) in the United States (US) that are associated with speaking up when patients are at risk for harm. The beliefs are based on the TPB major constructs of ATT, SN, and PBC that influence the intention to engage in a behavior. This study also strived to determine consensus agreement of identified belief statements.

Design

This study involved a two-step policy Delphi technique to gain consensus of critical care RNs regarding speaking up when patients are at risk for harm. The policy Delphi process is used to obtain a consensus among a panel of experts on barriers and facilitators for speaking up. It differs from the conventional Delphi which specifically seeks consensus by attempting to uncover all options with supporting evidence for

consideration, and identifying disagreement (de Loë, 1995; de Loë & Wojtanowski, 2001). A two-round version allows for the identification of statements that the group accepts as either important or unimportant, rather than those over which there are division. Two rounds can be used to avoid response exhaustion with busy experts and hard-pressed clinicians as long as consensus is achieved (Keeney, Hanson, & McKenna, 2006).

Advantages of using the policy Delphi method include: (a) combining the expertise of a geographically dispersed group, (b) assuring anonymity among participants but not researcher (important when surveying sensitive issues), (c) sparing cost and expense of additional meetings, (c) avoiding domination or influence of other's opinions (d) providing an opportunity to be honest and frank without fear of reaction from associates, (e) ensuring feedback to participants so that they can reflect on their responses in light of the overall group response (Polit & Beck, 2008), (f) placing emphasis on participant's expertise by virtue of professional or educational background rather than designation as an expert, and (g) exploring both consensus and disagreement surrounding the issues (de Loë, 1995). The results of a policy Delphi study can provide new information concerning issues relevant for nursing (Mead & Moseley, 2001) and has been used in numerous studies (Dreesen et al., 2013; Lakanmaa, Suominen, Perttilä, Puukka, & Leino-Kilpi, 2012; Oostendorp, Durand, Lloyd, & Elwyn, 2015).

Methods

Sample

When constructing TPB questionnaires, a sample of about 25 who are representative of the target population is recommended for the qualitative component

(Francis et al., 2004; Godin and Kok, 1996). The number required for a policy Delphi varies with the issue, but typically the size is between ten to 30 participants (Still, May, & Bristow, 1999; Rayens & Hahn, 2000). Convenience sampling was used in the selection of critical care nurse participants who were obtained from a nationwide sample through the AACN on-line *Enewsletter* and the AACN Facebook web page. In the two-round Delphi study, the first round contained the first 30 participants who met study criteria, answered demographic and open-ended belief questions, and agreed to respond to clarification emails from the researcher. In the second round, those who responded to the first round, met study criteria, answered all of the TPB variable questions, and agreed to respond to emails were included in the subsequent survey to seek consensus.

Participant inclusion criteria were: licensed in the US as an RN, currently employed at least 20 hours per week in a critical care area of an acute care facility, and currently holds a position as a staff nurse that allows at least 50% of the time to be spent in direct patient care. Participants had to be willing to communicate with the researcher by email to clarify responses. Exclusion criteria included: less than one year of experience as an RN; non-English-speaking, reading, or writing; a position in management or education requiring less than 50% time spent in direct-patient care responsibilities; and no or limited access to a computer and reliable internet. Studies using the Delphi technique recruit individuals based on criteria and expertise in the subject under investigation, e.g. professional experience, education, employment, or designation (Keeney, Hasson, & McKenna, 2006).

Human subjects. Approval from the institutional review board (IRB) from the University of Texas at Tyler (Appendix A) was obtained prior to sample recruitment.

Respondents to the survey link on the AACN's newsletter (Appendix B) were given information in a cover letter on the study's purpose, inclusion and exclusion criteria, confidentiality, publication of aggregate results, researcher contact numbers, IRB approval, risks and benefits, option to not participate, and ability to discontinue the study at any time. Respondents indicated that consent was implied by submitting responses to the questionnaire. Activities to protect participant confidentiality were implemented throughout the study.

Instruments

The overall development of instruments followed guidelines suggested by Ajzen (2015a) and Francis et al. (2004a). A two-round policy Delphi survey elicited the following qualitative data: (a) round one identified contextual factors related to ATT, SN, and PBC, and (b) round two obtained the collective evaluation (consensus) of those ideas (de Loë, 1995; de Loë & Wojtanowski, 2001) (see Figure 1).

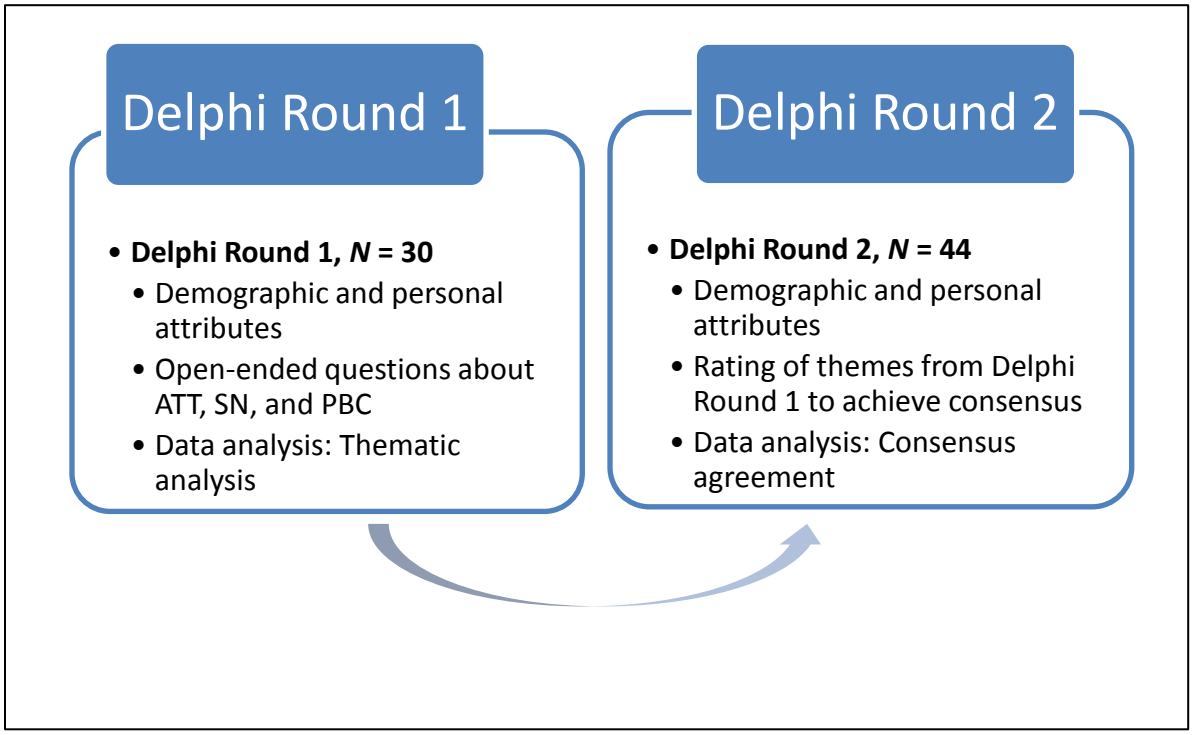

Figure 1. Flow Chart: Delphi Rounds 1 and 2

Delphi round one. Potential participants were directed from the AACN electronic newsletter web page to an internet link for the Qualtrics (2015) online survey platform and study questionnaire (see Appendix C). A cover letter introduced the study, provided informed consent, and listed screening questions to assist the respondent in determining participation. Consent was implied by the respondent completing and submitting the survey. The questionnaire asked: (a) demographic and personal attribute items and (b) open-ended questions to assess perceptions about TPB variables. The TPB variables included: (a) attitudes (ATT) regarding the specific advantages and disadvantages of nurses speaking up, (b) subjective norms (SN) regarding whether significant individuals (referents) approve or disapprove of nursing speaking up, and (c) perceived behavioral control (PBC) regarding factors or circumstances that would make

it easier or more difficult for nurses to speak up. A free-text box was available for respondents to type in their responses to TPB variable questions, and a separate box allowed the respondent to indicate "anything else" that might be relevant.

Open-ended responses to the ATT, SN and PBC variables provided the basis for the development of contextual "indirect" questions for a subsequent quantitative questionnaire. Indirect items provide salient beliefs of the population being studied rather than input from the researcher who may not fully understand the relevant influencing factors (Ajzen, 1991). Multiple complementary types of data can enhance confidence in the validity of the results of a research study (Polit & Beck, 2012).

Internet interviewing via an on-line open-text questionnaire allowed the researcher to direct a set of topics in a semi-structured manner (Polit & Beck, 2012). Participants were encouraged to express opinions freely with the understanding that there was no right or wrong answer. Follow-up emails were sent by the researcher to clarify statements and ensure that participants felt valued and their contributions made a difference to the study. This method allowed for participant-typed responses which assured documentation of statements and reduced possible misunderstanding by the researcher.

The internet questionnaire was examined for readability and content validity by an expert panel of eight RNs, (four with at least five years of critical care experience, four with a master's degree in nursing, and two with doctoral degrees in nursing). Revisions were made to improve clarity, general appearance, and understandability following expert panel suggestions. A Flesch-Kincaid readability test (Kincaid, Fishburne, Roger, & Chissom, 1975) indicated that the grade level of the questionnaire was 12.1, slightly

higher than most standard documents (Pett et al., 2003); and the readability was 41.5 (difficult for the average reader, but within the expectation for college-level readers [Readability Formulas, 2015]). Content validity was further enhanced by following published guidelines for eliciting contextual data related to TPB variables (Ajzen, 2015a; Francis et al., 2004).

Delphi round two. Respondents to the round one survey were sent an email invitation (Appendix D) to participate in the second survey (if they had previously provided their email address), met study criteria, and agreed to continue in the study. In the email, an internet link to the Qualtrics survey software program directed respondents to: (a) a cover letter that introduced the study, (b) informed consent information, and (c) closed-ended questions to ascertain consensus of TPB "indirect" contextual belief statements (Appendix E). Consent was implied by the respondent completing and submitting the survey.

In the questionnaire, respondents evaluated contextual statements that were distilled through thematic analysis from round one data (listed in order of frequency of response) to determine participant consensus or disagreement. Similar first-round statements were grouped together and a theme was selected to represent the group. There were six statements for ATT–Advantages of speaking up, seven for ATT–Disadvantages of speaking up, six for SN–Important individuals or groups who would approve of speaking up, seven for SN–Important individuals or groups who would disapprove of speaking up, seven for PBC–Factors that make it easier to speak up, and six PBC–Factors that make it harder to speak up when a patient is at risk for harm. Rating scales ranked the importance of statements using "strongly agree, agree, disagree, strongly disagree, or

no judgment". This type of scale forced participants to agree, disagree, or not provide an opinion (de Loë & Wojtanowski, 2001).

Readability and content validity were examined by the same panel of experts, using the same criteria that reviewed the round one survey. Revisions were made based on suggestions to improve overall appearance, clarity, and understandability. The Flesch-Kincaid readability test indicated that the grade level of the questionnaire was 10.2 and the readability was 48.7 (within the expectation for college-level readers) (Kincaid et al., 1975; Pett et al., 2003; Readability Formulas, 2015). The construction of the questionnaire followed the method suggested by deLoë and Wojtanowski (2001) for conducting a policy Delphi survey.

Data Collection

Management. The open-ended questionnaire for round one was entered into Qualtrics, an online survey platform (Qualtrics, 2015). A link to the survey was made available on the AACN *Critical Care eNewsline* (Appendix B) through four weekly postings and on AACN's Facebook website for four weeks. The cover letter for the online survey announced a drawing for one of three electronic tablets for participants upon completion of the second questionnaire. Follow-up emails were sent thanking respondents for participating and clarifying some of the free-text responses. A link to the round two survey was sent to respondents by email (see Appendix D) and followed up with reminder emails two weeks later. Respondents were thanked and encouraged to continue in the study by completing the second questionnaire which remained open for 25 days. Data for both surveys was downloaded to IBM SPSS Statistics for Windows,

Version 20.0 (2011) and maintained on a password-protected secure laptop. Data files were shared through secured computers with the study committee chair.

Respondents.

Delphi, round one. There were a total of 272 respondents, 211 stated they met study criteria, 160 indicated their willingness to participate after reading the requirements, and only 88 of all respondents provided an email address. The first 30 respondents who met criteria, completed all answers to the open-ended questions, and provided email addresses were included in the round one data for analysis.

Delphi, round two. Emails were sent to the 88 respondents from the round one survey that provided their email address, including those who were among the first 30 selected for data analysis in round one. Reminder emails were sent one week later, along with a note of thanks for continued participation. A total of 70 responded, but only 44 agreed to participate, met study inclusion criteria, and completed 95% or more of the survey questions. Sixteen (36.4%) of the participants in the round two study were among the 30 selected for the round one study.

Data Analysis

Demographics. Descriptive analysis in SPSS (version 20) was conducted for both round one and round two surveys. Socio-demographic characteristics and professional attributes were described in terms of frequency, percentages, and the mean for age and years of experience as an RN.

Delphi round one thematic analysis. A 14-step method, suggested by Burnard (1991) that was based on grounded theory (Glaser & Strauss, 1967; Strauss, 1986), content analysis (Babbie, 1979; Couchman & Dawson, 1990), and other qualitative data

analysis sources (Creswell, 2009) were used for thematic analysis of data (see Figure 2). Thematic analysis was selected to analyze data and discover higher order themes, rather than delving into deeper meaning or theory development (White et al., 2015). Each participant's typed response to open-ended questions was copied and pasted to a separate document. This resulted in six documents for the qualitative analysis of TPB indirect variables (Francis et al., 2004): (a) advantages of speaking up, (b) disadvantages of speaking up, (c) individuals or groups who would approve of speaking up, (d) individuals or groups who would disapprove of speaking up, (e) factors that would enable speaking up, and (f) factors that would make it difficult to speak up. Additional participant comments were added at the end of each document, including responses from emails to clarify free-text comments.

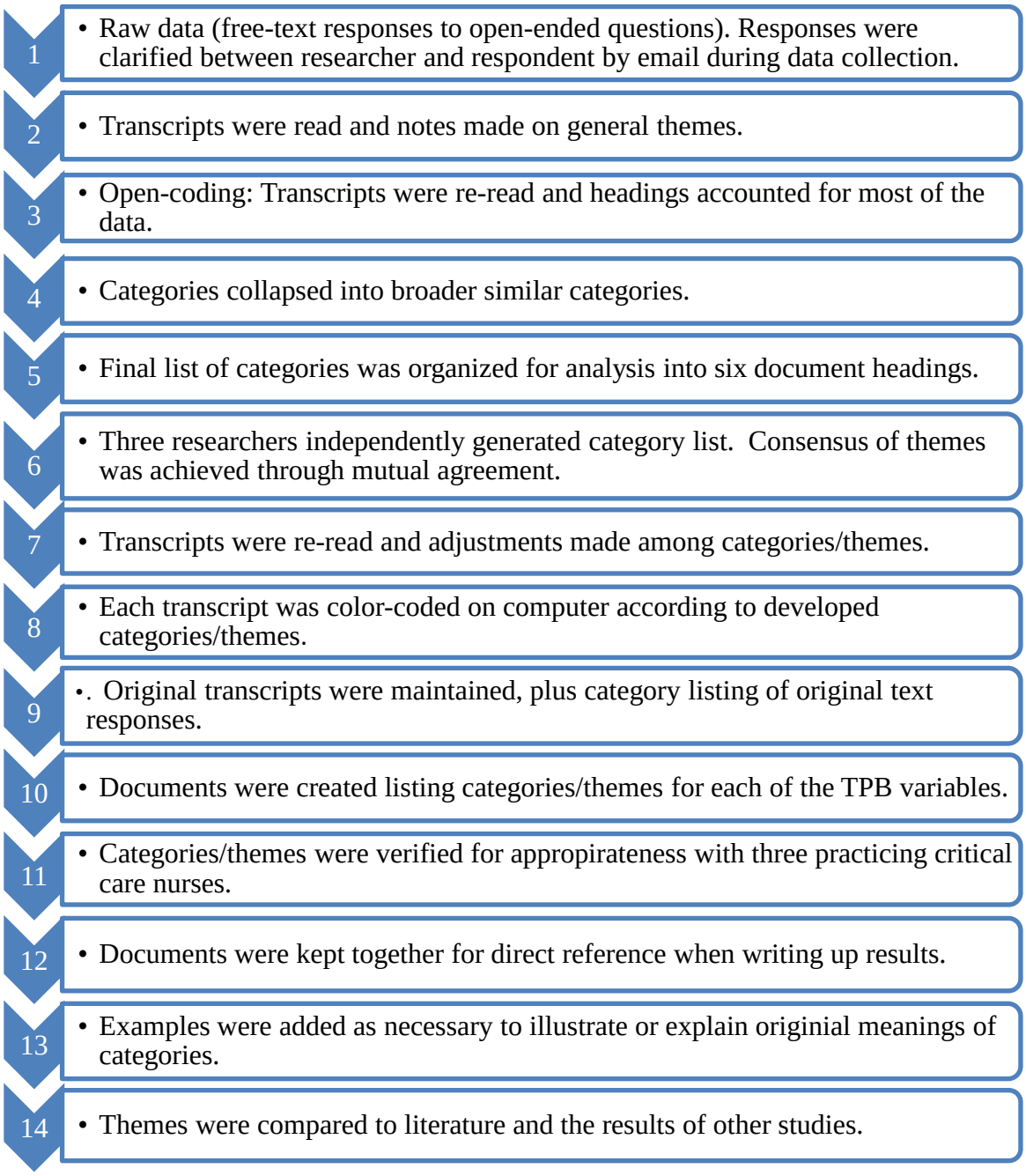

Figure 2. Data Analysis Flowchart for Delphi Round One (Burnard, 1991)

The generation of categories and themes was an iterative process. Three researchers (two with experience in qualitative analysis plus the principal investigator) independently read through each document and generated initial categories using computer-generated color codes. The primary investigator reviewed categories, grouped

them together, and collapsed similar ones into broader categories. Categories were reviewed with researchers to verify understanding and modify categories as needed. Using a final category list, the raw data was again color-coded to compare to generated categories. Final themes, based on categories, were agreed upon by the three researchers and then verified with three practicing critical care nurses for validity. Final themes were listed in order of frequency and percentage and compared to findings from the literature on nurses speaking up.

Delphi round two consensus analysis. Participants from round two rated statements from the thematic analysis of round one data to determine agreement or disagreement regarding the importance of each item. A four-point Likert scale was used to indicate the importance of each statement in relation to ATT, SN, PBC, and critical care situations where nurses consider speaking up at the time a patient may be at risk for harm (see Table 1). The rating scale forced participants to agree, disagree, or indicate no judgment on the importance of statements (de Loë & Wojtanowski, 2001).

Table 1. Example of Rating Scale for Delphi Round Two

Rate your level of agreement that each of the following is an <u>important advantage</u> of speaking up <u>at the time a patient may be at risk for harm</u>:					
If I speak up, I am more likely to provide timely intervention.	○ Strongly Disagree	○ Disagree	○ Agree	○ Strongly Agree	○ No Judgment

Consensus and agreement was determined by the percentage of ratings between categories of agree/strongly agree and disagree/strongly disagree (de Loë & Wojtanowski, 2001).

Results

Demographics: Delphi Rounds One and Two

Round one and two respondents (see Tables 2 and 3), ranged in age from 25 to 68 ($\bar{x}$ = 49.1) and 26 to 66 ($\bar{x}$ = 49.4) respectively. Age categories with the highest percentage of respondents ranged between 41 and 60 (round one, 73.3%; round two, 56.8%). Respondents were predominantly female (round one, 93.3%; round two, 93.2%) and had at least a Bachelor's degree in nursing or higher (round one, 63.2%; round two, 70.4%). A majority of respondents in both studies had more than 10 years of experience as an RN (round one, 56.7%; round two, 65.9%), were employed in a community (non-profit) health care facility (round one, 56.7%; round two, 63.6%), and worked in a general or medical-surgical ICU (round one, 50.0%; round two, 54.5%). These demographics were similar to the general membership demographics of the AACN (AACN, 2014). Professional attributes of the sample are summarized in Table 3.

Table 2. Demographic Characteristics of Delphi Round One and Two Respondents

	Delphi Round 1		Delphi Round 2	
	Frequency	Percent	Frequency	Percent
	N = 30	100%	*N* = 44	100%
Age (years)[a]	$\bar{x}$ = 49.1		$\bar{x}$ = 49.4	
Age by Category				
0-30	2	6.7%	4	9.1%
31-40	4	13.3%	4	9.1%
41-50	8	26.7%	10	22.7%
51-60	14	46.6%	15	34.1%
61+	2	6.7%	6	13.6%
Missing Data	0	0	1	2.3%
Gender				
Male	2	6.7%	3	6.8%
Female	28	93.3%	41	93.2%
Education				
Diploma	1	3.3%	4	9.1%
Associate's	10	33.3%	9	20.5%
Bachelor's	14	46.6%	23	52.3%
Master's	3	10.0%	8	18.1%
Doctorate	2	6.6%	0	0
Race/Ethnicity				
Asian	1	3.3%	0	9%
Black/African American	0	0%	0	0%
Caucasian/White not Hispanic	27	90%	41	93.2%
Hispanic/Latino	0	0%	1	2.3%
Other (includes American Indian, Alaskan or Native, Pacific Islander)	2	6.6%	2	4.5%

Table 3. Professional Attributes of Delphi Round One and Round Two Respondents

	Delphi Round 1		Delphi Round 2	
	Frequency	Percent	Frequency	Percent
	N = 30	100%	N = 44	100%
Years as an RN[a]	$\bar{x}$ = 19.6		$\bar{x}$ = 23.8	
1-10	8	26.7%	7	15.9%
11-20	5	16.7%	7	15.9%
21-30	6	20.0%	13	29.5%
31-40	4	13.3%	5	11.4%
40+	2	6.7%	4	9.1%
Missing Data	5	16.6%	8	18.2%
Facility Employed				
Community (non-profit)	17	56.7%	28	63.6%
Private (for profit)	4	13.3%	6	13.6%
Academic Teaching	8	26.7%	10	22.7%
Government Hospital	0	0%	0	0%
Other	1	3.3%	0	0%
Unit Type				
Progressive Care	2	6.7%	2	4.5%
Intensive Care Unit (ICU)	11	36.7%	18	40.9%
Coronary Care Unit (CCU)	2	6.7%	6	13.6%
Surgical ICU	3	10.0%	4	9.1%
Medical ICU (ICU)	3	10.0%	3	6.8%
Medical-Surgical ICU	4	13.3%	6	13.6%
Pediatric/Neonatal ICU	1	3.3%	1	2.3%
Emergency Department	1	3.3%	0	0
Other	3	10.0%	4	9.1%

Totals may vary due to missing data in some categories.

TPB variables: Delphi round one results. The results are organized around the three main belief concepts of the TPB (ATT, SN, and PBC) and the facilitators and inhibitors for each belief. The numbers and percentages of respondents (*N*=30) who raised an issue that was related to a theme are listed in Table 4. Examples of quotations supporting each theme are provided in Table 5.

Table 4. Delphi Round One Study (N = 30): Beliefs Related to the Critical Care Nurses Speaking Up about Patient Safety Concerns

Attitude: Perceived Advantages of Speaking Up	**Subjective Norms**: Individuals/Groups Who Would Approve of Speaking Up	**Perceived Behavioral Control**: Factors Making it Easier to Speak Up
1.) Maintain patient safety as #1 priority–23 (77%) 2.) Demonstrate nursing professionalism, patient advocacy–14 (47%) 3.) Provide timely intervention–14(47%) 4.) Promote a healthy work environment–7 (23%) 5.) Support administrative policies, procedures, standards of care–6 (20%) 6.) Promote legal protection for the nurse–5 (17%)	1.) Professional team members (co-workers)–16 (53%) 2.) Management (Nursing admin., managers)–13 (43%) 3.) Patients/Families–10(33%) 4.) Physicians–8 (27%) 5.) Professional nursing or regulatory organizations–6 (20%) 6.) Hospital Safety Committees–2 (7%)	1.) Management support (administrative)–11 (37%) 2.) Collaborative team support–7 (23%) 3.) Safety culture (patient safety is priority)–6 (20%) 4.) Communication (open, respectful, constructive)–8 (27%) 5.) Empowerment through education (training in speaking up skills)–4 (13%) 6.) Physician support (constructive, non-defensive)–4 (13%) 7.) Empowerment through infrastructure (policies/procedures to support safe speaking up)–3 (10%)

Attitude: Perceived Disadvantages of Speaking Up	**Subjective Norms**: Individuals/Groups Who Would Disapprove of Speaking Up	**Perceived Behavioral Control:** Factors/Making it Harder to Speak Up
1.) Fear of immediate negative reaction from the confronted (anger, reproach, humiliation) –17 (57%) 2.) Fear of negative sequelae (repercussions/consequences from administration or co-workers)–15 (50%) 3.) Powerless to make a difference (the "system" discourages speaking up)–7 (23%) 4.) Potential adverse effects on patient/family–6 (20%) 5.) Perceptions of events may differ (some safety situations lack clarity)–4 (13%) 6.) Assertive speaking up skills are inadequate–3 (10%)	1.) Management (Nursing admin., managers) –10 (33%) 2.) Physicians–10 (33%) 3.) Self- identified peer group (workplace friends, "clicks", cultural, or gender groups)–7 (23%) 4.) Co-workers (professional colleagues)–6 (20%) 5.) Individuals (non-specific) to who nurses speak up–6 (20%) 6.) Novice Nurses (inexperienced)–5 (17%) 7.) Patient/Family (Customer Relations Influence)–3 (10%)	1.) Fear of confrontation (retaliation, verbal abuse, bullying)–16 (53%) 2.) Management non-supportive (including punitive, ignored)–9 (30%) 3.) Lack of co-worker support–9 (30%) 4.) Insecurity of the nurse to speak up–6 (20%) 5.) "Guest Relations" emphasis (fear of upsetting family)–4 (13%) 6.) Punitive environment (job threatened)–3 (10%)

Table 5. Delphi Round One Study (N = 30): Key Concepts, Themes, and Quotations related to Beliefs

TPB Concepts	Key Themes	Example Quotations
Attitude: Advantage of speaking up	1.) Maintain patient safety as #1 priority–23 (77%)	"Prevents patient harm." "Potentially saving a patient's life and promote their well-being."
	2.) Demonstrate nursing professionalism, patient advocacy–14 (47%)	"Speaks to the professionalism of nursing." "ICU nurses are on the front-lines. If we don't speak up, no one else will." "All nurses need to be patient advocates."
	3.) Provide timely intervention–14 (47%)	"I believe you have a better chance of making a lasting impact if you can talk about potential safety hazards as they arise." "Allows concern to be addressed right away."
	4.) Promote a healthy work environment–7 (23%)	"Promotes staff satisfaction which promotes the hospital and keeps it a viable institution keeping people employed, less stressful environment."
	5.) Support administrative policies, procedures, standards of care–6 (20%)	"Helps make involved parties aware of policy and procedure." "Increases education of other team members."
	6.) Promote legal protection for the nurse–5 (17%)	"Protects the nurse who may potentially cause harm." "Helps protect themselves." "Helps safety of our staff (license, etc.)"
Attitude: Disadvantage of speaking up	1.) Fear of immediate negative reaction from the confronted (anger, reproach, humiliation)–17 (57%)	"The volatility of the situation." "Anger, frustration from the other providers." "Disrespect by physicians and other staff." "Generating or causing defensive behavior in the health care worker that you are speaking to." "People may become angry or irritated."
	2.) Fear of negative sequelae (repercussions/consequences from administration or co-workers)–15 (50%)	"Could damage a professional relationship." "Fear of reprisal by Nursing Management." "Possible criticism towards nurse. I tend to see doctors or administration trying to put sole blame on nurse." "You run a high risk of being labeled a 'whistleblower' which can impact future help or actions of other staff around you when you may need their help."
	3.) Powerless to make a difference (the "system" discourages speaking up)–7 (23%)	"I have had a manager turn it back on me, paraphrasing…what do you think we should do about it, non-supportive." "Administration wants it generally handled indirectly on an incident report or something being reported to a supervisor and handled by them. This type of system can lead to cover-up."
	4.) Potential adverse effects on patient/family–6 (20%)	"The person may scold someone in front of the family." "Patient/family concern and potential lack of confidence in the healthcare team." "The patient may be upset." "Losing patient's trust in giving competent care."
	5.) Perceptions of events may differ (some safety situations lack clarity)–4 (13%)	"Issue raised may turn out to be false." "Not everyone agrees on what is a potential safety incident. Looked down upon for slowing a procedure." "Nurse may possibly misinterpret your actions."
	6.) Assertive speaking up skills are inadequate–3 (10%)	"Today everything in a direct feedback loop seems to be perceived as criticism unless the nurse is skilled in this area or has many years of experience." "The only disadvantage is the manner how you addressed the problem and humiliating staff in front of the patient, family or colleagues."
Subjective Norms: Individuals/groups approve of speaking up	1.) Professional team members (co-workers)–16 (53%)	"Seeing my colleagues step up to the plate would influence me to do the same…." "Physical therapists, respiratory therapists that often see the same situations." "Co-workers and other professionals."
	2.) Management (Nursing admin., managers)–13 (43%)	"I am sure most managers." "My director would highly approve of it." "My direct manager's beliefs and encouragement to staff to provide the best care possible to patients."
	3.) Patients/Families─10 (33%)	"Patients and families." "Visitors." "Patient's loved ones."
	4.) Physicians–8 (27%)	"Doctors." "MICU attendings and fellows respect and encourage RN's to speak up. They have our back, and encourage our devotion to our patients."
	5.) Professional nursing or regulatory organizations–6 (20%)	"Board of Registered Nurses, AACN, multiple nursing associations." "CDC, WHO, Joint Commission, AHCA."
	6.) Hospital Safety Committees–2 (7%)	"Hospital safety and practice councils, Nursing Peer Review." "Maybe Risk Management."

Table 5 (Continued)

TPB Concepts	Key Themes	Example Quotations
Subjective Norms: Individuals/groups disapprove of speaking up	1.) Management (Nursing admin., managers)–10 (33%)	"Upper level management wants to keep the MDs happy and not make waves." "Administration…they tend to want to 'make nice' with those they feel to be influential." "Job security from superiors."
	2.) Physicians–10 (33%)	"Physicians, residents." Some physicians, especially the older ones don't think nurses should speak up.:
	3.) Self- identified peer group (workplace friends, "clicks", cultural, or gender groups)–7 (23%)	"Only those whom you called "camaraderie" to cover up the incident in the unit."
	4.) Co-workers (professional colleagues)–6 (20%)	"Other nurses get annoyed with having someone always speaking up about the rules or following protocol."
	5.) Individuals (non-specific) to who nurses speak up–6 (20%)	"Person involved decided they were offended and wrote me up for being rude."
	6.) Novice Nurses (inexperienced)–5 (17%)	"Ignorance of nurses on their rights to speak up." New employees."
	7.) Patient/Family (Customer Relations Influence)–3 (10%)	"The hospital goes crazy with Guest Relations. The customers, family, physicians are always right no matter how wrong they may be."
Perceived Behavioral Control: Factors making it easier to speak up	1.) Management support (administrative)–11 (37%)	"Direct support and involvement of upper level nursing management." "Job security and rock-solid reliable support from higher-ups." "Knowing supervisors support them." "Support from administration without fear of reprisal."
	2.) Collaborative team support–7 (23%)	"Fellow co-workers opinions." "Collaborative relationship between staff and physicians." "Team members…."
	3.) Safety culture (patient safety is priority)–6 (20%)	"Patient-centered approach to care which focuses on patient safety and comfort." "If the mindset changed from 'I am spying on you' to 'I am watching out for our patient.'"
	4.) Communication (open, respectful, constructive)–8 (27%)	"More open communication and an atmosphere of mutual respect." Zero tolerance for disrespectful behavior." "Knowing that voicing your opinion will not cause potential retaliation by administration or physician groups."
	5.) Empowerment through education (training in speaking up skills)–4 (13%)	"Educate nurses about this unsafe situation." "Communication and knowledge are powerful motivators for change." "Providing mandatory classes to all nurses…saying things in a right manner, right time, and right places. "Practicing self-equal opportunities to voice out concerns."
	6.) Physician support (constructive, non-defensive)–4 (13%)	"Intensivist support." "Atmosphere of mutual respect instead of doctors doing whatever they please and nurses being treated as less than." "More one on one time with physicians. Some physicians do not take nurses seriously."
	7.) Empowerment through infrastructure (policies/procedures to support safe speaking up)–3 (10%)	"Feeling empowered to safely speak up without retaliation." "Exceptional policies that give a person recourse or a way to deal with what is happening immediately. Have an "ouch" policy that tells a nurse or any employee what they can do with confrontation."
Perceived Behavioral Control: Factors making it harder to speak up	1.) Fear of confrontation (retaliation, verbal abuse, bullying)–16 (53%)	"Fear of reprisal." "Disrespectful behavior and/or past retaliation from involved parties." "Anything can make it difficult from screaming or disdain or actual verbal abuse." "It is scary to do, especially when…won't be professional."
	2.) Management non-supportive (including punitive, ignored)–9 (30%)	"Management wants you to follow protocol and do what you are supposed to do until it makes waves. Then a lot of times nursing doesn't feel like they have any support." When your concerns are ignored or just pushed aside, told that it is not an issue, that you are just being overly safe."
	3.) Lack of co-worker support–9 (30%)	"Other staff members." "When you don't have the support from your staff." "Friendship over professional relationship." "Not a team player." "Staff are lazy or inconsiderate and don't 'feel like' reporting a safety issue."
	4.) Insecurity of the nurse to speak up–6 (20%)	"RNs did not speak up due to not willing to look uneducated in front of their peers." "Newer nurses may need to get a more senior person to support them."
	5.) "Guest Relations" emphasis (fear of upsetting family)–4 (13%)	"When family is present and unaware of potential incident that has been averted." "We now 'cater' to families and act like a hospital is the latest in hotel services." "The MD should be notified privately not in front of the patient."

A majority of the nurses in Delphi round one identified the following areas as important in influencing whether they would speak up: (a) believing patient safety is the number one priority (77%), (b) fearing immediate negative reaction from the confronted (57%), fearing negative sequelae (50%), and (c) being influenced in a positive way by professional team members (co-workers) (53%). There was no majority identification of individuals or groups who would disapprove of speaking up, and there was no majority determination of factors making it easier to speak up. However, 53% indicated that fear of confrontation was an important factor making it harder to speak up. In summary, nurses believed that speaking up was important because patient safety is the nurse's priority, and nurses felt supported by their team members (co-workers) in this endeavor. However, fear of confrontation and an immediate negative reaction (e.g. anger, reproach, humiliation, retaliation, verbal abuse, and bullying) were important disadvantages that made speaking up harder.

TPB variables: Delphi round two results. Participants (N = 44) who scored at least 70% in the strong agreement (SA) or agreement (A) category, or at least 80% in two related agreement categories (SA and A) were considered reflective of "high" consensus agreement (de Loë & Wojtanowski, 2001) (see example in Figure 3) and approximated 75% of identified beliefs for ATT, SN, and PBC (Francis et al., 2004) . This determination of consensus (requiring at least 75% of responses) has been used in other Delphi studies in nursing (Mannix, 2011). A no judgment (NJ) category provided an opt-out of a forced rating, but was not counted towards a positive agreement category (i.e. NJ responses were removed from the denominator in percentage calculations (de Loë & Wojtanowski, 2001).

Example statement	Consensus	Agreement	Example Rating Distribution				
Advantage of speaking: If I speak up…			SA	A	D	SD	NJ
I am more likely to safe-guard the well-being of my patient	High (83.3%)	SA-A	15	5	3	1	1
I will be fulfilling my nursing duty to advocate for my patient.	None (50%)	None	1	10	10	1	2
I am more likely to provide timely intervention.	Medium (75%)	D-SD	1	5	12	6	3
I will help promote a healthy work environment.	Low (60%)	SA-A	5	10	6	4	0
I am more likely to be able to protect myself legally as a nurse.	Medium (62.5%)	A	0	15	6	3	1

Rating categories: Strong agreement = SA; Agreement = A; Disagreement = DA; Strongly disagree = SA; NJ = No judgment (neither agreement or disagreement, or blank).

Agreement: Indicates where there is consensus
Agreement: A, SA, or SA and A = strong agreement to agreement
Disagreement: D, SD, or SD and D – Strong disagreement to agreement
None: Neither agree or disagree

Consensus: The degree to which the group agrees on the importance (relevance) of the statement. Related categories are SA and A, and D and SD; when consensus is 'None' agreement is always ambiguous.
High: 70% of ratings in 1 agreement category or 80% in 2 related categories
Medium: 60% of ratings in 1 agreement category or 70% in 2 related categories.
Low: 50% of ratings in 1 agreement category or 60% in 2 related categories
None: less than 60% of ratings in 2 related categories

Delphi Round Two System of Analysis. Adapted from "Associated benefits and costs of the Canadian flood damage reduction program", by R. de Loë , and D. Wojtanowski, 2001, *Applied Geography*, 21, p. 8.

Figure 3. Delphi Round Two System of Analysis

Descriptive statistics were used for consensus agreement statements related to factors influencing speaking up. Polarity was measured using the variance of each distribution to determine if group ratings were equally divided between agreement and disagreement categories. Categories included strongly polarized (≥ 1.5), weak (≥ 1.2 and < 1.5), and none (< 1.2) (de Loë, 1995). Ordinal data were treated as interval since the actual data are always shown, and the variance measures polarity more precisely than the interquartile range (de Loë, 1995). Data were analyzed using the IBM SPSS Statistics for Windows, Version 20.0 (IBM, 2011).

A total of 39 statements (13 ATT, 13 SN, and 13 PBC) were evaluated by respondents for high, medium, low, and no consensus agreement (see Table 6). There were 21 statements that achieved high consensus agreement (mean ≥ 2.90) (see Table 7). All statements identified in round one concerning ATT (six advantages of speaking up) and PBC (seven factors that make it easier to speak up) were among the highest ranked indicators (ranked 1 to 13). The mean for the ATT (advantages of speaking up) and PBC (factors that make it easier to speak up) ranged between 3.88 and 3.46 respectively, indicating that nurses recognized the benefits of speaking up and identified resources that would make it easier to engage in this behavior.

Attitude. The advantages of speaking up were ranked highest of the TPB variables in support of speaking up (ranked 1 through 5, and 7, $\bar{x} = 3.59\text{-}3.88$). These highly ranked statements included advocating and safeguarding my patient, providing timely intervention, increasing awareness of safety policies and procedures, promoting a healthy work environment, and protecting the nurse legally. One statement indicated that a

Table 6. Delphi Round Two Study (N = 44): Themes and Statements with Consensus Agreeability Scores

	Agreeability Scale" SD = Strongly Disagree-1 D = Disagree-2 A = Agree-3 SA = Strongly Agree-4 NJ = No rating provided					**Consensus:** High = 70% in 1 category or 80% in 2 Medium = 60% in 1 category, or70% in 2 Low = 50% in 1 category, 60% in 2 Related categories are SA-A and D-SD			**Polarity** Strong ≥ 1.5 Weak ≥ 1.2 and < 1.5 None < 1.2 Variance of the distribution		
	1-SD (%)	**2-D (%)**	**3-A (%)**	**4-SA (%)**	**NJ**	**Consensus**	**Agreement**	**Mean**	**Polarity**	**Variance**	**SD**
Attitude: Advantage of speaking up											
1. I am more likely to safe-guard the well-being of my patient. (*n* = 43)	0	0	7(16.3)	36(83.7)	1	High	SA	3.84	None	0.14	0.37
2. I will be fulfilling my nursing duty to advocate for my patient. (*n* = 43)	0	0	5(11.6)	38(88.4)	1	High	SA	3.88	None	0.105	0.32
3. I am more likely to provide timely intervention. (*n* = 41)	0	1(2.4)	7(17.1)	33(80.5)	3	High	SA	3.78	None	0.226	0.48
4. I will help promote a healthy work environment. (*n* = 41)	1(2.4)	2(4.9)	8(19.5)	30(73.2)	3	High	SA	3.63	None	0.488	0.7
5. I am more likely to be able to protect myself legally as a nurse. (*n* = 41)	1(2.4)	1(2.4)	12(29.3)	27(65.9)	4	High	SA-A	3.59	None	0.449	0.67
6. I will increase awareness of safety policies and procedures for others. (*n* = 39)	1(2.6)	0	8(20.5)	30(76.9)	5	High	SA	3.73	None	0.366	0.61
Attitude: Disadvantage of speaking up											
7. I will worry about an immediate negative reaction (anger, humiliation) (*n* = 40)	2(5.9)	10(25.0)	21(52.5)	7(17.5)	4	Medium	SA-A	2.83	None	0.61	0.78
8. I will worry about repercussions from administration (nursing, management). (*n* = 40)	4(10.0)	13(32.5)	15(37.5)	8(20.0)	4	None	None	2.68	None	0.84	0.92
9. I worry about repercussions from co-workers. (*n* = 37)	10(27.0)	11(29.7)	13(35.1)	3(8.1)	7	None	None	2.24	None	0.911	0.96
10. It will be wasted effort - nothing will change. (*n* = 39)	7(17.9)	9(23.1)	19(48.7)	4(10.3)	5	Low	SA-A	2.51	None	0.853	0.91
11. It may cause conflicts between the patient or family and the staff. (*n* = 40)	1(2.5)	6(15.0)	22(55.0)	11(27.5)	4	High	SA-A	3.08	None	0.533	0.73
12. I will worry that others may not see things the same way I do. (*n* = 38)	2(5.3)	16(42.1)	13(34.2)	7(18.4)	6	None	None	2.66	None	0.718	0.85
13. I will worry I may not be able to communicate effectively. (*n* = 39)	7(17.9)	19(48.7)	6(15.4)	7(17.9)	5	Low	D-SD	2.33	None	0.965	0.98

Table 6 (Continued)

	1-SD (%)	2-D (%)	3-A (%)	4-SA (%)	NJ	Consensus	Agreement	Mean	Polarity	Variance	SD
Subjective Norm: Individuals/groups who would approve of nurses speaking up											
14. Professional team members (co-workers: RNs, therapists) (*n* = 41)	0	1(2.4)	21(51.2)	19(46.3)	3	High	SA-A	3.44	None	0.302	0.55
15. Management (nursing admin., managers, charge nurses) (*n* = 36)	3(8.3)	9(25.0)	16(44.4)	8(22.2)	8	Low	SA-A	2.88	None	0.79	0.89
16. Patients and/or families (*n* = 41)	1(2.4)	1(2.4)	20(48.8)	19(46.3)	3	High	SA-A	3.39	None	0.444	0.67
17. Physicians (*n* = 30)	0	11(36.7)	15(50.0)	4(13.3)	14	Low	SA-A	2.77	None	0.461	0.68
18. Professional nursing or regulatory organizations (*n* = 39)	1(2.6)	0	19(48.7)	19(48.7)	5	High	SA-A	3.44	None	0.41	0.64
19. Hospital safety committee members (*n* = 34)	1(2.9)	6(17.6)	13(38.2)	14(41.2)	10	High	SA-A	3.18	None	0.695	0.83
Subjective Norm: Individuals/groups who would disapprove of nurses speaking up											
20. Management (nursing admin., managers, charge nurses). (*n* = 35)	7(20.0)	15(42.9)	10(28.6)	3(8.6)	9	Low	D-SD	2.26	None	0.785	0.89
21. Physicians (especially if I speak up to other physicians) (*n* = 36)	1(2.8)	18(50.0)	12(33.3)	5(13.9)	8	None	None	2.58	None	0.593	0.77
22. My peer groups (workplace friends, "clicks", cultural groups). (*n* = 38)	11(28.9)	16(42.1)	8(21.1)	3(7.9)	6	Medium	D-SD	2.08	None	0.831	0.91
23. Professional team members (co-workers: RNs, therapists, etc.) (*n* = 43)	15(34.9)	24(55.8)	3(7.0)	1(2.3)	1	High	D-SD	1.77	None	0.468	0.68
24. If I address safety issues with others they will disapprove of being verbally confronted. (*n* = 37)	4(10.8)	8(21.6)	21(56.8)	4(10.8)	7	Low	SA-A	2.68	None	0.67	0.82
25. Inexperienced RNs are reluctant to support speaking up (direct confrontation). (*n* = 43)	1(2.3)	5(11.6)	28(65.1)	9(20.9)	1	High	SA-A	3.05	None	0.426	0.65
26. Patients and/or families would disagree that I should speak up in front of them. (*n* = 34)	6(17.6)	23(67.6)	5(14.7)	0(0.0)	10	High	D-SD	1.97	None	0.322	0.58

Table 6 (Continued)

	1-SD (%)	2-D (%)	3-A (%)	4-SA (%)	NJ	Consensus	Agreement	Mean	Polarity	Variance	SD
Perceived behavioral control: Important factor that makes it easier to speak up											
27. Knowing I have management support (administration, manager, charge nurse). (*n* = 41)	2(4.9)	2(4.9)	12(29.3)	25(61.0)	2	High	SA-A	3.46	None	0.655	0.81
28. Knowing I have support from my team members (co-workers). (*n* = 41)	1(2.4)	3(7.3)	10(24.4)	27(65.9)	3	High	SA-A	3.54	None	0.555	0.75
29. Knowing there is open communication (respectful, constructive). (*n* = 43)	1(2.3)	2(4.7)	11(25.6)	29(67.4)	1	High	SA-A	3.58	None	0.487	0.7
30. Knowing there is a culture of safety (where patient safety is a priority). (*n* = 43)	1(2.3)	1(2.3)	11(25.6)	30(69.8)	1	High	SA-A	3.63	None	0.43	0.66
31. Being skilled in verbal communication. (*n* = 43)	1(2.3)	0(0.0)	17(39.5)	25(58.0)	1	High	SA-A	3.53	None	0.398	0.63
32. Having the support of physicians. (*n* = 40)	1(2.5)	1(2.5)	12(30.0)	26(65.0)	4	High	SA-A	3.58	None	0.456	0.68
33. Having policies and procedures that support patient safety. (*n* = 42)	1(2.4)	1(2.4)	13(31.0)	27(64.3)	2	High	SA-A	3.57	None	0.446	0.67
Perceived behavioral control: Important factor that makes it harder to speak up											
34. Fear of confrontation (retaliation, abuse, or bullying). (*n* = 42)	3(7.1)	9(21.4)	18(42.9)	12(28.6)	2	High	SA-A	2.93	None	0.8	0.89
35. An unsupportive management (punitive, or ignoring). (*n* = 39)	6(15.9)	5(12.8)	12(30.8)	16(41.0)	5	High	SA-A	2.97	None	1.184	1.09
36. Lack of co-worker support. (*n* = 41)	5(12.2)	12(29.3)	15(36.6)	8(22.0)	3	None		2.68	None	0.922	0.96
37. Lack of self-confidence. (*n* = 40)	10(25.0)	18(45.0)	6(15.0)	6(15.0)	4	Medium	D-SD	2.2	None	0.985	0.99
38. Fear of upsetting the patient or family (Guest Relations emphasis). (*n* = 37)	0	14(37.8)	14(37.8)	9(24.3)	7	Low	SA-A	2.86	None	0.62	0.79
39. Worry about my job being affected (threatened). (*n* = 40)	6(15.0)	8(20.0)	12(30.0)	14(35.0)	4	Low	SA-A	2.85	None	1.156	1.08

*Table . Delphi Round Two Study: Top Statements with High Levels (Mean > 2.90) of Consensus Agreement **

Rank	Mean	TPB Variables and Associated Items
1	3.88	Attitude: Advantage of speaking up #2: I will be fulfilling my nursing duty to advocate for my patient.
2	3.84	Attitude: Advantage of speaking up #1: I am more likely to safe-guard the well-being of my patient.
3	3.78	Attitude: Advantage of speaking up #3: I am more likely to provide timely intervention.
4	3.72	Attitude: Advantage of speaking up #6: I will increase awareness of safety policies and procedures for others.
5	3.63	Attitude: Advantage of speaking up #4: I will help promote a healthy work environment.
6	3.63	Perceived Behavioral Control: Factors that make it easier to speak up # 30: Culture of safety (patient safety is a priority)
7	3.59	Attitude: Advantage of speaking up #5: I am more likely to be able to protect myself legally as a nurse.
8	3.58	Perceived Behavioral Control: Factors that make it easier to speak up # 29: Open communication (constructive, respectful)
9	3.58	Perceived Behavioral Control: Factors that make it easier to speak up # 32: Support of physicians
10	3.57	Perceived Behavioral Control: Factors that make it easier to speak up # 33: Policies and procedures that support patient safety
11	3.54	Perceived Behavioral Control: Factors that make it easier to speak up # 28: Support from my team members
12	3.53	Perceived Behavioral Control: Factors that make it easier to speak up # 31: Being skilled in verbal communication
13	3.46	Perceived Behavioral Control: Factors that make it easier to speak up # 27: Management support
14	3.44	Subjective Norm: Individuals/groups who would approve of speaking up #14: Professional team members (co-workers: RNs, therapists)
15	3.44	Subjective Norm: Individuals/groups who would approve of speaking up #18: Professional nursing or regulatory organizations
16	3.39	Subjective Norm: Individuals/groups who would approve of speaking up #16: Patient and/or families
17	3.18	Subjective Norm: Individuals/groups who would approve of speaking up #19: Hospital safety committee members
18	3.08	Attitude: Disadvantage of speaking up #11: It may cause conflicts between the patient or family and the staff.
19	3.05	Subjective Norm: Individuals/groups who would disapprove of nurses speaking up #25: Inexperienced RNS
20	2.97	Perceived Behavioral Control: Factors that make it harder to speak up #35: An unsupportive management (punitive, or ignoring)
21	2.93	Perceived Behavioral Control: Factors that make it harder to speak up #34: Fear of confrontation (retaliation, bullying)

*1.00 = Strong Disagreement
2.00 = Disagreement
3.00 = Agreement
4.00 = Strong Agreement

disadvantage of speaking up was "It may cause conflicts between the patient, family, and staff" (rank 18, $\overline{x} = 3.08$). No other disadvantages achieved consensus.

Subjective norms. Four of the SN categories achieved high consensus agreement for individuals or groups who would approve of speaking up: professional team members, professional nursing or regulatory organizations, patient and /or families, and hospital safety committee members (ranked 14-17, $\overline{x} = 3.18$-3.44). High consensus was also achieved for the SN statement "Inexperienced RNs would disapprove of speaking up" (ranked 19, $\overline{x} = 3.05$). Among top statements with high levels of consensus for disagreement (see Table 8) were individuals or groups who would disapprove of nurses speaking up: (a) professional team members (co-workers) and (b) patients and/or families ($\overline{x} = 1.77$ and 1.97 respectively). Consensus of disagreement for these last two statements suggests that team members and patients/families were actually supportive of nurses speaking up.

Table 8. Delphi Round Two Study: Top Statements with High Levels (Mean < 2.0) of Consensus Disagreement *

Rank	Mean	TPB Variables with Associated Items
NA	1.77	Subjective Norm: Individuals or groups who would disapprove of speaking up: # 23–Professional team members (co-workers).
NA	1.97	Subjective Norm: Individuals or groups who would disapprove of nurses speaking up in front of the: # 26–Patients and/or families.

*1 = Strong Disagreement
2 = Disagreement
3 = Agreement
4 = Strong Agreement

Perceived behavioral control. Factors that made it easier to speak up achieved high consensus (ranked 6, 8-13, $\overline{x} = 3.63$-3.46), just below ATT (advantages of speaking up). These factors were as follows: a culture of safety, open communication, support of physicians, policies and procedures that support patient safety, support from team

members, being skilled in verbal communication, and management support. High consensus for factors that made it harder to speak up included (a) unsupportive management (punitive, or ignoring) (ranked 20, $\bar{x}$ =2.97) and (b) fear of confrontation (retaliation, bullying), (ranked 21, $\bar{x}$ = 2.93).

Discussion

The results indicate that the Delphi study respondents generally agreed that statements based on the TPB variables influenced intention to speak up, primarily by identifying advantages, factors that made it easier to speak up, and individuals or groups who would support them. Respondents were less likely to agree on the disadvantages, factors that made it harder to speak up, and individuals or groups who would disapprove of this behavior. This may indicate that critical care nurses overall believe speaking up is a worthwhile endeavor, but some cannot agree on specific factors that make it difficult, or individuals/groups who would not support them. Some nurses may feel supported and find it easy to speak up, while others face barriers.

Attitudes: Advantages and Disadvantages

Advocating and safeguarding the patient were the statements that most nurses in the round two study agreed were advantages of speaking. One nurse stated:

> The patient is my priority. I must do whatever is right to protect him or her, even if it is uncomfortable for me. Even at the risk of upsetting someone, if I don't speak up, I am just as culpable as the person putting the patient at risk (round one participant).

Nembhard, Labao, & Savage (2015) concluded that the imperative to protect patients was the most compelling motivation for voice. Garon (2012) found that nurses have a

mandate to do the right thing and be an advocate "against a doctor, or anybody for my patient" (p. 366). Advocacy requires risk and action. Vocate comes from the Latin vocare (meaning to voice) and ad means to call out; so advocacy means speaking out, taking a risk, and dealing with some kind of conflict which nurses do daily (Buresh & Gordon, 2013).

According to Okuyama et al. (2014), health care professionals who actively voice concerns feel they are creating a safer environment and preventing adverse events from occurring. Providing timely intervention was rated important by nurses in round two. By addressing issues before an incident occurs, the nurse takes control of the moment, rather than referring it to a manager who may not act upon it. Nurses in round two also agreed that speaking up encouraged awareness of safety policies and procedures, promoted a healthy work environment, and helped protect nurses legally. Nembhard, Labao, and Savage (2015) reported in a study about hospital workers that interviewee's advocated speaking up to protect themselves, explain their positions, and avoid being placed in a negative light. In addition, Helmchen, Richards, and McDonald (2010) reported that patients are less litigious and more forgiving when they believe their providers openly disclosure medical errors. In general, nurses are encouraged to openly promote a culture of safety, avoid working in silos, and embrace teamwork and collegiality (Battié & Steelman, 2014).

The only statement that respondents of round two identified (through consensus agreement) that was a disadvantage of speaking up was "it may cause conflicts between the patient or family and the staff. One nurse participant wrote, "The only disadvantage is the manner how you addressed the problem to involve individuals and humiliating staff

in front of the patient, family members, or colleagues." Another wrote, "[A disadvantage is] losing patient's trust in giving competent care." Schwappach and Gehring (2014) reported that respondents were very reluctant to point out when coworkers did not engage in hand hygiene because patients were listening to this communication. Pointing out discrepancies in the presence of patients or relatives can be difficult, especially for those who are less skilled in effective communication strategies.

Subjective Norms: Individuals/groups who Approve or Disapprove of Speaking Up

Nurses agreed by consensus that professional team members (co-workers) were the most salient referents supportive of speaking up behaviors. This was followed by other supportive referents including professional nursing organizations, hospital committee members, patients, and/or families. However, there was low consensus agreement that physicians and nursing management would approve of speaking up. In a study of 4,235 critical care nurses, Maxfield et al. (2010) cite instances of physicians thwarting attempts by nurses to interrupt adverse events, and managers who later failed to support the nurse. Professional peer behavior was found to be a strong predictor of intention to engage in preventative safety behaviors for physicians, nurses and allied health professionals; but those participants who reported (a) poor communication within their organization and (b) lack of support for patient safety indicated they were less likely to engage in patient safety behaviors (Wakefield et al., 2010). Research validates that feeling part of a collaborative team facilitates the ability to voice concerns within the team (Nembhard et al., 2015).

The only statement achieving consensus for the SN category (round two) indicating disapproval of speaking up was "Inexperienced RNs are reluctant to support

speaking up". Comments from round one indicated some nurses were "weaker, more timid", and did not have a preceptor that "set the tone" for the new employee." Fackler, Chambers, and Bourbonniere (2015) found that nurses who reported being powerful were better able to voice concerns about patients. However, this power comes from knowledge, experience and confidence in abilities. Less experienced nurses may not believe they have the expertise to challenge those in the workplace, especially if they are perceived to be lower on the hierarchy scale. Inexperienced staff may avoid speaking up for fear of being seen as ignorant, potentially disruptive, and even incompetent (Edmondson, 2012).

Perceived Behavioral Control: Factors that Make it Easier or Harder to Speak Up.

Respondents identified "Knowing there is a culture of safety" (where patient safety is a priority) as the most important factor making it easier to speak up to prevent patient harm. All other supportive statements followed in order: open communication, support of physicians, policies and procedures that support patient safety, support from team members, being skilled in verbal communication, and management support. One nurse from round one commented: "A culture of safety and open communication…encourages and supports nurses in these situations." A definition of patient safety culture is:

> The values shared among organization members about what is important, their beliefs about how things operate in the organization, and the interaction of these with work unit and organizational structures and systems, which together produce behavioral norms in the organization that promote safety" (Singer, Lin, Falwell, Gaba, & Baker, 2009, p. 400).

This statement casts a wide net to include those external structural and inter-professional components of the health care system that were mentioned in round one as facilitators of speaking up–policies and procedures, management, team members, and physician support.

Skill in verbal communication was identified as an internal factor for making it easier to speak up in round two. Research indicates that (a) confidence in skills and (b) education about what to say and how to say something can influence whether providers speak up (Schwappach and Gehring, 2014). Strategies such as the communication tool SBAR (Situation-Background-Assessment-Recommendation) (AHRQ, 2014) exist to help structure conversations, and targeted communication strategies help nurses find their voice (Eppich, 2015). Simulation training can provide a supportive, non-threatening environment to practice speaking up (Eppich & Cheng, 2015), especially for interdisciplinary members of the critical care team. Unfortunately, research indicates that nurses and physicians have no historic tradition of training together and limited opportunities to currently engage in it (Sandahl et al., 2013).

Respondents of round two arrived at high consensus agreement on two factors that make it harder to speak up: (a) an unsupportive management (punitive, or ignoring) and (b) fear of confrontation (retaliation, abuse, or bullying), although 28.7% and 28.5% respectively disagreed that these were issues. The problem of disrespect was highlighted in the 2010 study of critical care nurses by Maxfield et al. (2010). Others have reported a link between lateral (nurse to nurse) and vertical (hierarchical, e.g. doctor to nurse) bullying with adverse patient safety risk and outcomes (Gaffney, DeMarco, Hofmeyer, Vessey, & Budin, 2012; Laschinger, 2014). Results from a study by Garon (2012)

suggest that nursing administration has a critical role in promoting openness and positive communication, and in creation of a culture that allows staff nurses to freely to speak up and be heard.

Strengths and Limitations

Limitations

Participants were selected from a nationwide sample, but the final sample was based not only on inclusion criteria, but also on those who completed free-text responses to all TPB variable questions. Therefore, respondents who were not in the final sample may have represented different viewpoints. Participants had to type responses to open-ended questions into the survey, which may have limited full descriptions of answers. The primary investigator sought clarification for some answers that were short or ambiguous, but did not always receive a response. The open-ended questions were predetermined by the guidelines for developing a TPB questionnaire (Francis et al., 2004), which may have limited the study's scope.

The respondents in both rounds one and two were predominately female, Caucasian, educated with at least a Bachelor's degree, and had at least 10 years of experience as an RN. Minorities, men, nurses with Associate or Diploma degrees, and those with less than 10 years of experience were not well-represented. Culture, education, and years of experience have been cited in previous research (Eppich, 2015; Garon, 2012; Nembhard et al., 2015; Okuyama et al., 2014) as contributing to differing styles of communication (including speaking up) among nurses. These differences may not have been captured in the present study and consequently hindered transferability.

Strengths

A variety of strategies were used to ensure analytic rigor of both rounds of this study. Published recommendations on sample size and specific open-ended questions for the TPB variables were followed (Ajzen, 2015a; Francis et al., 2004). Procedures for analyzing data in round one followed thematic content analysis recommended by Burnard (1991), and consensus agreement for round two was determined through steps recommended by de Loë and Wojtanowski (2001). Three researchers independently analyzed open-ended questions and readily achieved consensus agreement on the final themes. Results of analysis were validated with several currently practicing critical care nurses. Findings were interpreted in light of the theoretical model for the TPB and were compared to current literature on speaking up among nurses.

Summary

In summary, the results of this study are in concordance with, but extend the evidence of other studies about factors influencing nurses to speak up about patient safety. The TPB was useful in eliciting beliefs for important motivators and inhibitors of voicing concerns at the time patients are at risk. Consensus agreement among critical care nurses was highest for specific advantages, positive outcomes, and factors that promoted speaking up. The duty to advocate for "my patient" was considered to be very important to nurses. Facilitators for speaking up included open communication and a culture of safety. Important individuals/groups that would approve of speaking up included professional team members (co-workers). Lastly, there were four issues achieving consensus agreement that indicated potential difficulties for nurses speaking up: (a) conflicts between the patient, family and the staff, (b) inexperience in nursing, (c) an

unsupportive management, and (d) fear of confrontation, retaliation or bullying. The findings from this study support conclusions from the *Critical Care Nurse Work Environments 2013: A Status Report* (Ulrich et al, 2014) in that "the health of the work environment needs attention and care" particularly regarding true collaboration (p. 78). Future work should validate the findings of this Delphi study with a larger group of critical care nurses using the TPB theoretical framework.

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Chapter Three

Critical Care Nurses Speak Up to Prevent Patient Harm:

A Scale Based on the Theory of Planned Behavior

Abstract

Problem: Previous studies indicate that there is no instrument based on the Theory of Planned Behavior that measures speaking up among nurses in critical care areas. Studies also indicate that a culture of silence continues to exist that affects the healthcare workplace and patient safety.

Objectives: Determine the factors that provide a valid psychometric scale for assessing nurses' intention to speak up when patients are at risk for harm in critical care. Develop a theory-based scale that could be used in future research to provide further validation and continued refinement of a critical care nurses speak up scale.

Methods: A national study of critical care nurses was conducted to evaluate factors associated with the theory of planned behavior constructs and intention to speak up by critical care nurses.

Results: An exploratory principal component factor analysis revealed the following themes: contextual support, nursing professionalism, doing the right thing, and general intention. Critical care nurses believed in the benefits of speaking up, and the obligation and intention as a nurse to speak up, but they were equivocal about whether contextual factors supported this endeavor. If contextual barriers did exist, nurses were not sure they could speak up when patients were at risk for harm.

Keywords: Scale development, planned behavior theory, speaking up, critical care

Problem and Significance

The Institute of Medicine (IOM, 1999) reported that an estimated 44,000-98,000 deaths occur annually in hospitals as a result of medical errors that could have been prevented. More recent estimates indicate that there are over 400,000 premature deaths per year (James, 2013), and studies have found that there has not been much improvement in preventable patient harms since the IOM report (Landrigan et al., 2010). Patients in acute care hospitals and intensive care units are particularly at risk for adverse event exposure due to the complex environment (Ahmed et al., 2015). Even though well-educated and highly skilled nurses provide most of the care for these patients, the healthcare system is still plagued by quality and safety issues (Sherwood & Zomorodi, 2014). A study of critical care nurses found that over 50% of near miss events would have become harmful patient events if nurses had not intervened (Rothschild, Bates, Franz, Soukkup, & Kaushal, 2009). Furthermore, savings from these preventable errors would have been upwards of $13 million (Rothschild et al., 2009). In general, expenses for care in an ICU are among the highest in healthcare and warrant an in-depth understanding of the influences of cost-effective quality patient care (Garland, 2013).

Even though nurses are in a position to interrupt errors and prevent adverse patient outcomes (Henneman et al., 2010), many feel uncomfortable in speaking up about errors and rule violations (Schwappach and Gehring, 2014). Maxfield, Grenny, Lavandero, and Groah (2010) found that 58% (n = 1,403) of critical care and operating room nurses had been in situations where they thought it was unsafe to speak up or they could not get others to listen to concerns about patient care safety issues. There is a

tendency for those in health care to choose silence over voice even when there are few risks (Eppich, 2015; Detert & Edmondson, 2011).

Critical care staff members have reported that team training improved their confidence to handle different emergency situations, prevent mistakes (Ballangrud, Hall-Lord, Persenius, & Hedlein, 2014) and increased confidence to speak up (Dietz et al., 2014). According to Maxfield et al. (2010) improvement in speaking up capabilities requires an understanding of existing cultural practices, social norms, and personal skills among critical care staff. It also requires a valid instrument to assess the nurse's ability (or likelihood) to speak up and to determine if improvements have been made following interventions. A tool grounded in behavioral theory that assesses antecedents and intention to speak up could be used to evaluate speaking up behaviors of critical care staff nurses. In addition, a tool could guide education endeavors (e.g. orientation, in-service, undergraduate programs) to improve communication and ultimately patient safety in high risk critical care areas.

Research specific to the antecedents of speaking-up by critical care nurses at the time a patient is at risk for harm is scarcely reported in the literature and models based on theoretical frameworks need to be tested (Okuyama, Wagner, & Bijnen, 2014) . Qualitative studies identify the influence of some individual characteristics (e.g. personal attitudes, beliefs, and knowledge) and workplace characteristics (e.g. hierarchical relationships, power differentials among nurses and physicians, concerns not taken seriously, retaliation) on nurses' safety-related behaviors (Garon, 2012; Henneman, Gawlinski, & Blank, 2010; Pfaff, Baxter, Jack, & Ploeg, 2014). Quantitative studies that measure nurses' error interruption behaviors have been conducted with nurses in general

population groups (Sayre, McNeese-Smith, Leach, & Phillips, 2012; Wakefield, McLaws, Whitby, & Patton, 2010), labor and delivery (Lyndon et al., 2012) and intensive care (Maxfield et al., 2010; Weiss et al., 2014). However, no study describes a psychometrically tested instrument using the Theory of Planned Behavior (TPB) to assess intention of critical care nurses to speak up. The American Association of Critical Care Nurses (AACN, 2005) has called for ongoing assessments and evaluation of established standards to improve the culture of silence that affects patient safety.

Literature Review

Critical Care Environment

Unlike other areas in a hospital, critical care departments have complex working environments that raise the possibility of adverse events (Ahmed et al., 2015). In these high acuity areas, the practice of nursing is intellectually and emotionally draining since it requires the constant use of high technology, interaction with multiple providers, and nurses must deal with life-threatening situations where there is little margin for error (Benner, Kyriakidis, & Stannard, 2011). Staff members typically have more technical skills rather than expertise in communication, teamwork, or leadership abilities in the system of care (Haerkens, Jenkins, & van der Hoeven, 2012). Traditionally, the intensive care units have had a hierarchical structure dominated by a medical paradigm (Coombs & Ersser, 2004), but more recently nurses have been able to assert their power and authority to promote patient safety (Espin, Wickson-Griffiths, Wilson, & Linggard, 2010). Studies have identified the importance of assertive team communication skills among nurses working in critical care areas in preventing errors from occurring (Henneman, Blank, Gawlinski, & Henneman, 2006; Johnson & Kimsey, 2012; Maxfield et al., 2010).

However, a more recent report on critical care nurses work environments (Ulrich, Lavandero, Woods, & Early, 2014) found that communication, true collaboration, and quality care had declined, while moral distress and disrespect for nurses had increased. Poor work environments have been associated with negative outcomes for both nurses and patients (Aiken et al., 2011).

Conceptual Frameworks for Speaking Up

Previous research has focused on the development of a framework for assessing speaking up factors. Premeaux and Bedeian (2003) tested a conceptual scheme for speaking up (N = 118) among telecommunication employees that was based on two individual factors (locus of control and self-esteem) and two contextual factors (management openness and trust in a supervisor). Limitations included: (a) a specific theory was not tested, (b) attitudes regarding the outcome were not included as variables, and (c) the sample population was not surveyed for input on possible other influencing contextual and individual factors.

Another study (Weiss et al., 2014) proposed that concepts of agency and communion would predict speaking up in acute care teams. Agency (the desire to master the environment, assert oneself and experience competence achievement and power) and communion (desire to closely relate to others, reflected by being kind, helpful, and nice) were tested with 54 nurse-physician anesthesia teams in Switzerland during high fidelity simulation scenarios. Results indicated that agency was a positive predictor of speaking up, but communion was a negative predictor among nurse-physician teams; and, a high proportion of participants remained silent in spite of negative or even fatal simulated

patient outcomes. Recommendations from this study included evaluation of more diverse health care worker populations in a variety of real-life situations.

Another framework for nurses speaking up was proposed by Garon (2012) in a qualitative study with 33 RNs in the U.S. Three major constructs (individual and organizational influences, message transmission and reception, and outcomes) were used to elicit predictive factors. Organizational influence was the most important factor for nurses, particularly the role of management in establishing open communication and "walking the talk" of a culture of safety. However, this study was limited to a descriptive analysis and confined to participants from one university campus in the United States.

Several other studies have suggested theoretical frameworks based on a review of the growing research related to speaking up. Morrison (2014) surmised that from an organizational perspective, a variety of variables could inhibit or motivate voice: (a) individual disposition, (b) job and organizational attitudes and perceptions, (c) emotions, beliefs and schemas, supervisor and leader behavior, and (d) other contextual factors such as voice climate, caring climate, and formal voice mechanisms. Okuyama et al. (2014) expanded on the Morrison model for employee voice and cautioned that speaking up in health care is more about benefiting the patient and may require more variables to explain the risks and rewards of this behavior. Rainer (2015) provided a theoretical framework based on a literature review following a report from The Joint Commission (2014) that identified communication, leadership, and human factors as the top reasons for sentinel events. In Rainer's model, three primary "blocks" (organizational culture, personal culture, and generational differences) formed the foundation of a model of speaking up if faced with critical situations. While these theoretical frameworks provided

recommendations for improved speaking up ability, they have not yet been studied in healthcare employee populations.

The Theory of Planned Behavior (TPB) was used in an Australian study (Wakefield et al., 2010) to assess patient safety behavioral intent (PSBI) among 5,294 health care workers (physicians, nurses and allied health professionals). The tool consisted of twelve independent variable behavioral constructs, nine demographic questions, and the PSBI dependent variable that included the sum of eight questions (e.g. incident reporting behaviors, speaking out, or intervening when an error was witnessed). Questions were based on the literature, a safety attitude questionnaire, and focus group interviews specific to the Australian healthcare setting. The reliability for constructs was acceptable, ranging from Cronbach alpha correlations of $r = 0.71$ to $r = 0.94$. Analysis consisted of multiple logistic regressions to determine prediction of PSBI, but the 145 item questionnaire was not subjected to exploratory factor analysis. The two strongest predictors of PSBI were attitude toward engaging in patient safety behaviors (AOR 1.82, 95% CI 1.66 to 1.99, $p < 0.001$) and subjective norms—perceptions about professional colleagues' patient safety behavior (AOR 1.68, 95% CI 1.57 to 1.80, $p < 0.001$). This study demonstrates the importance of healthcare worker beliefs about outcomes of behavior and observations of peer actions in intent to engage in safety behaviors. Future study recommendations included utilizing planned behavioral theory to target specific contextual items for designated health care worker groups in order to facilitate more accurate generalizability.

Healthcare Studies Using the TPB

The TPB has been used in numerous studies concerning intention to comply with safety-related behaviors (de Feijter, de Grave, Hopmans, Koopmans, & Scherpbier, 2012; Fogarty & Shaw, 2010; Mc Laws, Maharlouei, Yousefi, & Askarian, 2012; Palat & Delhomme, 2012; White et al., 2015). Furthermore, TPB studies have specifically focused on nurses with good results. Ko et al. (2011) examined intention of nurses to comply with occupational safety post-exposure management. Cronbach's alpha correlation for behavioral constructs of attitudes (ATT) towards compliance, subjective norms (SN), and perceived behavioral control (PBC) ranged from 0.60, 0.95, and 0.93 respectively. Each construct contributed to significant direct effects on compliance behavioral intent (BI), and the model accounted for 54% of the variance. Thanee, Anucha, Winitra, Thana, & Mundy (2013) found that self-reported hand hygiene compliance correlated with TPB constructs ($r = 0.53$, $p < .001$) and ATT was an independent predictor for hygiene compliance. Lapkin, Levett-Jones, & Gilligan (2015) used the TPB to explore pharmacy, nursing, and medicine students' intentions in relation to medication safety and collaborative practice. While the sample size was small ($N = 65$) the questionnaire (based on the TPB questionnaire guide by Francis et al. [2004a]) incorporated qualitative interviews into an assessment of the TPB constructs. Cronbach's alpha correlations for the questionnaire were good ($r = .844$) and predictor variables accounted for 30-46% of the variance in BI. ATT was the most significant predictor of BI to improve medication safety.

The TPB has been found useful in the development of reliable and valid instruments to assess attitudes and intentions in healthcare. Attitudes and intentions of

women towards receiving antenatal care were studied by Tasci-Duran and Ozkahraman (2013). Exploratory factor analysis was used to determine a six factor structure that accounted for 82.8% of the variance. The Cronbach alpha coefficients for the 26 item scale ranged from 0.89 to 0.94, indicating a high degree of reliability. This scale could potentially be used as a pre-screening tool for pregnant women to determine the intent to receive antenatal care or as a strategy to promote and evaluate adherence.

Efficacy of the TPB in Behavioral Research

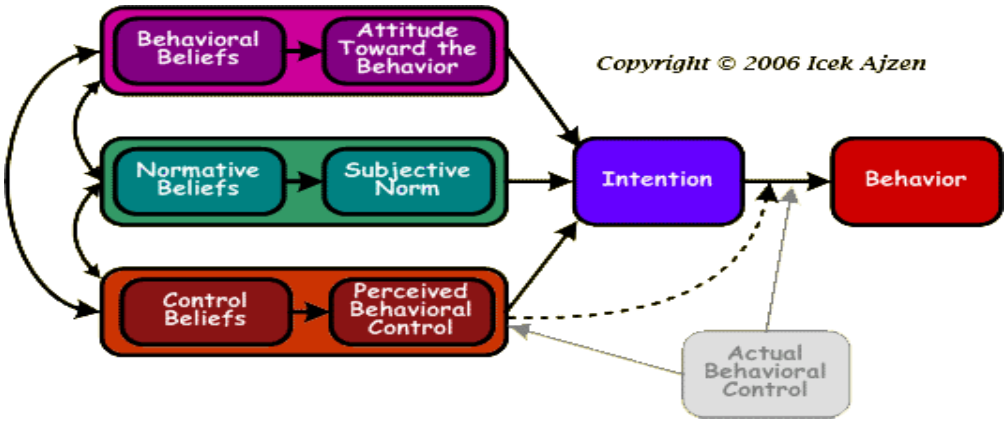
Choosing an appropriate theory for research about the behavior of healthcare professionals is important for comparing study results, the effect of interventions between studies, and the generalizability of findings. Consistency in the use of terms such as social norms influencing BI promotes consistency in replication for other situations, e.g. peer influence for hand washing among different healthcare worker groups and settings. Not every theory explains behavior change, and it is advantageous to use one that identifies modifiable factors when researching issues that require change. It also helps if a theory provides a method for identifying change, or identifies a mediator between predictor variables and actual behavior, such as BI. The following characteristics of theories may be most appropriate for measuring behaviors in clinical health professionals: (a) demonstrates effectiveness in predicting behavior change in a variety of settings, e.g. community versus acute care; (b) explains behavior in a way that is modifiable, e.g. beliefs, attitudes; and (c) includes factors that are non-volitional e.g. organizational barriers (Eccles, Grimshaw, Walker, Johnston, & Pitts, 2005).

The health belief model (HBM) has also been used to predict health-related behaviors. In a study comparing the HBM to the TPB, Montanaro, and Bryan (2014)

found that the four components of the TPB (ATT, SN, PBC and BI) significantly related to risky sex behavior and accounted for 32.8% of the variance; however, none of the HBM constructs correlated with the same risky sexual behavior, and only accounted for 1.6% of the variance. Researchers concluded that constructs which explain behavior may not be the same ones that produce behavior change. In a meta-analysis of 185 independent studies, Armitage and Conner (2001) found that the TPB accounted for 27 and 39% of the variance respectively in behavior and intention. Their findings support the efficacy of using the TPB as a predictor of behavioral intention and behavior. Finally, the TPB was found to be the best theory to explain BI and predict clinical behaviors of healthcare professionals in a systematic review of 78 studies of social–cognitive theories (Hoffmann, Bennett, & Del Mar, 2013). Little research exists on tested theories for speaking up among healthcare professionals (Okuyama et al., 2014), and no study was identified that used the TPB to develop a psychometric tool to assess nurses speaking-up in critical care.

Theoretical Model

The TPB (Ajzen, 1991) is a model of intention emerging from social psychology (see Figure 4). This theory is based on the idea that an individual's behavior is influenced by intention and three belief concepts. The first concept is behavioral belief which reflects overall evaluations of performing a behavior. Behavioral belief leads to an attitude (ATT) towards the behavior, consisting of two components: (a) beliefs about the consequences of the behavior (e.g. whether "speaking-up" is beneficial or harmful), and (b) the corresponding positive or negative outcome evaluation (e.g. whether speaking up is desirable/undesirable). The second concept is normative beliefs which relate to



According to the theory of planned behavior, human action is guided by three considerations: behavioral, normative, and control beliefs, each respectively influencing attitude toward the behavior, subjective norm and perceived behavioral control. In combination, attitude toward the behavior, subjective norm, and perception of behavioral control lead to the formation of a behavioral intention. Given the actual control over the behavior, people are expected to carry out intentions when the opportunity arises and assumed to be an immediate antecedent of behavior. If behavioral control is perceived, it can serve as a proxy for actual control and contribute to behavior prediction. Copyright 2006 by Icek Ajzen. Reprinted with permission.

Figure 4. Theory of Planned Behavior

subjective norms (SN), or social pressure to perform or not perform the behavior. SN consists of two components: (a) beliefs about how significant people would like them to perform (e.g. whether others apply pressure to speak-up), and (b) positive/negative judgments about pressure of significant others (e.g. whether it is important to do what others believe). The final belief concept is control beliefs which reflect perceived behavioral control (PBC). Two components of control beliefs are: (a) factors which are perceived to impede or facilitate a behavior (e.g. work environment can encourage/discourage a culture of safety), and (b) perceived power or ability to engage successfully in a behavior (e.g. internal factor of whether sufficient skill exists in speaking up, and/or external factor of whether the situation facilitates an individual's power to speak up).

In the TPB, the combined effects of ATT, SN, and PBC contribute to overall BI to perform a behavior. If beliefs are strongly held, then BI is also stronger. If PBC corresponds to actual facts then this contributes to the prediction of the behavior (e.g. nurse supervisor speaks up to correct a new nurse who is about to make a medication error). The behavior is defined in terms of its target, action, context, and time elements (TACT) (Francis et al., 2004a). In the proposed study the behavior will be speaking-up (action) to others in critical care settings (target) at the time (time element) a patient is at risk for harm (context).

Demographic and professional attributes (e.g. age, education) are not typically used in the TPB model other than to describe the characteristics of the target population. According to Ajzen (2015c), socio-demographic (e.g. age) variables affect beliefs, intentions, and behavior indirectly so their influence has already been included through the main constructs. Previous knowledge of a subject is also not included in the TPB because this factor usually does not relate to the specific behavior in question, and accuracy of that knowledge may not correlate with decisions that are made about the behavior (Ajzen, Joyce, Sheikh, & Cote, 2011). In this study, demographic variables were only used to describe the sample population and compare groups to ensure generalizability.

Conceptual and Operational Definitions of Concepts

According to the TPB, key constructs (ATT, SN, and PBC) would be important determinants of intention to speak up among critical care nurses at the time patients are at risk for harm. There are also general measures of BI that can be used as proximal measures of actual behavior (Francis et al., 2004a) which may influence whether speaking up behavior occurs. Guidelines for creating a TPB questionnaire (Ajzen, 2015a; Francis, et al., 2004a)

were used to create items reflective of each key construct. Direct items for ATT, SN, and PBC utilized standardized questions adapted to the specific population, behavior, and context – critical care nurses speaking up at the time a patient is at risk for harm – to provide a general assessment of the variables (see Table 9). Indirect items for ATT, SN and PBC were developed from qualitative input (based on an earlier pilot study) that informed sets of context-specific questions. The actual type and numbers of indirect questions can vary according to data from the qualitative pilot study. Three questions were recommended to capture BI of speaking up behavior. Conceptual and operational definitions are found in Table 1.

Table 9. Conceptual and Operational Definitions of Study Variables

Variable	Conceptual Definition	Operational Definition
Attitude (ATT) related to the behavior (speaking up)	An overall evaluation of the behavior (speaking-up) indicating beliefs about the consequences of a behavior and the corresponding positive or negative judgments about the possible outcomes (Ajzen, 1991)	Direct measures: Four items of overall attitude about speaking up (beneficial, pleasant, right, good practice) on a unipolar seven-point Likert scale (1-7), where seven indicates a more favorable attitude. Range 4-28. Indirect measures: Seven items eliciting specific beliefs about the perceived advantage/disadvantage of speaking up (identified from a previous pilot study) on a unipolar 1-7 point Likert scale, with seven indicating a more favorable attitude. Indirect paired measures: Seven items eliciting belief about the desirability of the outcome of the paired item on a bipolar (-3 to +3) seven-point scale. Indirect combined measures: Each of the seven indirect items is multiplied with its pair resulting in a range of -21 to +21. Total range for ATT indirect items = -147 to +147. The combined score indicates negative/positive attitude for speaking up. (Francis et al., 2004a)

Table 9 (Continued)

Variable	Conceptual Definition	Operational Definition
Subjective Norms (SN) related to the behavior (speaking up)	An overall estimate of the social pressure to perform a behavior (speaking-up) which indicates beliefs about how significant others want them to behave, and whether doing what others think is important/ unimportant (Ajzen, 1991)	Direct measures: Four items indicating overall belief that individuals or groups influence speaking up behavior on a unipolar seven-point Likert scale (1-7), where seven indicates higher agreement. Range 4-28. Indirect measures: Five items eliciting specific beliefs about what significant others do or think you should do related to speaking up (identified from a previous pilot study), on a bipolar (-3 to +3) seven-point scale, where +3 indicates a more favorable attitude. Indirect paired measures: Five items eliciting belief about the importance of identified individuals or groups paired item, scored on a unipolar Likert seven-point (1-7) Likert scale, where seven indicates very important. Indirect combined items: Each of the five items is multiplied with its pair resulting in a range of -21 to +21. Total range for SN indirect items = -105 to +105. The combined score indicates weak/strong social support for speaking up. (Francis et al., 2004a)
Percevied Behavioral Control (PBC) realated to the behavior (speaking up)	An overall indicator of confidence in the ability to perform the behavior (speaking-up) through evaluation of self-efficacy and controllability of the situation (Ajzen, 1991)	Direct measures: Four items with seven-point unipolar (1-7) Likert scale indicating (a) self-efficacy (difficulty in performance and confidence in ability) and (b) controllability (whether behavior performance is internal and whether external factors beyond their control determine their behavior). Range 4-28. Indirect measures: Eight items eliciting specific beliefs about barriers (identified from a previous pilot study) that might make it difficult to perform the behavior, scored on a unipolar Likert scale (1-7), where seven indicates the barrier is likely to occur. Indirect paired measures: Eight items eliciting belief about whether the specific barrier makes it easier or more difficult to speak up scored on a bipolar scale -3 to +3, where +3 indicates it is easier or more likely that speaking up will occur. Indirect combined items: Each of the eight items is multiplied with it pair resulting in a range of -21 to +21. Total range for PBC indirect items is -168 to + 168. The combined score indicates negative/positive level of control, or level of ease/difficulty, for speaking up. (Francis et al., 2004a)

Table 9 (Continued)

Variable	Conceptual Definition	Operational Definition
Behavioral Intention (BI) related to speaking up when a patient is at risk for harm.	Intention is a proxy measurement for behavior (Ajzen, 1991) and indicates a conscious plan to carry out a behavior (Francis et al., 2004a). Speaking-up when a patient is at risk for harm is giving voice to ideas, suggestions, or concerns in the event of an identifiable, modifiable problem so that corrective action can be taken (Detert & Edmondson, 2011; Nabhan et al., 2012) to produce a safe patient outcome (Sayre, Mc Neese-Smith, Leach & Phillips, 2012).	Direct measures: General intention to speak up in the next three months, measured by three items: (a) expect to speak up, (b) want to speak up, and (c) intend to speak up (Frances, et al., 2004a). Scales are unipolar Likert 1-7, range 3-21) where 7 indicates an increased intention to speak up.

Research Questions

The primary research question is: What is the reduced set of factors in the development of a scale necessary to explain relationships among the TPB constructs (ATT, SN, PBC and BI) regarding critical care nurses' intention to speak up when patients are at risk for harm? The results could be used in an instrument for future research. Related questions include: (a) What is the reliability of the scale and the associated factors, (b) how much variance is explained by the factors and the total scale, and (e) how are the factors interpreted based on the derived variables?

In order to ensure a representative sample and generalizability, a separate question asks if there are differences in professional attributes and demographics between the sample populations used in the study and the general population of critical care nurses.

Comparisons are made to critical care nurse demographics compiled through the American Association of Critical Care Nurses (AACN). Demographics include age, gender, education, and ethnicity/race. Professional attributes include years worked as an RN, type of facility in which employed, and type of critical care unit to which the nurse is assigned. Socio-demographic variables (e.g. age) are assumed by the TPB to indirectly affect intention and behavior by way of the main constructs (ATT, SN, and PBC) (Ajzen, 2015a; Ajzen & Klobas, 2013), and are therefore not included as TPB variables.

Study Design

A mixed-method, exploratory, sequential design (Cresell & Plano-Clark, 2011) that utilizes qualitative data from an earlier study (Critical Care Nurse Speak Up [CCNSU] study one) in a quantitative questionnaire (CCNSU study two) was used to identify TPB constructs that predict BI and actual behavior (Ajzen, 1991) (see Figure 5). Mixed-methods research portrays a holistic view of a phenomenon, creating a deeper understanding than would be achieved when using only one method (Hanson, Creswell, Clark, Petska, & Creswell, 2005). The use of qualitative data to enhance the development of a quantitative study is a common approach in health sciences (Plano-Clark, Huddleston-Casas, Churchill, Green, & Garrett, 2008). The "results of the first qualitative method help inform the second quantitative method… [and this design is] useful when the researcher needs to develop and test an instrument when one is not available" (Creswell & Plano Clark, 2011, p. 86).

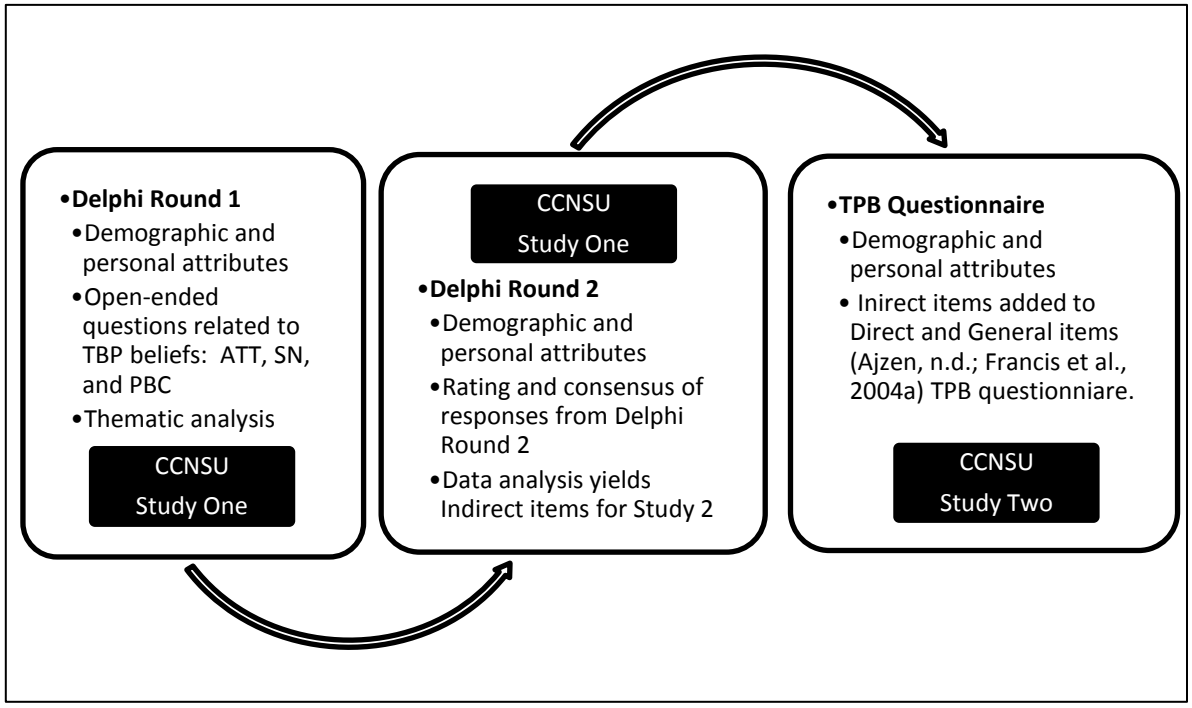


Figure 5. Flow Chart of CCNSU Study One and CCNSU Study Two

The exploratory sequential design blends well with guidelines recommended by Fishbein and Ajzen (2010) and Francis et al. (2004a) for construction of TPB questionnaires that combine qualitative and quantitative measures. Initially, a qualitative, formative study (CCNSU study one) of critical care nurses was conducted that led to the CCNSU study two. The questionnaire method that was employed for study one and study two is often used for collecting descriptive data related to attitudes, practices, and characteristics of groups (Portney & Watkins, 2009) and allows for anonymity and provision of honest answers to sensitive subjects without interviewer bias (Polit & Beck, 2012). Confidentiality was assured in study one and anonymity was ensured in study two. Study one qualitative responses were analyzed into belief themes (Francis et al. 2004a) that were converted into indirect measures for each of the TPB variables (ATT,

SN, and PBC) and embedded into a subsequent quantitative questionnaire (Francis et al., 2004a) (see Figure 2) in preparation for study two.

The CCNSU study two follows the mixed-methods research design in the development of an instrument (Creswell & Plano Clark, 2011). Sequential exploratory designs include: (a) data collection and analysis; (b) decisions about how results will be used in the second data collection; and (c) the second data collection and analysis (Creswell & Plano-Clark, 2011). Multi-method research assists in understanding constructs and improves validation when there are gaps in conceptualization (Polit & Beck, 2004). The construction of the study two questionnaire followed published guidelines for developing a TPB questionnaire (Fishbein & Ajzen**,** 2010; Francis et al., 2004a) and was pilot-tested with a nation-wide sample of critical care nurses. Finally, the results were subjected to exploratory factor analysis (EFA) to produce a preliminary scale for measuring critical care nurse intention to speak up when patients are at risk for harm. This tool may be used in future research to confirm scale reliability and validity and to help improve patient safety in critical care through assessment of speaking up intent.

Methods

Setting

The CCNSU study two was conducted following IRB approval through an internet questionnaire of critical care nurses who accessed a questionnaire link from their email. A request for participants was placed on the AACN's electronic newsletter– *Critical Care eNewsline* (Appendix F) and the AACN Facebook website (https://www.facebook.com/aacnface). Emails were also sent by the researcher to AACN chapter officers to direct chapter members or interested critical care nurses to the *Critical*

Care eNewsline study announcement. The *Critical Care eNewsline* and AACN Facebook website offers news updates, current guidelines, educational offerings, and embedded links to participate in research studies. The *Critical Care eNewsline* reaches approximately 240,000 nurses weekly. The AACN also provides resources such as specialty certifications and standards of practice, and it serves as a voice for critical care nurses regarding government and regulatory issues that shape health care policy and delivery environments. The AACN is the largest nurse specialty organization in the world with over 240 chapters in the U.S., China, Japan and Germany; and it represents more than 500,000 nurses (membership is 100,000) who care for critically ill patients (AACN, 2014).

Sample

The recommended sample size for exploratory factor analysis is 10 subjects per initial item to reduce sampling error (Pett, Lackey & Sullivan, 2003). However, others have recommended between five and 10 participants per variable up to a total of 300 participants because at this point test parameters are usually stable regardless of the respondent to item ratio (Field, 2009). Larger sample sizes may lead to more replicable results (Costello & Osborne, 2005), but a sample size of at least 300 cases may be sufficient (Comrey & Lee, 1992; Tabachnick & Fidell, 2001). Therefore, a sample size of at least 300 for the CCNSU study two was a minimum requirement. Since there are 35 variables for factor analysis, at least 300 participants would provide a participant-to-item ratio of 10:1.16.

Inclusion and exclusion criteria. Convenience sampling was used, based on inclusion criteria, in the selection of participants for Study 2. Inclusion criteria were:

Registered Nurses (RN) licensed in the U.S., currently employed at least 20 hours per week in a critical care area of an acute care facility, and hold a position as a staff nurse that allows 50% (or more) of the time to be spent in direct-patient care. Exclusion criteria include: less than one year experience as an RN; non-English-speaking, reading, or writing; a position in management or education requiring less than 50% time spent in direct-patient care responsibilities; no or limited access to a computer and reliable internet.

Human subjects. Participants for study two did not sign a formal consent form. Respondents to the questionnaire link were provided information in a cover letter on the study's purpose, inclusion and exclusion criteria, confidentiality, publication of aggregate results, researcher contact numbers, IRB approval, risks and benefits, option to not participate, and ability to discontinue the study at any time (Appendix G). Respondents indicated that consent was implied by continuing with and submitting the questionnaire.

Instrument

The questionnaire was developed and formatted using the guide from Francis et al. (2004a) and consisted of eight demographic/personal attribute questions and 55 general intention, direct, and indirect items relating to the TPB constructs (Appendix G). The TPB variable items were categorized as follows: (a) three general intention, (b) 12 direct measures of ATT, SN, and PBC, and (c) 40 indirect (unpaired) measures of ATT, SN and PBC (Figure 6). Indirect questions were later paired (combined for a total of 20 items) to yield 35 items for factor analysis. Each of the measures was tailored to the population of critical care nurses speaking up in the next three months when patients are at risk for harm.

Three general intention items: (a) “I expect....” (b) “I want…..” and (c) “I intend to speak up….” are recommended by Francis et al. (2004a) as a proximal measure of behavior. These three items are most often used in TPB research and together demonstrate very considerable response consistency (Armitage & Conner, 2001; Francis et al., 2004a). Francis et al. (2004a) discusses the option of using an intention simulation method (i.e. development of scenarios to simulate “real situations”) for research involving healthcare professionals. However, researchers are warned that this is a time-consuming process and can potentially be misleading (Francis et al., 2004a; Jones, Gerrity & Earp, 1990). Therefore, the three general intention items option was utilized in the factor analysis for this study.

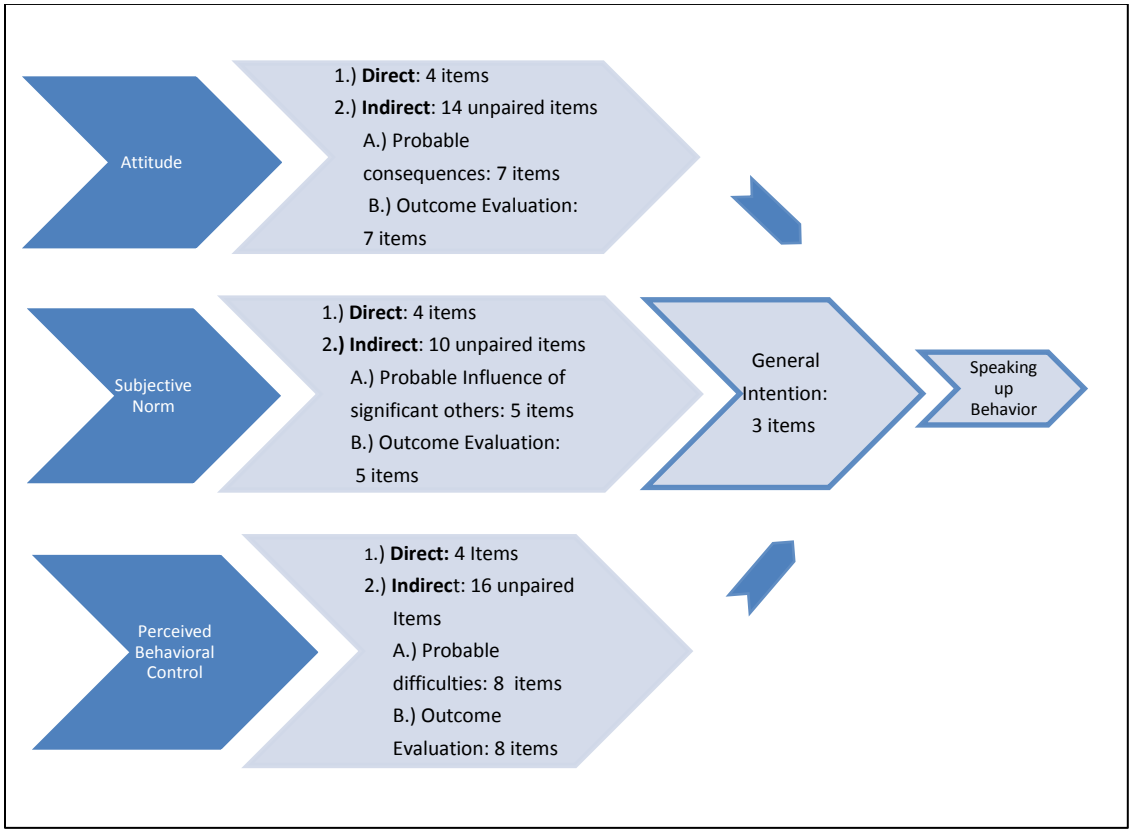


Figure 6. CCNSU Study Two: Direct and Indirect Items for TPB Variables

Direct measures of the ATT, SN, and PBC variables were formatted as broad questions with standardized wording applicable to a wide range of behaviors and groups (Francis et al., 2004a). There were 4 direct item questions for each of the three main TPB constructs: ATT (overall evaluation of the behavior–beneficial, good, right, and pleasant [and polar opposites, e.g. unpleasant]; SN (overall social pressure to perform the behavior–others expect, want, think I should speak up, and social pressure to speak up [agree or disagree]; and PBC (confidence, ease, feelings of being in control, and having authority to speak up [agree or disagree]). Each of these items was scaled 1-7 with the higher number demonstrating increased intention to speak up (three items were reversed coded).

Contextual indirect measures of ATT, SN and PBC were added to the TPB questionnaire according to guidelines (Ajzen, 2015a; Francis et al., 2004a). These items were based on results from the thematic analysis and consensus of behavioral beliefs from CCNSU study one. Indirect items provide salient beliefs of the population being studied rather than input from the researcher who may not fully understand the relevant influencing factors (Ajzen, 1991). The ATT-indirect questions consisted of 14 paired items: (a) seven questions identified probable consequences of speaking up, and (b) seven complementary items related to whether the outcome is desirable. The SN-indirect questions consisted of 10 paired items: (a) five questions identified the influence of others in speaking up, and (b) five complementary outcome items related to what others do, or what others think the nurse should do. The PBC-indirect questions consisted of 16 paired items: (a) eight questions identified the probability that situations made it difficult

to speak up, and (b) eight complementary items for outcome evaluation, e.g. how likely speaking up will occur in light of identified disadvantages.

Francis, Honston, Eccles, Grimshaw, & Kaner (2004b) recommend bipolar coding for complementary indirect items related to ATT, SN, and PBC. However, questionnaire items were written in the unipolar format (1-7) and then complementary indirect items were re-coded in SPSS to the bipolar scale -3 to +3 following data collection. According to Pett et al. (2003), previous research suggests that a positive integer coding system (e.g. 1-7) provides truer results on questionnaires because some respondents prefer these types of scales to bipolar negative integer scales. Consequently, using a bipolar scale on a questionnaire could result in a false higher positive mean. Therefore, complementary indirect question items were re-coded to meet guidelines (Francis et al., 2004b) as follows: (a) ATT indirect–seven unipolar items remained coded 1-7, and seven complementary bipolar items recoded to -3 to +3; SN indirect–five unipolar items recoded to -3 to +3 and five paired complementary unipolar items remained coded 1-7 (different from ATT and PBC coding); and PBC indirect–eight unipolar items remained coded 1-7 and eight complementary unipolar items recoded to -3 to +3. Differences in SN coding were recommended by Francis et al. (2004b) because some influential social forces may be directionally negative (e.g. peers may not approve of a co-worker speaking up) so the influence would be negative. Recoding from unipolar (1-7) to bipolar (-3 to +3) in SPSS occurred as follows: 1 = -3, 2 = -2, 3 = -1, 4 = 0, 5 = +1, 6 = +2, and 7 = +3.

Next, the indirect paired item sets for each of the variables (ATT, SN, and PBC), were multiplied (Francis et al., 2004b) which resulted in 20 indirect items (see

Figure 7) for a total of 35 items (three general intention, 12 direct and 20 indirect items) for factor analysis. The combining of indirect items yielded new measures for ATT–indirect (7 items), SN–indirect (5 items), and PBC–indirect (8 items) with scores ranging from -21 to +21 (higher positive scores indicate an increased likelihood of speaking up). The following are examples of how the paired indirect items might be scored and interpreted: (a) ATT–If the nurse perceives that speaking up is extremely likely to provide timely intervention (unipolar item relating to likelihood (e.g. +7), and timely intervention is extremely desirable (bipolar item relating to outcome, e.g. score = +3), the multiplied score is + 21 (a very strong positive attitude towards speaking up); (b) SN–If the nurse believes co-workers do not approve of a nurse speaking up (-3), and doing what co-workers want is very important +7, the multiplied score is -21 and the nurse is very much less likely to speak up; and (c) PBC–If the nurse believes there is very likely an absence of a culture of safety +7, and the nurse believes speaking up is still very likely to occur +3, the multiplied score is +21, i.e. the nurse is very likely to believe in control of the situation and have the self-confidence to speak up despite barriers.

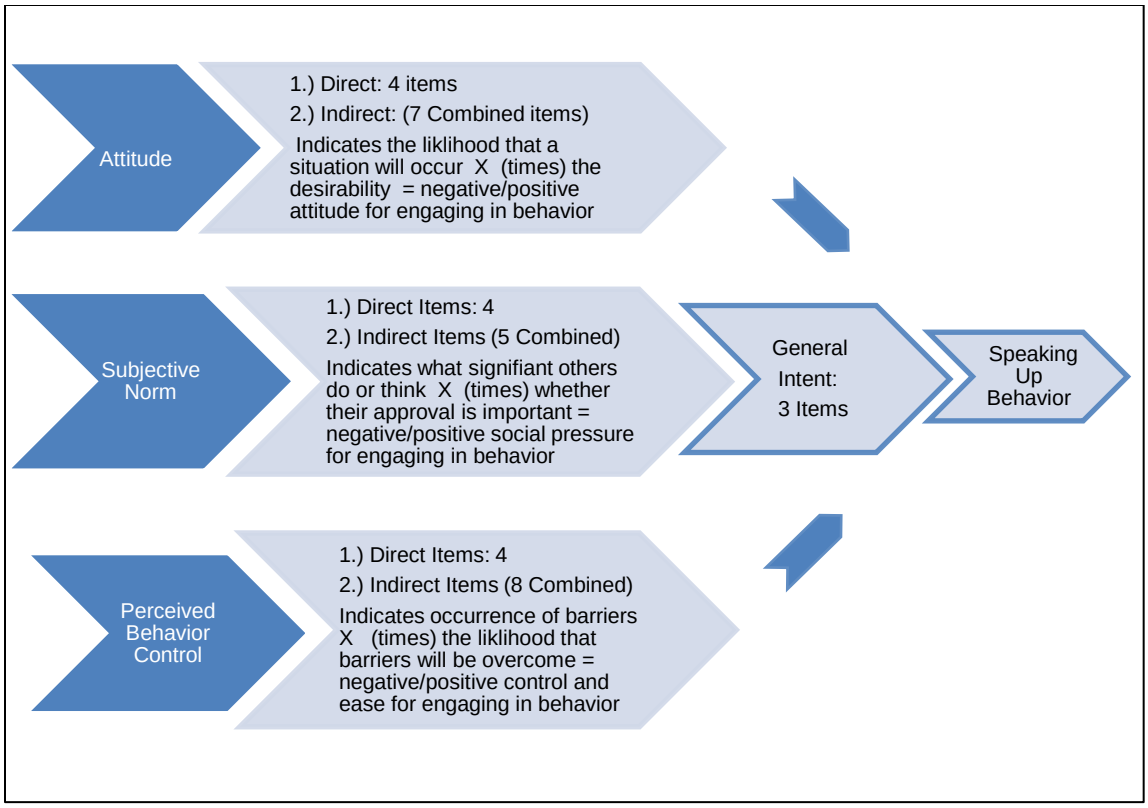


Figure 7. CCNSU Study Two: Direct Items and Combined Indirect Items for TPB Variables

Content validity. The study two questionnaire items were developed using the Ajzen (2015a) and Francis et al. (2004a) guidelines for TPB questionnaires. A Flesch-Kincaid readability test (Kincaid, Fishburne, Roger, & Chissom, 1975) indicated that the readability of the questionnaire was 9.9, slightly higher than most standard documents (Pett et al., 2003). However, the sample population had completed education beyond high school level. An expert panel reviewed a draft of questions created by the principal investigator and evaluated it for the following: completion time, face validity (readability, overall appearance, clarity and understanding of questions) and content validity (item construction, clarity, and relevance of the item within the constructs of the TPB). The expert panel consisted of five Master's prepared RNs with at least five years

of critical care experience, (two RNs currently practicing as staff nurses in intensive care units), two doctoral prepared nurse researchers, and a doctoral statistician with experience in measurement techniques and factor analysis research using the TPB (recommended by Davis, 1992). The principal investigator has 20+ years of experience in critical care as a staff nurse, educator, and clinical manager.

Content validity for the creation of a new instrument was improved by including qualitative inquiry data from CCNSU study one (Armitage & Conner, 2001; Garon, 2012; Lyndon et al., 2012; Polit & Beck, 2012). In addition, a content validity index (CVI) was conducted among six expert panel members before the questionnaire was finalized. This index is based on a 4-point scale (Polit and Beck, 2012): 1 = not relevant, 2 = somewhat relevant, 3 = quite relevant, 4 = highly relevant. An item CVI (I-CVI) was computed as the number of six RN expert panel members giving scores of 3 or 4 (dichotomizing the ordinal scale into relevant and not relevant) divided by the total number of experts (Polit & Beck, 2006). One of the items ranked 0.83 and the remaining items ranked 1.00. The scale-CVI (S-CVI) averages the I-CVIs and should be .90 as the standard for excellent content validity (Polit & Beck, 2012). The CVI for the CCNSU study two was .97. Average time for reported questionnaire completion was 16 minutes.

Content validity was further enhanced by following published guidelines for creating TPB questionnaires (Ajzen, 2015a; Francis et al., 2004a). This theory has been used in numerous studies as a conceptual framework for predicting intentions and behavior, explaining 20% of the variance in prospective measures of actual behavior (i.e. a medium to large effect size) (Armitage & Conner, 2001). Furthermore, it has been used to predict behaviors of nurses (Côté, Gagnon, Houme, Abdeljelil, & Gagnon, 2013; Ko

et al., 2011) and to develop a new instrument for an antenatal care scale (Cronbach's alpha 0.89 to 0.94) (Taşçı-Duran & Ozkahraman, 2013).

Construct validity. Pilot work and exploratory factor analyses (EFA) conducted in this study helped define the structure for a set of items related to the constructs of ATT, SN, PBC, and BI to speak-up about patient safety. Construct validity can be further enhanced with a future study to determine confirmatory factor analysis that will assess whether items measuring a given construct can be considered indicators of the same latent variable (Ajzen, 2015b; Pett et al., 2003).

Data Collection

Management. The questionnaire was entered into Qualtrics (2015), an online questionnaire platform, and a link to the questionnaire was made available on the AACN *Critical Care eNewsline* (Appendix F) and AACN's Facebook website from October 16, 2014 to November 20, 2014. This link was also included in emails to AACN chapter officers from November 25, 2014 to December 28, 2014. Participation was encouraged through four weekly postings on the *Critical Care eNewsline* and emails to chapter officers were repeated after one week. The cover letter for the online questionnaire announced a drawing for one of three electronic tablets for participants. Following the closing of the questionnaire, tablets were mailed to participants who were chosen at random. Data was downloaded to IBM SPSS Statistics for Windows, Version 20.0 (2011) and maintained on a password-protected secure laptop. Data files were shared through secured computers with the study committee chair and statistician.

Respondents. There were a total of 476 respondents to the online Qualtrics questionnaire, but 47 declined participation and 91 entries had from between 5% to 75%

missing data for the TPB variables. Raw data was examined individually and cases were removed from analysis for greater than 5% missing data (primarily from failure to complete the questionnaire), leaving a final total of 338 participants. Twenty-eight of the 338 participants had one to three missing responses for the indirect TPB variable items, and mean substitution was used to complete the data for these paired variables so they could be included (Polit & Beck, 2008). Missing data of less than 5% for demographic, 12 direct TPB variables, and 3 general intention TPB variables was not substituted. There were 308 respondents for the final factor analysis due to listwise deletion for fewer than 5% missing data related to the 12 direct and three general intention TPB variables.

Data Analysis

The main research question focused on determining the reduced set of factors necessary to explain relationships among the TPB constructs (ATT, SN, PBC and BI) regarding critical care nurses' intention to speak up when patients are at risk for harm. Data from the 35 variables of the CCNSU study two was entered into SPSS. A correlation matrix determined sufficient correlations between variables prior to running exploratory factor analysis. Bartlett's Test of Sphericity tested the null hypothesis that the correlation matrix was an identity matrix (ie. no relationships between items) and a large Bartlett's test indicated a greater likelihood that the null hypothesis would be rejected. A Kaiser-Meyer-Olkin Test (KMO) was a second indicator of the strength of the relationships among items (ranging from 0 to 1), with smaller values indicating factor analysis was not wise (.60 is mediocre, .70 is middling, .80 is meritorious, and .90 is marvelous [Pett et al., 2003]). A KMO should be greater than .60 for factor analysis (Pett et al., 2003). Once data was determined suitable for factor analysis, principal component

analysis (PCA) was used to obtain a succinct set of components that extracted variance in descending order to summarize a large number of variables (Tabachnick & Fidell, 2001). Eigenvalues greater than 1 were used to establish the initial factors along with a scree plot to determine the break point for eigenvalues. Factors were rotated using direct oblimin (an oblique rotation method for correlated items in social sciences). A factor pattern matrix was used to determine the extent that a simple structure had been achieved in an oblique rotation (Pett et al., 2003). Factor loadings with less than .30 were dropped from a factor. Items with high loadings on several factors were considered for their conceptual relationships to the factor before they were assigned to one factor and dropped from other factors. Internal consistency and reliability were evaluated with Cronbach's coefficient alpha correlations. Items in a factor were dropped if Cronbach's coefficient alphas were higher when a particular item was dropped. Item means, standard deviations, item to total correlations, total variance explained, and Cronbach coefficient alphas for the final 17-item scale were calculated. Lastly, factors were interpreted and named according to the dimension that the factor appeared to represent (Pett et al., 2003).

Differences in professional attributes and demographics between the CCSU Study 2 sample population and the general population of nurses were examined to ensure generalizability. Statistics were compiled through the AACN (2014) including age categories, gender, education, and ethnicity/race. Years worked as an RN, type of facility employed, and type of critical care unit to which the nurse is assigned were not provided for AACN members, but were listed for CCNSU study two respondents. Frequencies, percentages, Chi square, and significance at the $p < .05$ level were determined based on values provided by the AACN and CCSU study two data.

Results

Demographics

A demographic profile of 338 respondents was compared to demographics reported by the AACN (2014) (see Table 10). There were no significant differences ($p < .05$) between the study sample and AACN members for the demographic categories of age, gender, education, and ethnicity/race. The study respondents ranged in age from 22 to 67 ($\bar{x} = 42.1$ years), with the highest percentage (26.1%) in the 31-40 year old category. Respondents were predominantly female (89.6 %), Caucasian (87.8%) and had a bachelor's degree or higher (74.9 %). A majority of study respondents had 1-10 years of experience as an RN (52%) (see Table 11) with nearly one-third (31.8%) having five years or less. The majority (58.6%) was employed in a non-profit community hospital, and most (64.8%) were assigned to a general ICU (medical, surgical, or both types) rather than a specialized ICU (e.g. Neonatal ICU).

Table 10. Demographic Characteristics: CCNSU Study Two Sample and AACN Members

	Speak Up Study Sample		AACN Members (2014)[b]		Chi Square[c]	P Value
Variable	*N* = 338	%	*N* = 100,000+	%		
Age (years)[a]	42.1 ± 11.5			44.6		
Age by Category					3.99	*p* = 0.40 NS
0-30	69	21.5	17,000	17		
31-40	84	26.1	26,000	26		
41-50	76	23.7	22,000	22		
51-60	78	24.3	24,000	24		
61+	14	4.4	11,000	11		
Gender					0.76	*p* = 0.38 NS
Male	33	9.8	14,000	14		
Female	303	89.6	86,000	86		
Education					2.29	*p* = 0.68 NS
Diploma	19	5.6	3,000	3		
Associate's	66	19.5	19,000	19		
Bachelor's	190	56.2	58,000	58		
Master's	54	16	19,000	19		
Doctorate	9	2.7	1,000	1		
Race/Ethnicity					7.865	*p* = 0.09 NS
Asian	11	3.3	12,000	12		
Black/African American	8	2.3	5,000	5		
Caucasian/White not Hispanic	297	87.8	75,000	75		
Hispanic/Latino	12	3.6	4,000	4		
Other (includes American Indian, Alaskan or Native, Pacific Islander)	10	3.0	4,000	4		

Totals in each category may not be the same due to missing data.

a. Mean ± SD

b. American Association of Critical Care Nurses (2014)

c. Chi Square comparisons based on percentages in each group (Study sample & AACN members)

Table 11. Professional Attributes: CCNSU Study Two Respondents

Variable	*N* = 338	%
Years as an RN[a]	14.2 ± 11.7	
1-10	144	52.0 [b]
11-20	55	19.8
21-30	41	14.8
31-40	30	10.9
40+	7	2.5
Facility Employed		
Community (non-profit)	198	58.6
Private (for profit)	42	12.4
Academic Teaching	83	24.6
Government Hospital	8	2.4
Other	7	2.1
Unit Type		
Progressive Care (Telemetry)	29	8.6
Intensive Care Unit (ICU)	106	31.5
Coronary Care Unit (CCU)	16	4.7
Surgical ICU	40	11.9
Medical ICU (ICU)	32	9.5
Medical-Surgical ICU	40	11.9
Pediatric/Neonatal ICU	14	4.1
Emergency Department	23	6.8
Other	37	11

Totals in each category may not be the same in each category due to missing data.

a. Mean ± SD

b. 31.8% respondents had 1-5 years of experience

Initial Factor Analysis

The goal was to identify interrelationships among items in a questionnaire based on the TPB and reduce the number of variables into components that have common characteristics (Pett et al., 2003). Factor analysis helps guide theory refinement, assists with construct validity of the measures, and tests the measurement integrity of a scale (Henson & Roberts, 2006). The final goal was to simplify a questionnaire into an instrument for future research about speaking up behaviors of critical care nurses when patients are at risk for harm.

The 35 variables used in initial factor analysis are described in Table 12 and include mean, standard deviation, and scale ranges. Means for the three general intention items ranged from 6.56 to 6.70 (scale 1-7), ATT-direct items ranged from 3.25 to 6.92 (scale 1-7), SN-direct items ranged from 3.67 to 6.22 (scale 1-7), and PBC-direct ranged from 4.77 to 6.31 (scale 1-7). Indirect combined items for ATT, SN and PBC had a wider range of possible scores (scale -21 to +21): ATT (range -8.52 to 19.95), SN (range -70 to 14.54), and PBC (range -1.22 to 2.31). Examination of the correlation matrix (Appendix H) indicated that 25 (71.4 %) of the 35 variables had at least three correlations with other variables greater than .30; 14 of those variables had eight or more shared correlations, and 11 variables had at least 3-7 correlations $\geq .30$. However, 10 variables had fewer than three correlations with other variables that were $\geq .30$, which could limit a parsimonious number of factors (Pett et al., 2003, p. 72). No inter-item correlations exceeded $r = .71$, thus indicating no problems with multicollinearity (Pett et al., 2003.

Table 12. Descriptive Characteristics for CCNSU Study Two (Indirect COMB)

	Mean	Std. Dev.	Scale Range	Analysis N
I expect to speak-up.	6.56	.748	1-7	308
I want to speak-up.	6.70	.906	1-7	308
I intend to speak-up	6.59	.835	1-7	308
ATT-DIR-Harmful or beneficial	6.69	.903	1-7	308
ATT-DIR-Unpleasant or pleasant	3.25	1.508	1-7	308
ATT-DIR-Wrong or right	6.92	.352	1-7	308
ATT-DIR-Bad or good practice	6.91	.371	1-7	308
ATT-IND-COMB-1-Safeguard my patient	19.03	3.520	-21-+21	308
ATT-IND-COMB-2-Duty to Advocate	19.95	2.906	-21-+21	308
ATT-IND-COMB-3-Timely Intervention	18.61	3.567	-21-+21	308
ATT-IND-COMB-4-Promote healthy work environment	16.96	5.294	-21-+21	308
ATT-IND-COMB-5-Protecting myself legally	17.46	4.964	-21-+21	308
ATT-IND-COMB-6-Promote safety policy awareness	16.52	5.504	-21-+21	308
ATT-IND-COMB-7-Cause conflicts with patients/family/staff	-8.52	8.479	-21-+21	308
SN-DIR-1-Most people think I should NOT speak up.	5.68	1.681	1-7	308
SN-DIR-2-It is expected of me to speak up.	6.22	1.141	1-7	308
SN-DIR-3-I feel under social pressure to speak up.	3.67	1.929	1-7	308
SN-DIR-4-People important WANT me to speak up.	6.02	1.299	1-7	308
SN-IND-COMB-1-Team member's social pressure	7.93	7.058	-21-+21	308
SN-IND-COMB-2-Patient/family social pressure	12.47	7.490	-21-+21	308
SN-IND- COMB-3-Nursing/regulatory organization social pressure	14.54	6.748	-21-+21	308
SN-IND-COMB-4-Hospital Safety Committee social pressure	13.13	7.991	-21-+21	308
SN-IND-COMB-5-Inexperienced RN's social pressure	-.70	6.184	-21-+21	308
PBC-DIR-1-I am confident I could speak up if I wanted.	6.31	1.055	1-7	308
PBC-DIR-2-It is difficult for me to speak up.	4.77	2.027	1-7	308
PBC-DIR-3-Decision to speak up is beyond my control.	5.64	1.576	1-7	308
PBC-DIR-4-Whether I speak up is entirely up to me.	5.90	1.686	1-7	308
PBC-IND-COMB-1-No management support	2.31	7.191	-21-+21	308
PBC-IND-COMB-2-No team member support	2.07	5.922	-21-+21	308
PBC-IND-COMB-3-No open communication	1.14	7.255	-21-+21	308
PBC-IND-COMB4-No culture of safety	1.65	6.623	-21-+21	308
PBC-IND-COMB- 5-I lack good verbal communication skills	-.03	5.223	-21-+21	308
PBC-IND-COMB-6-Physicians are not supportive	.99	8.251	-21-+21	308
PBC-IND-COMB7-Policies/procedures don't support speaking up	.18	5.835	-21-+21	308
PBC-IND-Combined-8-Worry about confrontation if I speak up	-1.22	8.257	-21-+21	308

The strength of the linear associations among the 35 variables was evaluated using Bartlett's test of sphericity and the Kaiser-Meyer-Olim (KMO) measure of sampling adequacy. Bartlett's test of sphericity was significant ($\chi^2 = 4322.440$, $p = .000$) indicating that the correlation matrix (Appendix H) was not an identity matrix and correlations were sufficiently large for Principle Components Analysis (PCA). The KMO statistic was .860 (considered "meritorious" by Kaiser's [1974] criteria) that indicated there is sufficient covariance in the scale items to warrant utilizing factor analyses (Pett et al., 2003).

PCA with direct oblimin rotation was used in the analysis. PCA summarizes the relationships between large numbers of variables with a smaller number of components (Tabachnick & Fidel, 2001) and extracts variance in descending order. Each extracted component accounts for the largest amount of leftover variance after removing the influence of previous components; so the first extracted component accounts for the most variance and the last component accounts for the least variance (Pett et al., 2003). Henson and Roberts (2006) found in a study of 60 factor analyses, that the average explained variance from extracted factors was 52.03%. Pett et al. (2003) argues that research in social sciences can account for less explained variance (50-60%) than in natural science (75-80%). Direct oblimin is an oblique rotation that is appropriate for psychological constructs due to correlations within subcategories of items (Pett et al., 2003). The study items were assumed to be related since they were developed based on the TPB constructs (general intention, ATT, SN, and PBC) and BI (Ajzen, 1991, 2015c). Additionally, research on nurses indicates there are relationships between beliefs, values, attitudes, influence of others, self-efficacy, control of environmental, and the intention to

speak up (Garon, 2012; Lyndon et al., 2012; Premeaux & Bedeian, 2003; Wakefield et al., 2010).

An initial factor analysis was computed to obtain eigenvalues for each component in the data (loadings of less than .32 were suppressed). Ten components were extracted with eigenvalues over Kaiser's criterion of 1 (Field, 2009), and in combination explained 65.27% of the variance (Appendix I – Total Variance Explained, Initial 10 Factor Solution). The Scree Plot (Appendix J) was slightly ambiguous and showed inflexions that would justify retaining four factors. Since explained variance was less than 5% for components five and six (4.3% and 3.7% respectively), and the fifth factor included only two items, they were excluded. The initial four extracted factors accounted for 44.57% of the explained variance, which is near the 50% explained variance found among social sciences (Pett et al., 2003). The factor structure matrix (Appendix K) and pattern matrix (Appendix L) preferred for oblique rotation (Pett et al., 2003) were evaluated to determine the extent to which a simple structure had been achieved. There were at least three items that loaded on each of the first four components.

Reliability for Questionnaire Items

The initial questionnaire consisted of 55 items (3 general intention, 12 direct, 40 indirect), but once the indirect paired items were multiplied, the final number for factor analysis was 35 (general intention–3, ATT-direct–4, ATT-indirect–7, SN-direct–4, SN-indirect–5, PBC-direct–4, PBC-indirect–8). The overall reliability of this scale before factor analysis was 0.871 and corrected item-total correlations ranged from -0.044 to 0.618 (Appendix M).

Reliability for initial factor analysis. Standardized Cronbach's alphas for the initial factor analysis (four factors identified using PCA with Direct Oblimin–20 items) was 0.874. Cronbach's alphas were calculated for each of the 4 factors generated. The reliability scores for the first factor (5 items related to the combined ATT-indirect variables) was 0.839 (standardized alpha), which is good (Field, 2009) and no item scored more than .822 if deleted. Inter-item correlations ranged 0.402-0.639. The second factor originally contained nine items, with a reliability of 0.906. However, if one item (PBC-direct–1: "I am confident that I could speak up if I wanted to") was deleted, reliability would be improved to 0.912. The new second factor reliability resulted in a Cronbach's alpha of 0.912; but it would improve to 0.916 by dropping PBC-IND, Combined–5: "I lack good communication skills", leaving only seven items. Inter-item correlations for the second factor ranged 0.509-0.721. The third factor initially consisted of five items, but two items loaded higher on factor one; therefore, the remaining three-item reliability was 0.742. If the ATT-indirect combined item "safeguard my patient" was deleted, the resultant reliability for two items was higher–0.810 and inter-item correlation for the two items was 0.681. The fourth factor consisted of the three general intention items: a) "I want to speak up"; b) "I intend to speak up", and c) "I expect to speak up". Factor four reliability was 0.750 (with no item deleted resulting in more than 0.729) and inter-item correlations ranged 0.347-0.576.

Final Four Factor PCA

A final PCA analysis (based on the original 10 factors) consisted of four factors and 17 items (three items were deleted from the 20 items in the original four factor solution due to improved Cronbach's alphas). Examination of the correlation matrix

indicated that 16 (94.1%) of the 17 variables had at least four shared correlations ≥ 0.3 with other variables. No inter-item correlation exceeded $r = .71$. The KMO was 0.880 and the Bartlett's Test of Sphericity was significant ($\chi^2 = 2644.825$, $p = .000$). The scree plot showed an inflexion after the fourth factor. The total variance explained (Appendix N) was 68.799% with four factors, each with Eigenvalues ≥ 1.000**.** The first factor accounted for 31.551 % of the variance and each of the remaining three factors accounted for ≥ 5% of the overall variance (second factor –21.652%, third factor–9.123%, and fourth factor–6.474%). The final CCNSU study two scale would require un-combining indirect PBC and ATT variables and would result in 29 items (compared to 55 items in the original scale) for the CCNSU scale: (a) 14 PBC-indirect items, (b) 10 ATT-indirect items, (c) three general intention items, and two ATT-direct items.

Reliability. Cronbach's alpha for the final four factor (17-item) scale was 0.859 and explained variance was 68.79% (Appendix N). Reliability for each of the four factors was: (a) factor one (seven items)–0.916, (b) factor two (five items)–0.839; (c) factor three (three items)–0.750; and factor four (two items)–0.810. Henson and Roberts (2006) recommends that there should be at least two variables to define a factor. While Cronbach's alpha of 0.7 to 0.8 is generally acceptable, reliability for ability tests is suitable at 0.7 and psychological constructs below 0.6 can be realistically expected (Field, 2009).

Factor one: Contextual support. Factor one includes seven items from the PBC-indirect combined items: (a) no management support; (b) no team member support, (c) no open communication; (d) no culture of safety, (e) physicians are not supportive, (f) policies and procedures don't support speaking up, and (g) worry about confrontation . It

identifies factors or circumstances that make it difficult for the nurse to speak up combined with the likelihood of speaking up if perceived barriers exist. The inter-item correlations ranged from 0.521 to 0.715, with only one other item correlating 0.714 with another item. The mean for these combined items was 1.13 (minimum -1.00, maximum + 2.41 [scale -21 to +21 where 0 indicates unsure]) indicating nurses were unsure about speaking up in these situations. Uncombined scores revealed (a) the mean for belief in the likelihood of identified barriers was 3.1 (scale 1-7) indicating nurses were slightly unlikely to believe the identified barriers existed; and (b) the paired items likelihood of speaking up if the identified barriers existed was 0.677 (scale -3 to +3), indicating that nurses were unsure if they would speak up where barriers existed. This factor accounted for 31.55% of the variance and had an eigenvalue of 5.364. Cronbach's alpha coefficient for this factor was 0.916.

Factor two: Nursing professionalism. Factor two includes five items from the ATT-indirect combined items: (a) it's my duty to advocate, (b) provides timely intervention, (c) promotes healthy work environment, (d) promotes my legal protection, and (e) promotes safety policy awareness. The inter-item correlations ranged from .414 to .633. The mean for the combined items was 18.03 [(minimum 16.70, maximum 19.99) (scale -21 to +21)] indicating nurses believed speaking up was moderately good and it provided a moderately positive outcome. Uncombined scores revealed (a) the mean for likely consequences of speaking up was 6.38 (scale 1-7) indicating nurses were moderately likely to believe these consequences would occur; and (b) the paired item desirability of the outcome mean was 2.79 (scale -3 to +3), indicating nurses believed the identified consequences were moderate to extremely desirable. This factor accounted for

21.65% of the total variance and had an eigenvalue of 3.68. Cronbach's alpha coefficient was 0.839.

Factor three: Good intentions. This factor is comprised of the three general intention items: (a) I expect…. (b) I want…. and (c) I intend to speak up in the next three months when patients are at risk for harm. The inter-item correlations ranged from .350 to .577. The mean average for these three items was 6.618 (minimum 6.55, maximum 6.71, [scale 1-7]) indicating a high degree of intention to speak up. This factor accounted for 9.123% of the total variance and had an eigenvalue of 1.551. Cronbach's alpha coefficient was 0.750.

Factor four: Do the right thing. This factor is comprised of two ATT-direct items: (a) speaking up is the wrong/right thing to do and (b) speaking up is bad/good practice. The inter-item correlation was .691. The mean average for both items was 6.915, (minimum 6.91, maximum 6.92, scale 1-7) indicating that speaking up is moderately to extremely the right and good thing to do. This factor accounted for 6.473% of the total variance and had an eigenvalue of 1.101. Cronbach's alpha coefficient improved from 0.733 to 0.810 when a third item that loaded on this factor (Attitude-indirect, Combined-2, Duty to Advocate) was removed.

Discussion

Factor One: Contextual Support

A meta-analysis conducted by McEachen, Conner, Taylor, & Lawton (2011) indicated that the PBC-indirect variables correlate moderately well with behavior intention (mean correlations corrected for sampling and measurement error–0.44) and usually they have similar predictive ability to the ATT variable. The results of factor

analysis for the CCNSU study two indicated that contextual items were important considerations for the nurse in situations where speaking up was warranted for patient safety. The items for this factor related to environmental barriers for speaking up such as team members, management, physicians, policies, communication, culture of safety, and worries regarding confrontation. Nurses' control of situations when there is little support may make speaking up difficult. In this study, nurses were slightly unlikely to believe barriers existed; but if they did believe barriers existed, nurses were unsure that they would speak up.

Environmental barriers that include a lack of safety culture may not exist in all hospitals, which may explain why nurses were unsure that contextual barriers existed. Some nurses may work in Magnet status hospitals where attention to patient safety and collaborative relationships are prominent. The American Nurses Credentialing Center (ANCC, 2015) proposes that Magnet status promotes improved patient safety and quality care in an environment where nurses have higher retention rates, improved satisfaction, and increased collegial and collaborative relationships with other health care workers. The CCNSU study did not assess whether nurses worked in Magnet status hospitals. The majority worked in either community (58.6%) or private, not for profit (12.45%) hospitals, while 24.6% worked in academic teaching centers. In addition, the study respondents were associated with the AACN, and these nurses may reflect a group (members of a critical care professional organization) that is more confident and less likely to believe that situational barriers exist for them. This area has implications for future research that should include more diverse nurse population groups and healthcare facilities.

Nevertheless, lack of contextual support and some nurse's reluctance to voice patient safety concerns is supported in the literature. The traditional hierarchical nature of teams in the hospital and lack of teamwork training has contributed to conflicts in patient care situations (Anderson, LeFlore, & Anderson, 2013). Contextual factors such as rapport with team members, open communication, leadership (especially the manager), organizational and physician support, and worry about reprisals can influence whether providers speak up (Garon, 2012; Okuyama et al., 2014).

A white paper (Maxfield et al., 2010) reported that only 21% to 31% of critical care and perioperative nurses spoke up. A common reason for silence was perceived disrespect within the healthcare environment. Moreover, 58 % of critical care nurses said they had been in unsafe situations, or they were not able to get others to listen in spite of safety checklists. In a 2013 report on critical care nurse work environments (Ulrich et al., 2014), moral distress reflected an increase from 2008 to 2013 ($p < .05$), and 23.3% of the respondents said they experienced moral distress frequently. The Ulrich et al. (2014) study also found that ratings of respect had declined for RNs. Leap et al. (2012) maintain that disrespect "is a threat to patient safety because it inhibits collegiality and cooperation essential to team work, cuts off communication, undermines morale, and inhibits compliance with and implementation of new practices" (p. 845). In the CCNSU study two, nurses did indicate that if barriers to speaking up were perceived to exist, then they were not confident that they would speak up even when patients were at risk for harm. This is an unfortunate finding, but it corroborates results found in the literature.

Factor Two: Nursing Professionalism

The items for this factor relate to the ATT-indirect combined variables indicating that nurses were moderately likely to believe in benefits of speaking up (e.g. it fulfills nurses' duty to advocate, provides timely intervention, promotes healthy work environment, promotes my legal protection, and promotes safety policy awareness). Nurses also believed that the outcomes of speaking up were moderately desirable. This suggests that nurses believe it is part of their professional responsibility to engage in behaviors that protect patient safety. TPB research indicates that ATT measures are generally strong predictors of behavioral intent (McEachan, Conner, Taylor, & Lawton, 2011). Achieving a positive outcome by advocating for and protecting patients is goal for nurses. They are the ones most likely to notice adverse events (Brady et al., 2009) because nurses are the ones in close proximity to the patient. Espin et al. (2010) reported that ICU nurses felt obligated to bring an error to the attention of their work colleagues involved in the situation to enhance education and improve safety. Avoiding the outcome of potential significant patient harm was found to be related to labor and delivery nurses speaking up (Lyndon et al., 2012).

In the last 15 years, standards and guidelines have been developed to encourage nurses to increasingly speak up as part of their practice to protect patients. In 2003, the Institute of Medicine (IOM) requested a new safety structure to help prepare healthcare workers by establishing six core competencies to promote the delivery of patient-centered care through teamwork and collaboration (Sherwood & Zomorodi, 2014). Quality, Safety and Education for Nurses (QSEN) competencies established by the American Association of Colleges of Nursing, (2012) set the expectation that nurses speak up when

care is compromised. Educational programs such as TeamSTEPPS (Agency for Healthcare Research, n.d.) provide standardized communication guidelines on how to verbally identify safety issues in the clinical area. The national critical care nurses organization (AACN, 2005) set the *Standards for Establishing and Sustaining Healthy Work Environments* that promote: (a) improved skilled communication, (b) effective decision-making, (c) meaningful recognition as part of a healthy work environment, and (d) true collaboration. Buresh and Gordon (2000) maintain that nurses who speak according to their knowledge and authority as professionals, and encourage civility and respect will help promote a culture of safety culture.

Factor Three: Good Intentions

The three general intention variables indicated nurses wanted to speak up when patients were at risk for harm (combined $\bar{x} = 6.6,\ scale\ 1-7$). Intention is proposed to be the proximal antecedent of behavior (Ajzen, 1991). Generalized intention is measured by three statements (I want…. I expect…., and I intent to speak up) and is most commonly used in TBP questionnaires (Francis et al., 2004a) that explore behavioral intent of health care workers (Knowles et al., 2015; Werner, 2012). Moreover, these items demonstrate very considerable response consistency (Armitage & Conner, 2001; Francis et al., 2004a). Francis et al. (2004), however, suggest ideally developing 10 intention simulation scenarios that describe complex behaviors of health professionals to be used as measures of intention. The scenario simulation method can be time-consuming, potential misleading, and require additional analyses before it can be used as a valid tool (Jones, Gerrity, & Earp, 1990). Therefore, in the CCNSU study simulation scenarios items were not used. As a result, the decision to use the three general intention

items rather than contextual scenarios may help explain why nurses overall intention to speak up was high, yet identified barriers (PBC-indirect items) indicated nurses were equivocal about speaking up.

There may be other factors besides the ATT, SN, and PBC beliefs that influence whether a nurse expects, wants, or intends to speak up. Lyndon et al. (2012) reported in a study of labor and delivery staff (physicians and nurses) that the scores for the likelihood of speaking up were associated with bravery and assertiveness (Spearman's rho 0.30 and 0.35, $p < 0.05$). In addition, bravery and assertiveness scores were associated with age (Spearman's rho 0.36 and 0.26, $p < 0.05$) and years' experience (Spearman's rho 0.49 and 0.39, $p = 0.002$). Degrees of patient harm (e.g. life-threatening injuries versus relatively minor issues), age, and years' experience were not included in the TPB factors associated with speaking up. The majority of respondents in the CCNSU study two were over 40 years of age (52.8%), had more than 5 years' experience working as an RN (68.2%), and a bachelor's degree in nursing or higher (74.9%) which may have influenced an increased desire, expectation, and intention to speak up.

Factor Four: Do the Right Thing.

This factor consisted of two items related to ATT-direct variables: speaking up is the (a) wrong/right thing to do; and (b) bad/good practice. The high average mean (6.91) on a scale of 1-7 indicates a nurse believed that speaking up is not only the right thing to do, but it is good practice. TPB research indicates that ATT-direct measures are generally stronger predictors of behavioral intent than either SN or PBC (McEachan et al., 2011). This factor is differentiated from factor one by suggesting that nurses have a

moral imperative to speak up, beyond simply a professional responsibility to be a patient safety advocate.

Studies have found that nurses believe speaking up is the right thing to do, and that fact influences speaking up behavior (Garon, 2012). Protecting patients not only provides positive outcomes economically by decreasing costs and improving health of the population, but also morally by protecting and promoting human dignity (Kangasniemi, Baismoradi, Jasper, & Turunen, 2013; Sherwood, 2011). In a 2014 Gallup report (Gallup Poll Social Series, 2014), nurses were rated high or very high on honesty and ethics and they have been at the top of the list for the most ethical and honest of all professions since 1999. The most recent American Nurses Association Code of Ethics (ANA, 2015a) emphasizes patient safety and ethical behavior for all nurses. Provisions three, five and six of the code state: (a) the nurse promotes, advocates for, and protects the rights, health, and safety of the patient; (b) the nurse has a duty to act with integrity, according to professional and personal values; and (c) the nurse should do what is morally right or good, avoid harm, and respect persons. Furthermore, the code asserts that nurses must not condone through silence any errors committed and nurses should express concerns about patient harm directly to the person involved.

Implication for Practice and Research

Results from the quantitative study two indicate that critical care nurses want to do what is right for their patient by being an advocate and they see the benefits of speaking up to prevent patient harm. Additionally, nurses were not always clear about whether they had support for speaking up, but if barriers did exist then nurses were unsure if they would voice concerns. These results suggest that further research is

necessary to identify which barriers have the greatest influence on nurses remaining silent. Comparisons of nurses working in Magnet status hospitals with those in other hospitals may shed light on where barriers are most prevalent for nurses voicing concerns. Some previous studies have suggested that managers and hospital administration are most influential in promoting or preventing a culture where open communication is valued, but other factors may also play an influencing role (Okuyama et al., 2014). Self-confidence based on previous positive or negative experiences has also been shown to influence speaking up behavior (Lyndon et al., 2012; Law & Chan, 2015).

Future studies could focus on differences between nurses who avoid speaking up because of identified barriers and those who have internal resources which enable them to voice concerns regardless of lack of support and potential negative consequences. Nurses who are newer to critical care may be more reluctant to speak up, but it is unclear whether this might be due to age, experience, fear of consequences, or other factors. In the CCNSU study two, nearly one-third (31.8%) of participants had five years or less experience in critical care and a majority (52.0%) had 1- 10 years. A study evaluating differences in experience level and intention to speak up could suggest focused interventions for some groups of nurses.

The CCNSU scale could be used by a variety of nursing professionals to assess beliefs and intention to speak up to prevent patient harm in the critical care setting. Managers and/or educators could use it as part of a critical care orientation program to provide a baseline assessment and identify areas for instructional support. It could also be used as part of a quality improvement program in assessing a culture of safety before and after educational interventions, or following policy implementation. Managers could

work towards "modeling, inviting, and rewarding speaking up" (Detert & Edmondson, 2011, p. 484) and use results of a speaking up scale to determine if this intervention was effective. Researchers might also use the scale to evaluate other interventions recommended to improve assertive communication skills and patient safety (e,g. TeamSTEPPS Pocket Guide [Agency for Healthcare Research and Quality, 2013]).

The CCNSU scale could be adapted for use by other healthcare professionals employed in settings outside critical care. Even though high-risk acutely ill patients are at greater risk for medical error, speaking up may need to occur in settings such as clinics, ambulatory care centers, or nursing home facilities. Research could evaluate whether beliefs and attitudes towards speaking up are different in other settings or with other types of providers, e.g. Nurse Practitioners and RNs in a clinic setting, or Licensed Vocational Nurses in nursing homes.

Strengths and Limitations

Limitations

The CCNSU scale is a newly developed instrument and requires further psychometric testing. Measures of general intention to speak up were used rather than contextually-specific simulation scenarios recommended in the evaluation of intention for health care professionals (Francis et al., 2004a). There was no measure of actual behavior or past behavior that may reflect more accurate assessments of intention to speak up. Actual observed behavior may be a better method to account for variance since it more realistically portrays the complex clinical environment and may be a better predictor (Godin, Bélanger-Gravel, Eccles, & Grimshaw, 2008). In future studies that use the TPB for evaluating behavioral intention of healthcare providers, researchers may

want to develop clinical scenarios that reflect contextual issues involving potential patient harm (Francis et al., 2004a).

There were no SN beliefs that loaded on the final EFA for the CCNSU study two. Several of the PBC-indirect combined items that loaded on factor one included contextual barriers related to social support (e.g. management, team member, and physician support). Therefore, some social influences to speaking up may have been captured under factor one. The Cronbach's alpha for the five SN-indirect variables was only 0.669 which is less than 0.70 for a reliable scale (Field, 2009). There was a typographical error on the questionnaire for the SN scale items and this may have created inconsistencies in some responses. However, previous studies found that SN variables typically had a weaker influence on predictions for behavioral intent compared to ATT and PBC (Armitage & Conner, 2001; Wang et al., 2014). Hamilton and White (2008) proposed that when one self-identified with a behavior, then social factors might be less of an influence on behavioral performance.

Self-selection during convenience sampling may have resulted in respondent bias. There were 429 respondents who agreed to participate in CCSU study two, but 91 had between 5% and 75% missing data and were excluded from analysis, which may result in bias. There are inherent social values in speaking up to prevent harm that also may have introduced bias. Ethically, nurses are expected to advocate for patients, and respondents may have provided "acceptable" responses to questions. The sample was taken from nurses associated with the AACN rather than from a random sampling of critical care nurses. The demographics of the CCNSU study two revealed the majority of respondents were Caucasian, female, middle-aged, and had at least a bachelor's degree education

which may not be reflective of the entire critical care nurse population. This study was conducted around the time (October through December, 2014) that the first Ebola patients were being treated in the U.S., and there was increased media coverage on nurses speaking up to protect themselves and patients. Therefore, this study needs to be replicated in critical care nurse populations to ensure generalizability.

Strengths

This is the first scale developed for the population of critical care nurses based on the TPB, which has been used by numerous studies in the prediction of behavioral intent (Armitage & Conner, 2001). The design of the study utilized published guidelines for the development of TPB questionnaires and incorporated qualitative data in a quantitative questionnaire. Critical care nurse experts in the field reviewed questionnaire items and provided input into revisions. An EFA produced a four factor structure that accounted for a high percentage of variance–total of 68.79%. Other TPB studies have reported percentages of accounted variance ranging from 39% (Armitage & Conner, 2001) to 46% (Lapkin, Levett-Jones, & Gilligan, 2015). The CCNSU scale inter-item correlations ranged from .350 to .715, meeting the criteria of 0.30 - .80 (i.e. sufficiently correlated but not too highly correlated [Pett et al., 2003]). The Cronbach alpha reliability score for the CCNSU scale was good (0.859).

Summary

The TPB appears to be an appropriate theoretical model for evaluating factors associated with critical care nurses speaking up when patients are at risk for harm. The CCNSU study two scale is specific to critical care nurses in the context of speaking up when patients are at risk for harm. This scale must be tested for factor structure and

internal consistency prior to use in other contexts. Replication of this study through research with other nurses is recommended before it can be reliably used in critical care settings. Further studies utilizing the TPB could assist in examining speaking up to promote a safety culture, improve collaborative practice, and ultimately reduce patient harm in the health care setting.

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Chapter Four

Summary and Conclusion

This research project was developed to determine the most salient factors that influence critical care nurses to speak up when patients are at risk for harm. A review of the literature indicated that in spite of an emphasis on improving a culture of safety, nurses employed in critical care areas are still reluctant to voice concerns in the current healthcare environment. This study began with an assessment of contextual factors that could inhibit or facilitate speaking up to provide key information for understanding why many nurses remain silent. A mixed-methods design, using the exploratory sequential method, was used to obtain contextual qualitative survey data (study one) to inform a subsequent quantitative survey (study two) based on guidelines for TPB questionnaires (Ajzen, 2015; Francis, 2004).

In study one, a two-round Delphi method was employed to gather free-text contextual data from the experiences of critical care nurses. Questions focused on constructs from the TPB: (a) attitude (ATT)—perceived advantages and disadvantages to speaking up, (b) subjective norms (SN)—important people or groups of people who would approve or disapprove of this behavior, and (c) perceived behavioral control (PBC)—what respondents think would make it easier or more difficult to speak up when patients were at risk for harm. Following thematic content analysis of raw data in Delphi round one, themes evolved as follows: six advantages and six disadvantages to speaking up, six influential individuals/groups who would approve of speaking up and seven who

would disapprove, and seven factors that would make it easier and six that would make it harder to speak up. Results from the Delphi round one survey indicated that a majority of respondents believed maintaining patient safety was the number one priority advantage of speaking up to prevent patient harm (77%), and two major disadvantages included fear of immediate negative reaction from the confronted (57%) as well as fear of negative sequelae (50%). Respondents also identified professional team members as important individuals/groups who would approve of speaking up (53%). Finally, a majority (53%) indicated that fear of confrontation was an important barrier that made it harder to speak up when patients were at risk for harm.

In Delphi round two, respondents came to a consensus agreement on six ATT statements identifying advantages of speaking up: safe-guarding patients, advocating for my patient, providing timely intervention, promoting a healthy work environment, increasing likelihood of protecting myself legally, and increasing awareness of safety policies/procedures. Consensus agreement was found for one disadvantage of speaking up—it may cause conflicts between the patient or family and staff. There were four influential individuals/groups that achieved high consensus agreement regarding speaking up in the SN category: professional team members, patients and/or families, professional nursing or regulatory organizations, and hospital safety committee members. Respondents strongly agreed that inexperienced RNs are reluctant to support speaking up. Seven statements achieved high consensus related to PBC and factors that made it easier to speak up: management support, support from team members, open communication, a culture of safety, being skilled in verbal communication, having the support of physicians, and having policies and procedures that support patient safety. However, two

statements achieved high consensus for factors that made it more difficult to speak up– fear of confrontation and an unsupportive management. All of these facilitating and inhibiting factors are supported by the literature on nurses speaking up. Failure to achieve consensus for some statements may reflect situational differences or an individual participant's confidence in abilities to speak up (e.g. peer support, self-confidence).

Study two focused on the development and testing of a quantitative questionnaire that explored the TPB constructs according to guidelines by Ajzen (2015) and Francis et al. (2004). Statements from Delphi round one were used to develop 40 indirect questions (i.e. questions based on beliefs related to ATT, SN and PBC that were identified from the study one respondents). For example, Delphi round one respondents identified that an advantage of speaking up was timely intervention. In study two, the following question was developed– "If I speak up, I am (extremely unlikely, moderately unlikely, somewhat unlikely, unsure, slightly likely, moderately likely, extremely likely) to provide timely intervention." According to TPB questionnaire development guidelines (Ajzen, 2015; Francis et al., 2004) indirect questions are added to twelve direct questions about the ATT, SN, and PBC beliefs (four questions per belief construct). Direct measures are measures of the theory's constructs and are obtained by developing specifically framed questions that have been determined to be reliable and internally consistent (Ajzen, 2006). Finally, Ajzen (2006) recommends asking three general intention questions that are determined to be reliable and internally consistent and that reflect overall intention to engage in a behavior. The final quantitative questionnaire resulted in 55 items related to TPB constructs and eight demographic items. Analysis of the data required combining

the 40 paired indirect TPB items (multiplying associated pairs) that would result in a 20 indirect, 12 direct, and three general intention items for a total of 35 items (Francis et al., 2004). The 35 TPB items were subjected to principal component factor analysis which yielded a 17-item, four factor solution with Cronbach's alpha of 0.859 and total explained variance of 68.79%.

Most of the variance (31.55%) in factor analysis was explained by factor one that consisted of seven PBC-indirect items, and indicated nurses were slightly unsure that contextual barriers existed (e.g. management or team member support). However, if these contextual barriers did exist, then nurses were not confident that they would speak up. This may reflect that some nurses felt contextually supported and others did not; but if these barriers did exist, then nurses could not commit to speaking up when patients were at risk for harm. Factor two (21.65% of explained variance) consisted of five ATT-indirect items that identified moderately positive outcomes of speaking up (e.g. fulfilling a professional duty, providing timely intervention, promoting a healthy work environment). Factor three (9.12% of explained variance) consisted of all three general intention items and indicated nurses had a high degree of intention to speak up "in the next three months". Factor four (6.47% of explained variance) consisted of two ATT-direct items which revealed nurses strongly believed speaking up was the right and good thing to do. In summary, factor analysis revealed nurses believed in the benefits of speaking up and the obligation and intention as a nurse to speak up, but they were equivocal about whether contextual factors (situation/environment) supported this endeavor. Moreover, if contextual barriers did exist, nurses were not sure they could speak up when patients were at risk for harm.

Even though nurses were unsure about the existence of speaking up barriers in study two, the qualitative data from study one indicted that some nurses found it difficult to voice concerns about patients within their particular environment. The results of the qualitative and quantitative studies are similar to what is found in the literature on nurses speaking up (Eppich, 2015; Lancaster, Kolakowsky-Hayner, Kovacich, & Greer-Williams, 2015; Maxfield, Grenny, Lavandero, & Groah, 2010; Okuyama, Wagner, & Bijnen, 2014; Paradis et al., 2014). It is unclear whether interventions (e.g. checklists, communication scripts, inter-professional team building) aimed at reducing the culture of silence have made significant improvements. A recent study (Law & Chan, 2015) found that ongoing mentoring and positive experiences with speaking up may be just as important, or more important, than standardized training or safety checklists, particularly among those who are less experienced. In fact, caution was suggested that some safety interventions (e.g. guidelines, documentation) may just add another layer of frustration for healthcare workers. Ongoing assessment with a reliable and valid speaking up tool might provide data to determine problem areas and assess progress following interventions.

A goal of this study was to spotlight safety issues facing nurses while they care for critically ill patients, and to support efforts for nurses to be voices for those who cannot always advocate for themselves. The factor analysis of study two data provided a reliable, concise instrument to assess intention to speak up among critical care nurses in the U.S. It is the first theory-based tool developed to look specifically at nurses voicing concerns in the critical care area where patients are most vulnerable and at high risk for adverse events. Through psychometric analysis, the survey was determined to include

four factors that matched well with the TPB. This theory has been used in other studies on health professional's behavioral intention with good reliability and validity. A scale grounded in a theoretical framework facilitates comparison with similar constructs in other studies and psychometric evaluations of reliability and validity (Clark & Watson, 1995; Pollard, Johnston, & Dixon, 2007).

The survey can be used in the future to determine speaking up intent among nurses who are caring for the critically ill by evaluating beliefs related to ATT, SN, PBC, and general intention. Results from assessments can assist managers and educators to plan activities to improve assertive voicing and patient advocacy. Results can also be used to provide ongoing monitoring and early recognition of problems related to safety culture.

Future work in the area of nurses speaking up should include replication of this study to verify psychometric properties. Additional research should target a variety of clinical facilities in an effort to obtain a more representative sample of critical care nurses that includes more minority groups (e.g. African Americans) and nurses with a wider range of educational backgrounds (e.g. Associate Degrees in Nursing). Newer nurses with less experience may struggle with the hierarchical nature of healthcare (Law & Chan, 2015) and may be even more prone to silence. Therefore, studies targeting new nurses in critical care may reveal additional influencing factors for speaking up. According to Pamela Cipriano, President of the American Nurses Association, all nurses must be encouraged to follow the ANA ethical code, courageously speak out, and be advocates for patients (Cipriano, 2015).

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Appendix A. UT Tyler IRB Approval Letter

THE UNIVERSITY OF TEXAS AT TYLER
3900 University Boulevard • Tyler, TX 75799 • (903) 565-7132 • FAX (903) 565-5858

ASSOCIATE VICE PRESIDENT
FOR SPONSORED RESEARCH
AND DIRECTOR OF FEDERAL RELATIONS

The University of Texas at Tyler
Institutional Review Board

July 17, 2013

Dear Ms. Crumpler,

Your request to conduct the study: *Critical Care Nurses' Intention to Speak-up about Patient Safety Concerns: The Influence of Beliefs and Attitudes According to the Theory of Planned Behavior,* IRB #Sum2013-85 has been approved by The University of Texas at Tyler Institutional Review Board under expedited review. This approval includes a waiver of written informed consent, but please ensure participant knowledge of the following prior to study participation: this is a research study; participation is completely voluntary with no obligations to continue participating, with no adverse consequences for non-participation; and assurance of confidentiality of their data. In addition, please ensure that any research assistants are knowledgeable about research ethics and confidentiality, and any co-investigators have completed human protection training within the past three years, and have forwarded their certificates to the IRB office (G. Duke).

Please review the UT Tyler IRB Principal Investigator Responsibilities, and acknowledge your understanding of these responsibilities and the following through return of this email to the IRB Chair within one week after receipt of this approval letter:

- This approval is for one year, as of the date of the approval letter
- Request for Continuing Review must be completed for projects extending past one year
- Prompt reporting to the UT Tyler IRB of any proposed changes to this research activity
- **Prompt reporting to the UT Tyler IRB and academic department administration will be done of any unanticipated problems involving risks to subjects or others**
- Suspension or termination of approval may be done if there is evidence of any serious or continuing noncompliance with Federal Regulations or any aberrations in original proposal.
- Any change in proposal procedures must be promptly reported to the IRB prior to implementing any changes except when necessary to eliminate apparent immediate hazards to the subject.

Best of luck in your research, and do not hesitate to contact me if you need any further assistance.

Sincerely,

Dennis Combs

Dennis Combs, PhD
Designated Reviewer, UT Tyler IRB

Appendix B. AACN eNewsletter Announcement for Study One, Round One

AACN CriticalCare eNewsline
American Association of Critical-Care Nurses

NEWS - FDA announcements

AACN NEWS - Start planning for NTI2014

ACTION - Comment on performance measures for dysphagia

EVIDENCE - Administration of IV prostacyclins

October 17, 2013

Action | Evidence | News | Resources | AACN News | Bookstore | Jobs Top

Oct. 17: Progressive mobility webinar completes AACN's PAD miniseries

Join AACN Thursday, Oct. 17 at 10 a.m. PT for "**Executing Evidence-based Progressive Mobility in the ICU**," a free, live webinar presented by Cheryl Esbrook and Brenda Pun. The third and final program in a miniseries devoted to implementation of new pain, agitation and delirium (PAD) guidelines, this 30-minute webinar will discuss long-term outcomes of critical illness survivors, evidence supporting early progressive mobility in the ICU and common obstacles faced when implementing mobility programs. **Learn more and register**.

Apply by Oct. 18 for AACN scholarship to attend NIWI: March 30-April 1, 2014

The Nurse in Washington Internship (NIWI), held annually in Washington, D.C., teaches nurses how to advance healthcare agendas through the legislative process and influence policy at local and national levels. For the fifth consecutive year, AACN will award continuing professional development scholarships for AACN members who wish to attend the 2014 program, March 30 to April 1. You must **register separately** for NIWI. Access **AACN scholarship information**, and then apply for an **AACN scholarship to attend NIWI**, no later than Friday, Oct. 18.
Email **scholarships@aacn.org** with questions.

Comment by Oct. 21 on performance measures for dysphagia in ischemic stroke

The American Heart Association/American Stroke Association Stroke Performance Oversight Committee, Dallas, **invites public comments** on performance measures for dysphagia in patients with acute ischemic stroke. Deadline for comments is Oct. 21.

Apply for an AACN research grant online by Nov. 1.

AACN invites clinicians and researchers to apply for its grants, which range from $10,000 to $50,000. They fund priority projects that address gaps in clinical research and support the translation of these findings to bedside nurses. Applications must be submitted online by Friday, Nov. 1. **Learn more and get started**.

Hospitals asked to participate in survey on NG feeding tubes

The **New Opportunities for Verification of Enteral Tube Location (NOVEL) Project**, sponsored by the American Society for Parenteral and Enteral Nutrition, Silver Spring, Md., invites hospitals to participate in a one-day prevalence study of nasogastric (NG) feeding tubes in infants and children. The information will aid research designed to better understand the risks of NG tube placement verification. Email **Sharon Irving** if your hospital would like to participate.

Participate in survey on nurses' intent to speak up about patient safety concerns

Deborah Crumpler, a doctoral candidate at The University of Texas at Tyler, College of Nursing, invites critical care nurses to **participate in a survey** on the influence of attitudes and beliefs on nurses' intention to speak up about patient safety concerns. **Email Crumpler** with questions.

Appendix C

Study One, Round One Instructions and Internet Questionnaire

Critical Care Nurses' Intention to Speak Up about Patient Safety Concerns: The Influence of Beliefs and Attitudes According to the Theory of Planned Behavior
Study I, Round I

Thank you for your interest in this important study! As patient advocates, nurses can intervene in situations where patients may be at risk for harm. In critical care hospital areas, patients are at risk due to severity and extent of illness. Although safety improvements have been made since the Institute of Medicine's report *To Err is Human (1999)*, nurses still report barriers to speaking up in potentially unsafe patient situations. Attitudes and beliefs that influence speaking up behaviors among critical care nurses are relatively unexplored in research studies.

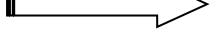
My name is Deborah Crumpler, and I have been a critical care nurse for 20 years. Currently I am a doctoral candidate in the College of Nursing at The University of Texas at Tyler. My dissertation study involves nurse's attitudes and beliefs related to speaking up to the parties involved about safety concerns to prevent patient harm. The study has been approved by the IRB at The University of Texas at Tyler (IRB #Sum2013-85), and is being supervised by Dr. Gloria Duke (gduke@uttyler.edu).

If you meet the following criteria, I would like you to participate in the study:
A.) Are you currently employed as a staff nurse (at least 20 hours per week) in a critical care area in the U.S. where your assignment requires direct patient care at least 50% of the time?
B.) Do you maintain a license as a Registered Nurse (RN) in the U.S.?
C.) Have you worked as an RN in a critical care area for at least one year?
D.) Do you have Internet access and a current email address that you can share with the researcher (confidentiality is guaranteed)?
E.) Are you willing to complete a confidential survey, communicate by email with the researcher for follow-up, and complete one additional survey?

If you meet the eligibility criteria, and you are interested in being a study participant, choose answer choice A - YES.
If you either do not meet eligibility criteria, or you do not want to participate, indicate choice B - NO

A. YES, I meet the study criteria and I am interested in participating. I will proceed to the instructions on the next page. Click on the arrow below.

B. NO, I either do not meet the criteria, or I am not interested in participating. I will stop and submit my answer now. Click on the arrow below.



The following information is for those answering YES, I meet the study criteria and I am interested in participating.

This study will involve completing two questionnaires over a period of approximately two months. These questionnaires elicit your ideas and seek agreement among other critical care nurses. Each questionnaire should take approximately 15 minutes to complete.

The **first questionnaire** (attached to this link) asks for general information about you, followed by open-ended questions related to factors which may influence your decision to speak up about patient safety concerns. You will also be asked your opinions about the relevance of two scenarios where nurses might speak up to prevent patient harm. An email address will be requested to contact you to clarify responses or obtain additional feedback. Your email address will not be shared with anyone else, will be kept secure and confidential, and will be used to send you a link for a second questionnaire.

The **second questionnaire** (accessed through the provided emailed link) will contain combined anonymous results from all the participants who answered the first questionnaire. You will be asked to rate the combined responses, indicate your agreement on factors that could influence speaking up behaviors, and decide whether examples accurately portray situations where speaking up by critical care nurses might prevent patient harm.

Consent to participate is voluntary, and you may decline to answer any questions, or withdraw at any time without undue consequences. Risks are considered to be minimal, other than the possibility that you may become slightly distressed when discussing patient safety issues. Submission of the on-line questionnaire(s) will be considered informed and voluntary consent to use and publish the combined results of the data. Your responses are confidential - no one will have access to an individual's raw data except for the researcher and the dissertation chair who will be assisting with the review and analysis.

Thank you for considering this opportunity to make a contribution to nursing knowledge. Your participation in the study will allow you to enter a drawing for a Kindle Fire after the second survey is complete. Please contact me for any questions or assistance. **PLEASE CONTINUE TO THE NEXT SECTION IF YOU ARE WILLING TO PARTICIPATE.**

Sincerely,

Deborah R. Crumpler, PhD Candidate, MSN, RN, CCRN
Doctoral Student at The University of Texas at Tyler
Phone: 903-240-1953
Email: dcrumpler@patriots.uttyler.edu

Gloria Duke, PhD, RN (Dissertation Chair)
College of Nursing at The University of Texas at Tyler
3900 University Blvd., Tyler, Texas 75799
Phone: 903-566-1981
Email: gduke@uttyler.edu

THE FOLLOWING QUESTIONS ENSURE INFORMED CONSENT AND REQUEST FURTHER INFORMATION ON PARTICIPANT CRITERIA.

1.) Are you willing and able to participate in this study?

- o Yes
- o No

2.) Have you been provided with sufficient information regarding the purpose of this study and your rights as a participant? (If no, please contact the researcher).

- o Yes
- o No

3.) Are you currently working as a staff nurse in a critical care area (specifically ICU, step-down unit, or intermediate care/progressive care with cardiac monitoring)?

- o Yes
- o No (specific other areas)_____

4.) In which of the following critical care areas do you spend the majority of your time providing patient care?

- o Intermediate or Progressive Care Unit (Telemetry Unit)
- o Intensive Care Unit (ICU)
- o Coronary Care Unit (CCU)
- o Surgical Intensive Care Unit (SICU)
- o Medical Intensive Care Unit (MICU)
- o Combined Medical and Surgical Intensive Care Unit
- o Pediatric ICU
- o Neonatal ICU
- o Other, e.g. Telehealth: (specify)_____

5.) What is your primary Job Description?

- Staff Nurse
- Charge Nurse
- Nurse Manager or Clinical Director
- Nurse Educator
- Other (specify)_____

6.) Do you work at least 20 hours/week where at least 50% of the time is spent providing direct patient care?

- Yes
- No

7.) Do you maintain a current license as a Registered Nurse (RN) in the United States?

- Yes
- No

8.) Have you worked as an RN in a critical care practice setting for at least one year?

- Yes
- No

9.) Have you been in situations where you considered speaking up about patient safety concerns?

- Yes
- No

10.) Are you able to access the Internet, provide an email address that will be kept confidential, and communicate by email with the researcher?

- Yes
- No

THE FOLLOWING ARE DEMOGRAPHIC AND PROFESSIONAL ATTRIBUTE QUESTIONS:

11.) How long (total number of years) have you worked as a Registered Nurse? _____

12.) Indicate the highest degree in nursing you have completed.

- Diploma
- Associate Degree
- Bachelors Degree
- Masters Degree
- Doctoral Degree

13.) Indicate your age in years. _____

14.) Indicate your gender.

- Male
- Female

15.) Indicate one of the following:

- Hispanic, Latino or Spanish
- Not Hispanic, Latino or Spanish

16.) Indicate one of the following:

- African American/Black
- American Indian or Alaska native
- Asian
- Native Hawaiian or Pacific Islander
- Caucasian/White
- Other_____
- Identified by two or more of the above categories

17.) In which of the following types of health care facilities are you employed?

- Community or Regional Hospital (not for profit)
- Private Hospital (for profit)
- Academic Teaching Center (affiliated with a medical school)
- Government Hospital, e.g. VA
- Other, e.g. clinic (specify) _____

The following open-ended questions relate to situations where nurses may consider speaking up (verbally addressing the parties involved) about patient safety concerns with the intent of preventing harm. AN EXAMPLE: The nurse may verbally interrupt a health care team member who does not adhere to posted precautions for a patient's isolation room.
LIST AS MANY THINGS THAT YOU THINK ARE IMPORTANT.

18.) ATTITUDE ABOUT WHETHER SPEAKING UP IS WORTHWHILE:
What do you believe are the advantages of nurses speaking up to involved parties at the time of a potential patient safety incident?

19.) ATTITUDE ABOUT WHETHER SPEAKING UP IS WORTHWHILE:
What do you believe are the disadvantages of nurses speaking up to involved parties at the time of a potential patient safety incident?

20.) ATTITUDE ABOUT WHETHER SPEAKING UP IS WORTHWHILE:
Is there anything else you associate with your own views (or beliefs) regarding advantages or disadvantages of nurses speaking up to involved parties at the time of a potential patient safety incident?

21.) INFLUENCE OF OTHER GROUPS OR INDIVIDUALS ON DECISION TO SPEAK UP:
Are there individuals or groups important to you who would approve of nurses speaking up to involved parties at the time of a potential safety incident?

22.) INFLUENCE OF OTHER GROUPS OR INDIVIDUALS ON DECISION TO SPEAK UP:
Are there individuals or groups important to you who would disapprove of nurses speaking up to involved parties at the time of a potential safety incident?

23.) INFLUENCE OF OTHER GROUPS OR INDIVIDUALS ON DECISIONS TO SPEAK UP:
Is there anything else you associate with other people's views that might influence whether nurses speak up to involved parties at the time of a potential safety incident?

24.) PERCEPTION OF CONFIDENCE OR CONTROL IN SITUATIONS WHERE SPEAKING UP IS CONSIDERED:
What factors or circumstances would make it easier for nurses to speak up to involved parties at the time of a potential safety incident?

25.) PERCEPTION OF CONFIDENCE OR CONTROL IN SITUATIONS WHERE SPEAKING UP IS CONSIDERED:
What factors or circumstances would make it difficult or impossible for nurses to speak up to involved parties at the time of a potential safety incident?

26.) PERCEPTIONS OF CONFIDENCE OR CONTROL IN SITUATIONS WHERE SPEAKING UP IS CONSIDERED:
Are there any other issues that come to mind when you think about nurses speaking up to involved parties at the time of a potential safety incident?

This is the end of the first survey. A link to a second, follow-up survey will be emailed to you in approximately one month. You may enter a drawing for a Kindle Fire after completing the second survey. **Please provide your email address in the text box below, then click to the last page:**

Thank you for your interest and participation in this survey. You may submit your answers by clicking on the arrow to the right below. If you have any questions, call or email the researcher: Deborah Crumpler, Email: dcrumpler@patriots.uttyler.edu or Phone: 903-663-8226.

Appendix D. Email to Prospective Participants of Study One, Round Two

Dear _____:

My name is Deborah Crumpler, and I am a doctoral candidate in the College of Nursing at the University of Texas at Tyler. You participated in a study through the American Association of Critical Care Nurses (AACN) website (Critical Care eNewsline) entitled *Critical Care Nurses' Intention to Speak up about Patient Safety Concerns: The Influence of Beliefs and Attitudes According to the Theory of Planned Behavior*. The results have been analyzed and your expert opinion as a critical care nurse is requested in a follow-up survey. Speaking up to protect patients from harm is a timely topic and your help is needed to increase knowledge in this area. As a thank-you for completing this follow-up survey, you may enter a drawing for one of three Kindle Fire devices. The questionnaire should take approximately 15 minutes.

You are not obligated to continue as a participant in this study, and you may withdrawal at any time. Your responses will remain confidential, accessed only by the researcher and faculty associated with the data analysis. Submission of the second on-line survey indicates you have given informed and voluntary consent to participate and agree to publication of the aggregate results. This research has met IRB approval from the University of Texas at Tyler and is being supervised by Dr. Gloria Duke.

Please complete the Round 2 Questionnaire by accessing the following internet link to a secure survey. Link: http://uttyler.az1.qualtrics.com/SE/?SID=SV_exFaHEHBoGSfXpj. There is no right or wrong answer to the questions. Please feel free to contact me by email or phone for any concerns or questions.

Sincerely,

Deborah R. Crumpler, PhD Candidate, RN, CCRN,
Doctoral Student at the University of Texas at Tyler
Phone: 903-240-1953
Email: dcrumpler@patriots.uttyler.edu

Gloria Duke, PhD, RN (Dissertation Chair)
College of Nursing at the University of Texas at Tyler
3900 University Blvd., Tyler, Texas 75799
Phone: 903-566-1981
Email: gduke@uttyler.edu

Appendix E. Study One, Round Two Questionnaire

Critical Care Nurses' Intention to Speak up about Patient Safety Concerns: The Influence of Beliefs and Attitudes According to the Theory of Planned Behavior, Study 1, Round 2

Dear Fellow Critical Care Nurse:

The purpose of this study is to gain consensus agreement on the most important factors that influence critical care nurses to speak up at the time a patient may be at risk for harm. You are invited to participate because you responded to the initial survey on this topic. In this follow-up survey, you are encouraged to rate whether you agree with the compiled, anonymous responses from other critical care nurses. As a thank you for completing the survey, you may enter a drawing for one of three Kindle Fire devices.

You will be asked the following kinds of questions: 1.) some basic questions about you and your practice; and 2.) your agreement of the importance (relevance) of suggested factors that may influence whether a critical care nurse speaks up. There is a "no judgment" option if you cannot decide to either support or oppose a statement, and there is no right or wrong answer. The survey should take approximately 15 minutes.

You are not obligated to continue as a study participant, and you may withdraw at any time. Risks include the possibility that you may experience some distress as you consider past, present, or potential patient safety issues. Your responses will remain confidential, accessed only by the researcher and faculty associated with the data analysis. Submission of the second on-line survey indicates you have given informed and voluntary consent to participate and agree to publication of the aggregate results. The study has been approved by the IRB at The University of Texas at Tyler (IRB #Sum2013-85), and is being supervised by Dr. Gloria Duke (gduke@uttyler.edu).

Please feel free to contact me by email or phone for any questions or concerns.

Deborah Crumpler, PhD Candidate, MSN, RN, CCRN
Doctoral Student at the University of Texas at Tyler
Telephone: 903-663-8226
Email: dcrumpler@patriots.uttyler.edu

Gloria Duke, PhD, RN (Dissertation Chair)
College of Nursing at the University of Texas at Tyler
3900 University Blvd., Tyler, Texas 75799
Phone: 903-566-1981
Email: gduke@uttyler.edu

Appendix E (Continued)

1.) Indicate your willingness to continue participation by clicking below.

- A. YES, I am interested in participating. I will proceed to the instructions on the next page. Click on the arrow below.
- B. NO, I am not interested in participating. I will stop and submit my answer now. Click on the arrow below.

2.) The following questions ensure informed consent and request further information on participant criteria.

Have you been provided with sufficient information regarding the purpose of this study and your rights as a participant? (If no, please contact the researcher).

- Yes
- No

3.) Are you currently working (within the past year) as a staff nurse in a critical care area (example: any type of ICU, step-down unit, or intermediate care/progressive care with cardiac monitoring)?

- Yes
- No (specify other areas)

4.) In which of the following critical care areas do you spend the majority of your time providing patient care?

- Intermediate or Progressive Care Unit (Telemetry Unit)
- Intensive Care Unit (ICU)
- Coronary Care Unit (CCU)
- Surgical Intensive Care Unit (SICU)
- Medical Intensive Care Unit (MICU)
- Combined Medical and Surgical Intensive Care Unit
- Pediatric ICU
- Neonatal ICU
- Other, please specify area (example: Telehealth)

5.) What is your primary Job Description?

- Staff Nurse
- Charge Nurse
- Nurse Manager or Clinical Director
- Nurse Educator
- Other (specify)

6.) Do you work at least 20 hours/week where at least 50% of the time is spent providing direct patient care?

- Yes
- No

Appendix E (Continued)

7.) Do you maintain a current license as a Registered Nurse (RN) in the United States?

- Yes
- No

8.) Have you worked as an RN in a critical care practice setting for at least one year?

- Yes
- No

9.) Have you been in situations where you considered speaking up about patient safety concerns?

- Yes
- No

10.) Are you able to access the Internet in the future, provide an email address that will be kept confidential, and communicate by email with the researcher?

- Yes
- No

11.) How long (total number of years) have you worked as a Registered Nurse?

12.) Indicate the highest degree in nursing you have completed.

- Diploma
- Associate Degree
- Bachelor's Degree
- Master's Degree
- Doctoral Degree

13.) Indicate your age in years.

14.) Indicate your gender.

- Male
- Female

15.) Indicate one of the following:

- Hispanic, Latino or Spanish
- Not Hispanic, Latino or Spanish

16.) Indicate one of the following:

- African American/Black
- American Indian or Alaska native
- Asian
- Native Hawaiian or Pacific Islander
- Caucasian/White
- Other
- Identified by two or more of the above categories

17.) In which of the following types of health care facilities are you employed?

- Community or Regional Hospital (not for profit)
- Private Hospital (for profit)
- Academic Teaching Center (affiliated with a medical school)
- Government Hospital, e.g. VA
- Other, e.g. clinic (specify)

The following six categories (A thru F) and themes (under each category) are based on results obtained from the previous study about critical care nurses and speaking up. Items are listed in order of frequency of nurses' responses from the first survey (example: more critical care nurses indicated that an advantage of speaking up is that it helps safe-guard the patient's well-being). A goal of the study is to determine consensus of the <u>most</u> important factors that influence speaking up behavior.

A. Rate your level of agreement that each of the following is an <u>important advantage</u> of speaking up <u>at the time a patient may be at risk for harm</u>:

	Strong Agree	Agree	No Judgment	Disagree	Strongly Disagree
1.) If I speak up, I am more likely to safe-guard the well-being of my patient	○	○	○	○	○
2.) If I speak up, I will be fulfilling my nursing duty to advocate for my patient.	○	○	○	○	○
3.) If I speak up, I am more likely to provide timely intervention.	○	○	○	○	○
4.) If I speak up, I will help promote a healthy work environment.	○	○	○	○	○
5.) If I speak up, I am more likely to be able to protect myself legally as a nurse.	○	○	○	○	○
6.) If I speak up, I will increase awareness of safety policies and procedures for others.	○	○	○	○	○

B.) Rate your level of agreement that each of the following is an <u>important disadvantage</u> of speaking up <u>at the time a patient may be at risk for harm</u>:

	Strong Agree	Agree	No Judgment	Disagree	Strongly Disagree
1.) If I speak up, I will worry about an immediate negative reaction (anger, humiliation)	○	○	○	○	○
2.) If I speak up, I will worry about repercussions from administration (nursing management).	○	○	○	○	○
3.) If I speak up, I will worry about repercussions from my co-workers.	○	○	○	○	○
4.) If I speak up, it will be wasted effort because nothing will change.	○	○	○	○	○
5.) If I speak up in front of the patient or family, it may cause conflicts between them and the staff.	○	○	○	○	○
6.) If I speak up, I will worry others may not see things the same way I do.	○	○	○	○	○
7.) If I speak up, I will worry I may not be able to communicate effectively.	○	○	○	○	○

C.) Rate your level of agreement that each of the following is an <u>important individual or group</u> who would <u>approve</u> of nurses speaking up <u>at the time a patient may be at risk for harm:</u>

	Strong Agree	Agree	No Judgment	Disagree	Strongly Disagree
1.) Professional team members (co-workers: RNs, therapists, etc.) would approve if I speak up.	○	○	○	○	○
2.) Management (nursing admin., managers, charge nurses) would approve if I speak up.	○	○	○	○	○
3.) Patients/families would approve if I speak up.	○	○	○	○	○
4.) Physicians would approve if I speak up.	○	○	○	○	○
5.) Professional nursing or regulatory organization members would approve if I speak up.	○	○	○	○	○
6.) Hospital safety committee members would approve if I speak up.	○	○	○	○	○

D.) Rate your level of agreement that each of the following is an i<u>mportant individual or group</u> who would <u>disapprove</u> of nurses speaking up <u>at the time a patient may be at risk for harm:</u>

	Strong Agree	Agree	No Judgment	Disagree	Strongly Disagree
1.) Management (nursing admin., managers, charge nurses) would disapprove if I speak up.	○	○	○	○	○
2.) Physicians would disapprove if I speak up (especially to physicians).	○	○	○	○	○
3.) My peer groups (workplace friends, "clicks", cultural or gender groups) would disapprove if I speak up.	○	○	○	○	○
4.) Professional team members (co-workers: RNs, therapists, etc.) would disapprove if I speak up.	○	○	○	○	○
5.) If I address safety issues with others, they will disapprove of being verbally confronted.	○	○	○	○	○
6.) Inexperienced RNs are reluctant to support speaking up (direct confrontation).	○	○	○	○	○
7.) Patients and/or families would disagree that I should speak up in front of them	○	○	○	○	○

E. Rate your level of agreement that the following is an important factor that makes it easier to speak up at the time a patient may be at risk for harm:

	Strong Agree	Agree	No Judgment	Disagree	Strongly Disagree
1.) Knowing I have management support (administration, manager, charge nurse) makes it easier for me to speak up.	○	○	○	○	○
2.) Knowing I have support from my team members (co-workers) makes it easier for me to speak up.	○	○	○	○	○
3.) Knowing there is open communication (respectful, constructive) makes it easier for me to speak up.	○	○	○	○	○
4.) Knowing there is a culture of safety (where patient safety is a priority) makes it easier for me to speak up.	○	○	○	○	○
5.) Being skilled in verbal communication makes it easier for me to speak up.	○	○	○	○	○
6.) Having the support of physicians makes it easier for me to speak up.	○	○	○	○	○
7.) Having policies and procedures that support patient safety makes it easier for me to speak up.	○	○	○	○	○

F. Rate your level of agreement that the following is an important factor that makes it harder to speak up at the time a patient may be at risk for harm:

	Strong Agree	Agree	No Judgment	Disagree	Strongly Disagree
1.) Fear of confrontation (retaliation, abuse, or bullying) makes it harder for me to speak up.	○	○	○	○	○
2.) An unsupportive management (punitive or ignoring) makes it harder for me to speak up.	○	○	○	○	○
3.) Lack of co-worker support makes it harder for me to speak up.	○	○	○	○	○
4.) Lack of self-confidence makes it harder for me to speak up.	○	○	○	○	○
5.) Fear of upsetting the patient or family (Guest Relations emphasis) makes it harder for me to speak up.	○	○	○	○	○
6.) Worry about my job being affected (threatened) makes it harder for me to speak up	○	○	○	○	○

If you wish to enter a **drawing for one of three Kindle Fire devices**, please provide your **email address** in the text box below; then **click on the arrow below to submit the survey.**

YOUR EMAIL ADDRESS IS:_____

Thank you for your interest and participation in this survey. You may end this survey by clicking the arrow to the right below. If you have any questions, call or email the researcher: Deborah Crumpler, Email: dcrumpler@patriots.uttyler.edu or Phone: 903-663-8226.

Appendix F. AACN Critical Care eNewsline Study Two Announcement

ACTION - Comment on clinical alarm management NPSG
EVIDENCE - Chlorhexidine bathing
NEWS - FDA announces recalls
AACN UPDATE - Apply for AACN grant by Oct. 31

October 16, 2014

"Our society must make it right and possible for old people not to fear the young or be deserted by them, for the test of a civilization is the way that it cares for its helpless members."

~ Pearl S. Buck

Action | Evidence | News | Resources | AACN Update | Bookstore | Jobs Top

Request for hospital feedback on clinical alarm management NPSG

The Joint Commission, Oakbrook Terrace, Illinois, is **asking hospitals for feedback** on their experiences with the requirements of the new National Patient Safety Goal (NPSG) on clinical alarm management. The comments, due Oct. 29, will help determine whether the goal needs enhancement before Phase II implementation begins Jan. 1, 2016.

Apply for three new grants

The American Association of Colleges of Nursing, Washington, and the Centers for Disease Control and Infection, Atlanta, are **accepting grant applications** for "three small evaluation projects focused on expanding the evidence base related to the impact of academic-practice partnerships on population health and public health." Each grant is $5,000, and the **application deadline is Nov. 15**.

Participate in study on patient safety

Deborah Crumpler, doctoral student at The University of Texas at Tyler, invites critical care nurses who meet the criteria to participate in "**Critical Care Nurses' Intention to Speak Up About Patient Safety Concerns: The Influence of Beliefs and Attitudes According to the Theory of Planned Behavior, Study 2**." Participants in the confidential survey may enter a drawing for one of three Apple iPad minis. Please **email Crumpler** with your questions, or call her at 903-663-8226.

Appendix G. Study Two Questionnaire: Critical Care Nurses' Intention to Speak Up about Patient Safety Concerns

Dear Fellow Critical Care Nurse:

The purpose of this study is to determine the most important factors that influence critical care staff nurses to speak up at the time a patient may be at risk for harm. These factors are based on the Theory of Planned Behavior and the results of an earlier survey of critical care nurses. To participate, you should have at least one year of critical care experience and work primarily as a general staff nurse (excluding full-time positions as a Charge Nurse, Manager/Director, educator, or advanced practice nurse). Participants should perform direct patient care at least 20 hours per week in a critical care unit, i.e. any type of ICU, or ER with specialized area for critically ill. Participants may also work in a progressive care unit, i.e. unit where patients require an increased intensity of nursing care, increased level of surveillance, and who have an increased potential for a life-threatening event. Finally, participants should have some experience in situations where speaking up about patient safety concerns was considered.

If you choose to participate, you may enter a drawing for one of three Apple - iPad mini devices. The survey will ask (a) basic questions about you and your practice, (b) your opinion of factors that may influence you (as a nurse) to verbally speak up at the time a patient may be at risk for harm, (c) your overall intention of speaking up, and (d) the likelihood you would speak up in two scenarios. There is no right or wrong answer. The survey should take approximately 15 minutes.

You are not obligated to continue as a study participant; and if you agree, you may withdraw at any time. Risks include the possibility that you may experience some distress as you consider past, present, or potential patient safety issues. Your responses will remain confidential, accessed only by the researcher and faculty associated with the data analysis. Submission of the survey indicates you have given informed and voluntary consent to participate and agree to publication of the aggregate results. The study has been approved by the IRB at The University of Texas at Tyler (IRB #Sum2013-85), and is being supervised by Dr. Gloria Duke (gduke@uttyler.edu).

Please feel free to contact me by email or phone for any questions or concerns.

Deborah Crumpler, PhD Candidate, MSN, RN, CCRN
Doctoral Student at the University of Texas at Tyler
Telephone: 903-663-8226
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Email: gduke@uttyler.edu

Appendix G (Continued)

1.) Indicate whether you are willing to continue and you meet the following participant criteria:

YES, I want to participate and I meet the following criteria: I have at least one year of critical care experience. I have been working in the United States as a general staff RN in an ICU, critical care area, or progressive care unit (as defined above) providing (a) direct patient care at least 50% of the time, and (b) for at least 20 hours per week. I have been in situations where I have considered speaking up about patient safety concerns. I have been provided with sufficient information regarding the purpose of this study and rights as a participant. (Proceed to the next page by clicking on the arrow.)

NO, I either do not meet the participant criteria, or I do not want to continue with the survey at this time. I may contact the researcher for questions. (Submit this answer by clicking on the arrow.)

The following questions ask about you and your practice as a Registered Nurse.

2.) In which of the following critical care or progressive care areas do you spend the majority of your time providing patient care?

- o Intermediate or Progressive Care Unit (Telemetry Unit)
- o Intensive Care Unit (ICU)
- o Coronary Care Unit (CCU)
- o Surgical Intensive Care Unit (SICU)
- o Medical Intensive Care Unit (MICU)
- o Combined Medical and Surgical Intensive Care Unit
- o Pediatric ICU
- o Neonatal ICU
- o ER (Trauma or ICU unit)
- o Other, please specify area (example: Telehealth, Flight Nurse) _____

3.) How long (total number of years) have you worked as a Registered Nurse? _____

4.) Indicate the highest degree in nursing you have completed.

- o Diploma
- o Associate Degree
- o Bachelor's Degree
- o Master's Degree
- o Doctoral Degree

5.) Indicate your age in years._____

6.) Indicate your gender.

- o Male
- o Female

Appendix G (Continued)

7.) Indicate one of the following:

- o Hispanic, Latino or Spanish
- o Not Hispanic, Latino or Spanish

8.) Indicate one of the following:

- o African American/Black
- o American Indian or Alaskan Native
- o Asian
- o Native Hawaiian or Pacific Islander
- o Caucasian/White
- o Other _____
- o Identified by two or more of the above categories

9.) In which of the following types of health care facilities are you primarily employed as a staff nurse?

- o Community or Regional Hospital
- o Private Hospital (for profit)
- o Academic Teaching Center (affiliated with a medical school)
- o Government Hospital, e.g. VA
- o Other, e.g. clinic (specify)_____

Indicate the likelihood that you would speak-up about patient safety concerns in the following two scenarios.

10.) **Scenario 1**: A 58 year old male patient is admitted to a critical care unit at 2000 with bilateral diffuse crackles, BP - 84/54, P - 104, T - 102, and SaO2 - 92%. Admitting orders and shock protocols are initiated, including intravenous fluids, vasopressors, blood cultures, oxygen by nasal cannula, labs, and antibiotics. At 2200 the nurse calls the physician to report the following patient changes: BP - 76/48, P - 106, T - 103, SaO2 - 88%, unilateral absent breath sounds, and disorientation. The nurse also explains that the Rapid Response Team was called, but they are involved with another patient. When the nurse requests a bedside evaluation, the physician says he/she cannot come now, but will call back soon.

	Extremely Unlikely	Moderately Unlikely	Slightly Unlikely	Unsure	Slightly Likely	Moderately Likely	Extremely Likely
In this situation, I am _____ to speak-up to the physician at this time.							

11.) **Scenario 2**: You are talking with a patient in an ICU room when another clinician comes in to start an intravenous line (IV) on your patient. You know the clinician has not washed his/her hands or used an alcohol-based sanitizer, and does not appear to be planning to do so.

	Extremely Unlikely	Moderately Unlikely	Slightly Unlikely	Unsure	Slightly Likely	Moderately Likely	Extremely Likely
In this situation, I am _____ to speak-up to the physician at this time.							

12.) In the next three months, when a patient is at risk for harm...

	Strongly Disagree	Moderately Disagree	Slightly Disagree	Unsure	Slightly Agree	Moderately Agree	Strongly Agree
12.1) I expect to speak up.							
12.2.) I want to speak up.							
12.3.) I intend to speak up.							

Appendix G (Continued)

13.) As a nurse in critical care, verbally speaking up at the time a patient may be at risk for harm is:

	Extremely Harmful	Moderately Harmful	Slightly Harmful	Unsure	Slightly Beneficial	Moderately Beneficial	Extremely Beneficial
Harmful or beneficial?							

14.) As a nurse in critical care, verbally speaking up at the time a patient may be at risk for harm is:

	Extremely Unpleasant	Moderately Unpleasant	Slightly Unpleasant	Unsure	Slightly Pleasant	Moderately Pleasant	Extremely Pleasant
Unpleasant or pleasant?							

15.) As a nurse in critical care, verbally speaking up at the time a patient may be at risk for harm is:

	Extremely Wrong	Moderately Wrong	Slightly Wrong	Unsure	Slightly Right	Moderately Right	Extremely Right
The right or the wrong thing to do?							

16.) As a nurse in critical care, verbally speaking up at the time a patient may be at risk for harm is:

	Extremely Bad	Moderately Bad	Slightly Bad	Unsure	Slightly Good	Moderately Good	Extremely Right
Bad practice or good practice?							

17.) Rate your belief about the consequences of speaking up at the time a patient may be at risk for harm:

	Extremely Unlikely	Moderately Unlikely	Slightly Unlikely	Unsure	Slightly Likely	Moderately Likely	Extremely Likely
17.1 If I speak up, I am _____ to safeguard the well-being of my patient							
17.2 If I speak up, I am _____to fulfill my nursing duty as an advocate for my patient.							
17.3 If I speak up, I am _____ to provide timely intervention.							
17.4 If I speak up, I am _____to promote a healthy work environment.							
17.5 If I speak up, I am _____ to be able to protect myself legally as a nurse.							
17.6 If I speak up, I am _____to increase awareness of safety policies and procedures for others.							
17.7 If I speak up, I am _____to cause conflicts between the patient/family and the staff.							

Appendix G (Continued)

18.) Rate your belief about the outcome of speaking up at the time a patient may be at risk for harm:

	Extremely Undesirable	Moderately Undesirable	Slightly Undesirable	Unsure	Slightly Desirable	Moderately Desirable	Extremely Desirable
18.1 Safeguarding the well-being of my patient is:_____							
18.2 Fulfilling my nursing duty to advocate for my patient is:_____							
18.3 Providing timely intervention is: _____.							
18.4 Promoting a healthy work environment is:_____							
18.5 Protecting myself legally as a nurse is:_____							
18.6 Increasing awareness of safety policies and procedures for others is:_____							
18.7 Causing conflicts between the patient/family and the staff is:_____							

19.) Indicate whether other individuals or groups influence you (as a nurse) to speak up at the time a patient may be at risk for harm:

	Very Strongly Disagree	Moderately Disagree	Slightly Disagree	Unsure	Slightly Agree	Moderately Agree	Very Strongly Agree
19.1 Most people who are important to me think that I should **not** speak up.							
19.2 It is expected of me to speak up.							
19.3 I feel under social pressure to speak up.							
19.4 People who are important to me want me to speak up.							

20.) What do other individuals or groups think a nurse should do, or what do they do, related to speaking up at the time a patient may be at risk for harm?

	Very Strongly Disagree	Moderately Disagree	Slightly Disagree	Unsure	Slightly Agree	Moderately Agree	Very Strongly Agree
20.1 Other professional team members (co-workers: RNs, therapists, etc.) speak up.							
20.2 Patients/families think that I should speak up.							
20.3 Professional nursing or regulatory organizations would approve of my speaking up.							
20.4 Hospital safety committee members would approve of my speaking up.							
20.5 Inexperienced RNs speak up (engage in direct confrontation).							

Appendix G (Continued)

21.) Do other **individuals or groups** motivate you to speak up at the time a patient may be at risk for harm?

	Very Strongly Disagree	Moderately Disagree	Slightly Disagree	Unsure	Slightly Agree	Moderately Agree	Very Strongly Agree
21.1 Doing what other professional team members do is important to me.							
21.2 The approval of patients and/or families is important to me.							
21.3 What nursing or regulatory organizations think I should do matters to me.							
21.4 What hospital safety committee members think I should do matters to me.							
21.5 Doing what inexperienced RNs do is important to me							

22.) When you consider speaking up at the time a patient may be at risk for harm, how confident and in control do you feel?

	Very Strongly Disagree	Moderately Disagree	Slightly Disagree	Unsure	Slightly Agree	Moderately Agree	Very Strongly Agree
22.1 I am confident that I could speak up if I wanted to.							
22.2 It is difficult for me to speak up.							
22.3 The decision to speak up is beyond my control.							
22.4 Whether I speak up or not is entirely up to me.							

23.) Indicate if you experience these issues when considering whether to speak up at the time a patient may be at risk for harm.

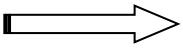
	Very Unlikely	Moderately Unlikely	Slightly Unlikely	Unsure	Slightly Likely	Moderately Likely	Very Likely
23.1 I do not have management support (administration, manager, charge nurse) when I speak up.							
23.2 I do not have support from my team members (co-workers) when I speak up.							
23.3 There is no open communication (respectful, constructive) that supports me in speaking up.							
23.4 There is not a culture of safety (where patient safety is a priority) that supports me in speaking up.							
23.5 I lack good verbal communication skills that would help me speak up.							
23.6 Physicians are not supportive when I speak up							
23.7 I do not have policies and procedures to support me if I speak up.							
23.8 I worry about confrontation (retaliation, abuse, or bullying) if I speak up.							

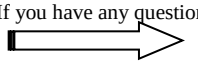
Appendix G (Continued)

24. In each of these situations, rate how likely you are to speak up at the time a patient may be at risk for harm.

	Very Unlikely	Moderately Unlikely	Slightly Unlikely	Unsure	Slightly Likely	Moderately Likely	Very Likely
24.1 If I do not have management support, I am _____to speak up.							
24.2 If I do not have support from my team members (co-workers), I am _____to speak up.							
24.3 If there is no open communication (respectful, constructive), I am _____to speak up.							
24.4 If there is not a culture of safety (where patient safety is a priority), I am _____to speak up.							
24.5 If I lack good verbal communication skills, I will be_____ to speak up.							
24.6 When physicians are not supportive, I am _____ to speak up.							
24.7 If I do not have policies and procedures to support me, I am _____ to speak up.							
24.8 When I worry about confrontation (retaliation, abuse, or bullying), I am _____to speak up.							

25. If you wish to enter a drawing for one of three Apple iPad mini devices, please provide your email address in the text box below, and then click on the arrow to submit. If you don't want to provide an email address and you don't want to enroll in the drawing, simply click on the arrow to submit the survey.

YOUR EMAIL ADDRESS IS: _____ 

Thank you for your interest in this survey. Submit your answer(s) by clicking the arrow to the right below. If you have any questions, call or email the researcher: Deborah Crumpler, Email: dcrumpler@patriots.uttyler.edu or Phone: 903-663-8226. 

Appendix H. Study Two Correlation Matrix: 35 Direct and Indirect-Combined Items

1		I expect to speak up.	I want to speak up.	I intend to speak up	ATT-DIR: Harmful or beneficial	ATT-DIR: Unpleasant or pleasant	ATT-DIR: Wrong or right	ATT-DIR: Bad or good practice	ATT-IND: 17x18 Comb.-1-Safeguard my patient
I expect to speak up.	Pearson Correlation	1	___	___	___	___	___	___	___
	Sig. (2-tailed)		___	___	___	___	___	___	___
I want to speak up.	Pearson Correlation	.350**	1	___	___	___	___	___	___
	Sig. (2-tailed)	.000		___	___	___	___	___	___
I intend to speak up	Pearson Correlation	.577**	.577**	1	___	___	___	___	___
	Sig. (2-tailed)	.000	.000		___	___	___	___	___
ATT-DIR-Harmful or beneficial	Pearson Correlation	.131*	.157**	.210**	1	___	___	___	___
	Sig. (2-tailed)	.022	.006	.000		___	___	___	___
ATT-DIR-Unpleasant or pleasant	Pearson Correlation	.094	.098	.152**	.140*	1	___	___	___
	Sig. (2-tailed)	.101	.087	.008	.014		___	___	___
ATT-DIR-Wrong or right	Pearson Correlation	.314**	.254**	.302**	.291**	.068	1	___	___
	Sig. (2-tailed)	.000	.000	.000	.000	.235		___	___
ATT-DIR-Bad or good practice	Pearson Correlation	.366**	.266**	.339**	.329**	.008	.691**	1	.419**
	Sig. (2-tailed)	.000	.000	.000	.000	.891	.000		.000
ATT-IND-17x18 Comb.-1-Safeguard my patient	Pearson Correlation	.253**	.202**	.218**	.221**	.102	.393**	.419**	1
	Sig. (2-tailed)	.000	.000	.000	.000	.075	.000	.000	
ATT-IND-17x18 Comb.-2-Duty to Advocate	Pearson Correlation	.323**	.253**	.271**	.153**	-.004	.454**	.494**	.520**
	Sig. (2-tailed)	.000	.000	.000	.007	.946	.000	.000	.000
ATT-IND-17x18 Comb.-3-Timely Intervention	Pearson Correlation	.331**	.188**	.299**	.237**	.106	.414**	.445**	.522**
	Sig. (2-tailed)	.000	.001	.000	.000	.064	.000	.000	.000
ATT-IND-17x18 Comb.-4-Promote healthy work environment	Pearson Correlation	.268**	.137*	.220**	.340**	.160**	.239**	.332**	.305**
	Sig. (2-tailed)	.000	.016	.000	.000	.005	.000	.000	.000

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).

2		I expect to speak up.	I want to speak up.	I intend to speak up	ATT-DIR: Harmful or beneficial	ATT-DIR: Unpleasant or pleasant	ATT-DIR: Wrong or right	ATT-DIR-Bad or good practice	ATT-IND-17x18 Comb.-1-Safeguard my patient
ATT-IND-17x18 Comb.-5-Protecting myself legally	Pearson Correlation	.248**	.130*	.233**	.170**	.125*	.250**	.280**	.261**
	Sig. (2-tailed)	.000	.023	.000	.003	.028	.000	.000	.000
ATT-IND-17x18 Comb.-6-Promote safety policy awareness	Pearson Correlation	.316**	.096	.279**	.311**	.205**	.214**	.263**	.342**
	Sig. (2-tailed)	.000	.094	.000	.000	.000	.000	.000	.000
ATT-IND-17x18 Comb.-7-Cause conflicts w/ pts., family, staff	Pearson Correlation	-.025	.060	-.037	-.053	.205**	-.115*	-.104	-.003
	Sig. (2-tailed)	.662	.297	.520	.355	.000	.044	.069	.958
SN-DIR-1-Most people think I should NOT speak up.	Pearson Correlation	.063	-.001	.074	.188**	.063	.079	.124*	.181**
	Sig. (2-tailed)	.271	.993	.196	.001	.270	.169	.030	.001
SN-DIR-2-It is expected of me to speak up.	Pearson Correlation	.238**	.011	.191**	.088	.175**	.157**	.196**	.286**
	Sig. (2-tailed)	.000	.852	.001	.125	.002	.006	.001	.000
SN-DIR-3-I feel under social pressure to speak up.	Pearson Correlation	-.065	.049	-.012	-.078	-.077	-.014	-.075	-.070
	Sig. (2-tailed)	.259	.394	.832	.171	.180	.810	.188	.223
SN-DIR-4-People important to me WANT me to speak up.	Pearson Correlation	.280**	.121*	.211**	.180**	.172**	.103	.146*	.149**
	Sig. (2-tailed)	.000	.034	.000	.001	.002	.071	.010	.009
SN-IND-20x21Combined-1-Team member's social pressure	Pearson Correlation	.172**	.062	.204**	.181**	.232**	.065	.121*	.077
	Sig. (2-tailed)	.002	.278	.000	.001	.000	.258	.034	.179
SN-IND-20x21Combined-2-Patient/Family social pressure	Pearson Correlation	.151**	.178**	.183**	.189**	.160**	.144*	.165**	.136*
	Sig. (2-tailed)	.008	.002	.001	.001	.005	.012	.004	.017
SN-IND-20x21Combined-3-Nursing/regulatory organiz. social pressure	Pearson Correlation	.258**	.126*	.246**	.243**	.067	.201**	.291**	.228**
	Sig. (2-tailed)	.000	.027	.000	.000	.244	.000	.000	.000
SN-IND-20x21Combined-4-Hospital Safety Committee social pressure	Pearson Correlation	.129*	.065	.158**	.290**	.132*	.119*	.218**	.157**
	Sig. (2-tailed)	.023	.259	.005	.000	.021	.037	.000	.006
SN-IND-20x21Combined-5-Inexperienced RN's social pressure	Pearson Correlation	.006	.013	.004	.022	.069	-.018	-.054	-.001
	Sig. (2-tailed)	.916	.822	.944	.706	.225	.757	.341	.980

**Correlation is significant at the 0.01 level (2-tailed) * Correlation is significant at the 0.05 level (2-tailed).

3		I expect to speak up.	I want to speak up.	I intend to speak up	ATT-DIR: Harmful or beneficial	ATT-DIR: Unpleasant or pleasant	ATT-DIR: Wrong or right	ATT-DIR-Bad or good practice	ATT-IND-17x18Combined-1-Safeguard my patient
PBC-DIR-1-I am confident that I could speak up if I wanted.	Pearson Correlation	.462**	.014	.301**	.201**	.205**	.188**	.166**	.207**
	Sig. (2-tailed)	.000	.809	.000	.000	.000	.001	.003	.000
PBC-DIR-2-It is difficult for me to speak up.	Pearson Correlation	.258**	.037	.234**	.113*	.176**	.034	.040	.031
	Sig. (2-tailed)	.000	.520	.000	.048	.002	.556	.485	.592
PBC-DIR-3-Decision to speak up is beyond my control.	Pearson Correlation	.067	.022	.053	.085	.072	.085	.098	.125*
	Sig. (2-tailed)	.238	.705	.355	.134	.205	.138	.085	.028
PBC-DIR-4-Whether I speak up or not is entirely up to me.	Pearson Correlation	.108	.020	.088	.160**	-.025	.080	.099	.106
	Sig. (2-tailed)	.058	.722	.124	.005	.656	.164	.083	.062
PBC-IND-23x24Combined-1-No management support	Pearson Correlation	.258**	.001	.175**	.058	.118*	.093	.082	.113*
	Sig. (2-tailed)	.000	.988	.002	.311	.039	.102	.151	.048
PBC-IND-23x24Combined-2-No team member support	Pearson Correlation	.289**	.045	.228**	.083	.051	.065	.083	.079
	Sig. (2-tailed)	.000	.429	.000	.147	.370	.255	.146	.168
PBC-IND-23x24Combined-3-No open communication	Pearson Correlation	.249**	.001	.200**	.010	.066	.072	.044	.060
	Sig. (2-tailed)	.000	.983	.000	.860	.251	.210	.447	.297
PBC-IND-23x24Combined-4-No culture of safety	Pearson Correlation	.255**	-.007	.202**	.016	.068	.039	.018	.022
	Sig. (2-tailed)	.000	.905	.000	.780	.233	.500	.747	.698
PBC-IND-23x24Combined 5-I lack good verbal communication skills	Pearson Correlation	.153**	.029	.229**	-.072	.111	.027	-.010	.048
	Sig. (2-tailed)	.007	.610	.000	.210	.051	.636	.864	.406
PBC-IND-23x24Combined-6-Physicians are not supportive	Pearson Correlation	.322**	-.002	.257**	.083	.166**	.049	.098	.079
	Sig. (2-tailed)	.000	.978	.000	.145	.003	.390	.087	.169
PBC-IND-23x24Combined-7-Policies/proced. don't support speaking up	Pearson Correlation	.218**	.031	.192**	.110	.174**	.069	.026	.074
	Sig. (2-tailed)	.000	.594	.001	.054	.002	.229	.650	.195
PBC-IND-23x24Combined-8-Worry about confrontation if I speak up	Pearson Correlation	.211**	-.037	.210**	.061	.219**	.012	-.012	.033
	Sig. (2-tailed)	.000	.512	.000	.283	.000	.834	.832	.559

** Correlation is significant at the 0.01 level (2-tailed). *Correlation is significant at the 0.05 level (2-tailed).

Appendix H (Continued)

4		ATT-IND-17x18 Combined-2-Duty to Advocate	ATT-IND-17x18 Combined-3-Timely Interven-tion	ATT-IND-17x18 Combined-4-Promote healthy work environment	ATT-IND-17x18 Combined-5-Protecting myself legally	ATT-IND-17x18 Combined-6-Promote safety policy awareness	ATT-IND-17x18 Combined-7-Cause conflicts with pts, family, staff	SN-DIR-1-Most people think I should not speak up.	SN-DIR-2-It is expected of me to speak up.
I expect to speak up.	Pearson Correlation	___	___	___	___	___	___	___	___
	Sig. (2-tailed)	___	___	___	___	___	___	___	___
I want to speak up.	Pearson Correlation	___	___	___	___	___	___	___	___
	Sig. (2-tailed)	___	___	___	___	___	___	___	___
I intend to speak up	Pearson Correlation	___	___	___	___	___	___	___	___
	Sig. (2-tailed)	___	___	___	___	___	___	___	___
ATT-DIR-Harmful or beneficial	Pearson Correlation	___	___	___	___	___	___	___	___
	Sig. (2-tailed)	___	___	___	___	___	___	___	___
ATT-DIR-Unpleasant or pleasant	Pearson Correlation	___	___	___	___	___	___	___	___
	Sig. (2-tailed)	___	___	___	___	___	___	___	___
ATT-DIR-Wrong or right	Pearson Correlation	___	___	___	___	___	___	___	___
	Sig. (2-tailed)	___	___	___	___	___	___	___	___
ATT-DIR-Bad or good practice	Pearson Correlation	___	___	___	___	___	___	___	___
	Sig. (2-tailed)	___	___	___	___	___	___	___	___
ATT-IND-17x18Combined-1-Safeguard my patient	Pearson Correlation	___	___	___	___	___	___	___	___
	Sig. (2-tailed)	___	___	___	___	___	___	___	___
ATT-IND-17x18Combined-2-Duty to Advocate	Pearson Correlation	1	___	___	___	___	___	___	___
	Sig. (2-tailed)		___	___	___	___	___	___	___
ATT-IND-17x18Combined-3-Timely Intervention	Pearson Correlation	.534**	1	___	___	___	___	___	___
	Sig. (2-tailed)	.000		___	___	___	___	___	___
ATT-IND-17x18Combined-4-Promote healthy work environment	Pearson Correlation	.472**	.579**	1	___	___	___	___	___
	Sig. (2-tailed)	.000	.000		___	___	___	___	___

** Correlation is significant at the 0.01 level (2-tailed). * Correlation is significant at the 0.05 level (2-tailed).

Appendix H (Continued)

5		ATT-IND-17x18 Combined-2-Duty to Advocate	ATT-IND-17x18 Combined-3-Timely Interven-tion	ATT-IND-17x18 Combined-4-Promote healthy work environment	ATT-IND-17x18 Combined-5-Protecting myself legally	ATT-IND-17x18 Combined-6-Promote safety policy awareness	ATT-IND-17x18 Combined-7-Cause conflicts with pts, family, staff	SN-DIR-1-Most people think I should not speak up.	SN-DIR-2-It is expected of me to speak up.
ATT-IND-17x18Comb-ined-5-Protect myself legally	Pearson Correlation	.416**	.501**	.517**	1	___	___	___	___
	Sig. (2-tailed)	.000	.000	.000		___	___	___	___
ATT-IND-17x18Comb-ined-6-Promote safety awareness	Pearson Correlation	.414**	.511**	.633**	.534**	1	___	___	___
	Sig. (2-tailed)	.000	.000	.000	.000		___	___	___
ATT-IND-17x18Comb-ined-7-Cause conflicts with pts,family, staff	Pearson Correlation	-.141*	-.072	-.039	.009	.026	1	___	___
	Sig. (2-tailed)	.013	.205	.500	.874	.651		___	___
SN-DIR-1-Most people think I should NOT speak up.	Pearson Correlation	.154**	.195**	.195**	.192**	.196**	.042	1	___
	Sig. (2-tailed)	.007	.001	.001	.001	.001	.461		___
SN-DIR-2-It is expected of me to speak up.	Pearson Correlation	.250**	.303**	.284**	.324**	.351**	.078	.343**	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.170	.000	
SN-DIR-3-I feel under social pressure to speak up.	Pearson Correlation	.009	-.057	.002	.021	-.022	-.056	-.128*	.087
	Sig. (2-tailed)	.870	.315	.976	.719	.699	.327	.025	.129
SN-DIR-4-People important to me WANT me to speak up.	Pearson Correlation	.202**	.249**	.321**	.247**	.380**	.024	.376**	.500**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.675	.000	.000
SN-IND-20x21 Combined-1-Team member's social pressure	Pearson Correlation	.048	.162**	.254**	.185**	.257**	.101	.202**	.277**
	Sig. (2-tailed)	.405	.004	.000	.001	.000	.076	.000	.000
SN-IND-20x21 Combined-2-Patient/Family social pressure	Pearson Correlation	.201**	.251**	.255**	.224**	.249**	.083	.246**	.211**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.148	.000	.000
SN-IND-20x21 Combined-3-Regul. organiz. pressure	Pearson Correlation	.275**	.290**	.355**	.334**	.356**	.041	.252**	.264**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.477	.000	.000
SN-IND-20x21 Combined-4-Hospital Safety Committee social pressure	Pearson Correlation	.193**	.246**	.356**	.291**	.348**	.032	.348**	.250**
	Sig. (2-tailed)	.001	.000	.000	.000	.000	.581	.000	.000
SN-IND-20x21 Combined-5-Inexperienced RN's pressure	Pearson Correlation	-.064	-.031	.069	-.003	.025	.098	.065	.072
	Sig. (2-tailed)	.264	.584	.228	.962	.656	.087	.255	.209

**. Correlation is significant at the 0.01 level (2-tailed). *. Correlation is significant at the 0.05 level (2-tailed).

6		ATT-IND-17x18 Combined-2-Duty to Advocate	ATT-IND-17x18 Combined-3-Timely Interven-tion	ATT-IND-17x18 Combined-4-Promote healthy work environ-ment	ATT-IND-17x18 Combined-5-Protecting myself legally	ATT-IND-17x18 Combined-6-Promote safety policy awareness	ATT-IND-17x18 Combined-7-Cause conflicts with pts, family, staff	SN-DIR-1-Most people think I should not speak up.	SN-DIR-2-It is expected of me to speak up.
PBC-DIR-1-I am confident that I could speak up.	Pearson Correlation	.193**	.315**	.257**	.324**	.304**	.069	.142*	.362**
	Sig. (2-tailed)	.001	.000	.000	.000	.000	.228	.012	.000
PBC-DIR-2-It is difficult for me to speak up.	Pearson Correlation	.011	.127*	.136*	.161**	.169**	.092	.180**	.199**
	Sig. (2-tailed)	.851	.025	.017	.005	.003	.107	.002	.000
PBC-DIR-3-Speaking up is beyond my control.	Pearson Correlation	.082	.101	.065	.045	.025	.074	.217**	.115*
	Sig. (2-tailed)	.153	.077	.257	.433	.667	.193	.000	.043
PBC-DIR-4-Whether I speak up or not is entirely up to me.	Pearson Correlation	.097	.188**	.175**	.108	.195**	.090	.065	.099
	Sig. (2-tailed)	.090	.001	.002	.059	.001	.116	.254	.084
PBC-IND-23x24Combine-1-No manamgement support	Pearson Correlation	.028	.083	-.007	.063	.108	.001	.036	.175**
	Sig. (2-tailed)	.622	.146	.901	.273	.058	.992	.524	.002
PBC-IND-23x24Combine-2-No team member support	Pearson Correlation	.048	.086	.046	.109	.154**	-.006	.003	.149**
	Sig. (2-tailed)	.404	.133	.424	.056	.007	.917	.959	.009
PBC-IND-23x24 Combined-3-No open comm.	Pearson Correlation	-.009	.107	-.007	.090	.116*	-.037	.063	.182**
	Sig. (2-tailed)	.874	.061	.901	.115	.041	.514	.269	.001
PBC-IND-23x24 Combined-4-No culture of safety	Pearson Correlation	.014	.057	-.016	.077	.103	-.004	.075	.133*
	Sig. (2-tailed)	.809	.320	.775	.175	.072	.946	.192	.019
PBC-IND-23x24 Combined 5-No verbal skills	Pearson Correlation	.073	.066	-.004	.115*	.035	.027	.009	.132*
	Sig. (2-tailed)	.199	.251	.942	.043	.545	.641	.881	.020
PBC-IND-23x24Combined-6-MDs are not supportive	Pearson Correlation	.069	.158**	.095	.198**	.184**	.033	.120*	.233**
	Sig. (2-tailed)	.226	.005	.095	.000	.001	.564	.035	.000
PBC-IND-23x24 Combined-7-Policies don't support	Pearson Correlation	.013	.119*	.056	.206**	.162**	.053	.038	.127*
	Sig. (2-tailed)	.825	.037	.324	.000	.004	.357	.508	.025
PBC-IND-23x24 Combined-8-Worry about confrontation	Pearson Correlation	-.032	.103	.024	.186**	.147**	.080	.091	.230**
	Sig. (2-tailed)	.577	.071	.674	.001	.010	.161	.111	.000

** Correlation is significant at the 0.01 level (2-tailed). * Correlation is significant at the 0.05 level (2-tailed).

Appendix H (Continued)

7		SN-DIR-3-I feel under social pressure to speak up.	SN-DIR-4-People important to me WANT me to speak up.	SN-IND-20x21 Combined-1-Team member's social pressure	SN-IND-20x21 Combined-2-Patient/ Family social pressure	SN-IND-20x21 Combined-3-Nursing/ regulatory organiz. social pressure	SN-IND-20x21 Combined-4-Hospital Safety Committee social pressure	SN-IND-20x21 Combined-5-Inexperienced RN's social pressure	PBC-DIR-1-I am confident that I could speak up if I wanted.
I expect to speak up.	Pearson Correlation	—	—	—	—	—	—	—	—
	Sig. (2-tailed)	—	—	—	—	—	—	—	—
I want to speak up.	Pearson Correlation	—	—	—	—	—	—	—	—
	Sig. (2-tailed)	—	—	—	—	—	—	—	—
I intend to speak up	Pearson Correlation	—	—	—	—	—	—	—	—
	Sig. (2-tailed)	—	—	—	—	—	—	—	—
ATT-DIR-Harmful or beneficial	Pearson Correlation	—	—	—	—	—	—	—	—
	Sig. (2-tailed)	—	—	—	—	—	—	—	—
ATT-DIR-Unpleasant or pleasant	Pearson Correlation	—	—	—	—	—	—	—	—
	Sig. (2-tailed)	—	—	—	—	—	—	—	—
ATT-DIR-Wrong or right	Pearson Correlation	—	—	—	—	—	—	—	—
	Sig. (2-tailed)	—	—	—	—	—	—	—	—
ATT-DIR-Bad or good practice	Pearson Correlation	—	—	—	—	—	—	—	—
	Sig. (2-tailed)	—	—	—	—	—	—	—	—
ATT-IND-17x18Combined-1-Safeguard my patient	Pearson Correlation	—	—	—	—	—	—	—	—
	Sig. (2-tailed)	—	—	—	—	—	—	—	—
ATT-IND-17x18 Com bined-2-Duty to Advocate	Pearson Correlation	—	—	—	—	—	—	—	—
	Sig. (2-tailed)	—	—	—	—	—	—	—	—
ATT-IND-17x18 Combined-3-Timely Intervention	Pearson Correlation	—	—	—	—	—	—	—	—
	Sig. (2-tailed)	—	—	—	—	—	—	—	—
ATT-IND-17x18 Combined-4-Promote healthy work environment	Pearson Correlation	—	—	—	—	—	—	—	—
	Sig. (2-tailed)	—	—	—	—	—	—	—	—

**.Correlation is significant at the 0.01 level (2-tailed). *.Correlation is significant at the 0.05 level (2-tailed).

8		SN-DIR-3-I feel under social pressure to speak up.	SN-DIR-4-People important to me WANT me to speak up.	SN-IND-20x21 Comb.-1-Team member's social pressure	SN-IND-20x21 Comb.-2-Patient/ Family social pressure	SN-IND-20x21 Combined -3-Nurse regul. organiz. pressure	SN-IND-20x21 Comb.-4-Hospital Safety Comm. pressure	SN-IND-20x21 Comb. -5-In-experienced RN's social pressure	PBC-DIR-1-I am confident that I could speak up if I wanted.
ATT-IND-17x18Comb.-5-Protecting myself legally	Pearson Correlation	___	___	___	___	___	___	___	___
	Sig. (2-tailed)	___	___	___	___	___	___	___	___
ATT-IND-17x18Comb.-6-Promote safety policy awareness	Pearson Correlation	___	___	___	___	___	___	___	___
	Sig. (2-tailed)	___	___	___	___	___	___	___	___
ATT-IND-17x18 Comb.-7-Conflicts for pts, family, staff	Pearson Correlation	___	___	___	___	___	___	___	___
	Sig. (2-tailed)	___	___	___	___	___	___	___	___
SN-DIR-1-Most people think I should not speak up.	Pearson Correlation	___	___	___	___	___	___	___	___
	Sig. (2-tailed)	___	___	___	___	___	___	___	___
SN-DIR-2-It is expected of me to speak up.	Pearson Correlation	___	___	___	___	___	___	___	___
	Sig. (2-tailed)	___	___	___	___	___	___	___	___
SN-DIR-3-I feel under social pressure to speak up.	Pearson Correlation	1	___	___	___	___	___	___	___
	Sig. (2-tailed)		___	___	___	___	___	___	___
SN-DIR-4-People important to me WANT me to speak up.	Pearson Correlation	.077	1	___	___	___	___	___	___
	Sig. (2-tailed)	.180		___	___	___	___	___	___
SN-IND-20x21 Comb.-1-Team member's pressure	Pearson Correlation	.137*	.239**	1	___	___	___	___	___
	Sig. (2-tailed)	.016	.000		___	___	___	___	___
SN-IND-20x21 Comb.-2-Patient/Family pressure	Pearson Correlation	.030	.279**	.212**	1	___	___	___	___
	Sig. (2-tailed)	.601	.000	.000		___	___	___	___
SN-IND-20x21Comb.-3-Nurse Reg. organiz. pressure	Pearson Correlation	.139*	.265**	.217**	.386**	1	___	___	___
	Sig. (2-tailed)	.015	.000	.000	.000		___	___	___
SN-IND-20x21Comb.-4-Hospital Safety Comm. pressure	Pearson Correlation	.017	.234**	.333**	.386**	.588**	1	___	___
	Sig. (2-tailed)	.771	.000	.000	.000	.000		___	___
SN-IND-20x21 Comb.-5-Inexperienced RN's pressure	Pearson Correlation	.026	.080	.231**	.211**	.109	.116*	1	___
	Sig. (2-tailed)	.653	.161	.000	.000	.055	.042		.247

**.Correlation is significant at the 0.01 level (2-tailed). *.Correlation is significant at the 0.05 level (2-tailed).

9		SN-DIR-3-I feel under social pressure to speak up.	SN-DIR-4-People important to me WANT me to speak up.	SN-IND-20x21 Comb.-1-Team member's social pressure	SN-IND-20x21 Comb.-2-Patient/ Family social pressure	SN-IND-20x21 Comb.-3-Nursing/ regulatory organiz. pressure	SN-IND-20x21 Comb.-4-Hospital Safety Comm. pressure	SN-IND-20x21 Comb.-5-In-experienced RN's social pressure	PBC-DIR-1-I am confident that I could speak up if I wanted.
PBC-DIR-1-I am confident that I could speak up if I wanted.	Pearson Correlation	-.056	.233**	.258**	.204**	.338**	.220**	.066	1
	Sig. (2-tailed)	.329	.000	.000	.000	.000	.000	.247	
PBC-DIR-2-It is difficult for me to speak up.	Pearson Correlation	-.322**	.148**	.113*	.100	.132*	.058	.058	.441**
	Sig. (2-tailed)	.000	.009	.048	.079	.021	.309	.310	.000
PBC-DIR-3-Decision to speak up is beyond my control.	Pearson Correlation	-.067	.148**	-.042	.156**	.156**	.101	.000	.057
	Sig. (2-tailed)	.244	.009	.459	.006	.006	.076	.996	.322
PBC-DIR-4-Whether I speak up or not is entirely up to me.	Pearson Correlation	-.102	.084	.110	-.001	.062	.130*	-.052	.177**
	Sig. (2-tailed)	.075	.140	.054	.989	.279	.022	.363	.002
PBC-IND-23x24Comb.-1-No mgmt. support	Pearson Correlation	-.089	.001	.023	.068	.023	-.016	.146*	.337**
	Sig. (2-tailed)	.121	.985	.692	.237	.691	.777	.010	.000
PBC-IND-23x24Comb.-2-No team member support	Pearson Correlation	-.042	.023	.044	.040	.085	.057	.074	.337**
	Sig. (2-tailed)	.467	.686	.443	.485	.138	.317	.198	.000
PBC-IND-23x24Comb.-3-No open commun.	Pearson Correlation	-.070	.015	.022	.027	.098	.001	.019	.381**
	Sig. (2-tailed)	.221	.799	.706	.633	.087	.979	.736	.000
PBC-IND-23x24 Comb.-4-No culture of safety	Pearson Correlation	-.062	-.011	.038	.026	.102	.002	.077	.325**
	Sig. (2-tailed)	.274	.853	.507	.655	.074	.972	.178	.000
PBC-IND-23x24Comb. 5-I lack verbal commun. skills	Pearson Correlation	-.097	-.043	.042	.058	.048	.026	.132*	.262**
	Sig. (2-tailed)	.089	.451	.459	.311	.398	.655	.021	.000
PBC-IND-23x24Comb.-6-Physicians are not supportive	Pearson Correlation	-.074	.070	.155**	.078	.189**	.114*	.000	.465**
	Sig. (2-tailed)	.194	.219	.006	.171	.001	.045	.994	.000
PBC-IND-23x24 Comb.-7-Policies don't support	Pearson Correlation	-.028	.004	.147**	.108	.147**	.140*	.049	.316**
	Sig. (2-tailed)	.621	.941	.010	.059	.010	.014	.395	.000
PBC-IND-23x24Comb.-8-Worry about confrontation.	Pearson Correlation	-.016	.053	.181**	.165**	.143*	.184**	.165**	.429**
	Sig. (2-tailed)	.785	.354	.001	.004	.012	.001	.004	.000

**Correlation is significant at the 0.01 level (2-tailed). *Correlation is significant at the 0.05 level (2-tailed).

Appendix H (Continued)

10		PBC-DIR-2-It is difficult for me to speak up.	PBC-DIR-3-Decision to speak up is beyond my control.	PBC-DIR-4-Whether I speak up or not is entirely up to me.	PBC-IND-23x24 Comb.-1-No manage-ment support	PBC-IND-23x24 Comb.-2-No team member support	PBC-IND-23x24 Comb.-3-No open communi-cation	PBC-IND-23x24 Comb.-4-No culture of safety	PBC-IND-23x24 Comb. 5-I lack good verbal communi-cation skills
I expect to speak up.	Pearson Correlation	___	___	___	___	___	___	___	___
	Sig. (2-tailed)	___	___	___	___	___	___	___	___
I want to speak up.	Pearson Correlation	___	___	___	___	___	___	___	___
	Sig. (2-tailed)	___	___	___	___	___	___	___	___
I intend to speak up	Pearson Correlation	___	___	___	___	___	___	___	___
	Sig. (2-tailed)	___	___	___	___	___	___	___	___
ATT-DIR-Harmful or beneficial	Pearson Correlation	___	___	___	___	___	___	___	___
	Sig. (2-tailed)	___	___	___	___	___	___	___	___
ATT-DIR-Unpleasant or pleasant	Pearson Correlation	___	___	___	___	___	___	___	___
	Sig. (2-tailed)	___	___	___	___	___	___	___	___
ATT-DIR-Wrong or right	Pearson Correlation	___	___	___	___	___	___	___	___
	Sig. (2-tailed)	___	___	___	___	___	___	___	___
ATT-DIR-Bad or good practice	Pearson Correlation	___	___	___	___	___	___	___	___
	Sig. (2-tailed)	___	___	___	___	___	___	___	___
ATT-IND-17x18Comb.-1-Safeguard my patient	Pearson Correlation	___	___	___	___	___	___	___	___
	Sig. (2-tailed)	___	___	___	___	___	___	___	___
ATT-IND-17x18Comb.-2-Duty to Advocate	Pearson Correlation	___	___	___	___	___	___	___	___
	Sig. (2-tailed)	___	___	___	___	___	___	___	___
ATT-IND-17x18Comb.-3-Timely Intervention	Pearson Correlation	___	___	___	___	___	___	___	___
	Sig. (2-tailed)	___	___	___	___	___	___	___	___
ATT-IND-17x18 Comb.-4-Promote healthy work environment	Pearson Correlation	___	___	___	___	___	___	___	___
	Sig. (2-tailed)	___	___	___	___	___	___	___	___

**Correlation is significant at the 0.01 level (2-tailed). * Correlation is significant at the 0.05 level (2-tailed).

11		PBC-DIR-2-It is difficult for me to speak up.	PBC-DIR-3-Decision to speak up is beyond my control.	PBC-DIR-4-Whether I speak up or not is entirely up to me.	PBC-IND-23x24 Comb.-1-No mgmt.. support	PBC-IND-23x24 Comb.-2-No team member support	PBC-IND-23x24 Comb.-3-No open communi-cation	PBC-IND-23x24 Comb.-4-No culture of safety	PBC-IND-23x24 Comb. 5-I lack good verbal communi-cation skills
ATT-IND-17x18 Comb. -5-Protect self legally	Pearson Correlation	___	___	___	___	___	___	___	___
	Sig. (2-tailed)	___	___	___	___	___	___	___	___
ATT-IND-17x18 Comb.-6-Promote safety policy awareness	Pearson Correlation	___	___	___	___	___	___	___	___
	Sig. (2-tailed)	___	___	___	___	___	___	___	___
ATT-IND-17x18Comb.-7-Cause conflicts with pts,family,staff	Pearson Correlation	___	___	___	___	___	___	___	___
	Sig. (2-tailed)	___	___	___	___	___	___	___	___
SN-DIR-1-Most people think I should not speak up.	Pearson Correlation	___	___	___	___	___	___	___	___
	Sig. (2-tailed)	___	___	___	___	___	___	___	___
SN-DIR-2-It is expected of me to speak up.	Pearson Correlation	___	___	___	___	___	___	___	___
	Sig. (2-tailed)	___	___	___	___	___	___	___	___
SN-DIR-3-I feel under social pressure to speak up.	Pearson Correlation	___	___	___	___	___	___	___	___
	Sig. (2-tailed)	___	___	___	___	___	___	___	___
SN-DIR-4-People important to me want me to speak up.	Pearson Correlation	___	___	___	___	___	___	___	___
	Sig. (2-tailed)	___	___	___	___	___	___	___	___
SN-IND-20x21Comb.-1-Team member's social pressure	Pearson Correlation	___	___	___	___	___	___	___	___
	Sig. (2-tailed)	___	___	___	___	___	___	___	___
SN-IND-20x21 Comb.-2-Patient/Family social pressure	Pearson Correlation	___	___	___	___	___	___	___	___
	Sig. (2-tailed)	___	___	___	___	___	___	___	___
SN-IND-20x21Comb.-3-Nurse regulatory social pressure	Pearson Correlation	___	___	___	___	___	___	___	___
	Sig. (2-tailed)	___	___	___	___	___	___	___	___
SN-IND-20x21Comb.-4-Hospital Safety Cmte. pressure	Pearson Correlation	___	___	___	___	___	___	___	___
	Sig. (2-tailed)	___	___	___	___	___	___	___	___
SN-IND-20x21 Comb.-5-Inexperienced RN pressure	Pearson Correlation	___	___	___	___	___	___	___	___
	Sig. (2-tailed)	___	___	___	___	___	___	___	___

**Correlation is significant at the 0.01 level (2-tailed) * Correlation is significant at the 0.05 level (2-tailed).

12		PBC-DIR-2-It is difficult for me to speak up.	PBC-DIR-3-Speaking up is beyond my control.	PBC-DIR-4-Whether I speak up or not is entirely up to me.	PBC-IND-23x24 Comb.-1-No mgmt.. support	PBC-IND-23x24 Comb.-2-No team member support	PBC-IND-23x24 Comb.-3-No open communication	PBC-IND-23x24 Comb.-4-No culture of safety	PBC-IND-23x24Combined 5-I lack good verbal communi-cation skills
PBC-DIR-1-I am confident that I could speak up if I wanted.	Pearson Correlation	___	___	___	___	___	___	___	___
	Sig. (2-tailed)	___	___	___	___	___	___	___	___
PBC-DIR-2-It is difficult for me to speak up.	Pearson Correlation	1	___	___	___	___	___	___	___
	Sig. (2-tailed)		___	___	___	___	___	___	___
PBC-DIR-3-Decision to speak up is beyond my control.	Pearson Correlation	.248**	1	___	___	___	___	___	___
	Sig. (2-tailed)	.000		___	___	___	___	___	___
PBC-DIR-4-Whether I speak up or not is entirely up to me.	Pearson Correlation	.089	.013	1	___	___	___	___	___
	Sig. (2-tailed)	.118	.821		___	___	___	___	___
PBC-IND-23x24Comb.-1-No mgmt. support	Pearson Correlation	.163**	.081	.089	1	___	___	___	___
	Sig. (2-tailed)	.004	.155	.117		___	___	___	___
PBC-IND-23x24Comb.-2-No team member support	Pearson Correlation	.188**	.046	.068	.715**	1	___	___	___
	Sig. (2-tailed)	.001	.417	.232	.000		___	___	___
PBC-IND-23x24Combined-3-No open commun.	Pearson Correlation	.272**	.091	.097	.693**	.714**	1	___	___
	Sig. (2-tailed)	.000	.112	.089	.000	.000		___	___
PBC-IND-23x24Comb.-4-No culture of safety	Pearson Correlation	.259**	.075	.052	.629**	.694**	.679**	1	.436**
	Sig. (2-tailed)	.000	.187	.361	.000	.000	.000		.000
PBC-IND-23x24Comb. 5-I lack verbal skills	Pearson Correlation	.209**	-.017	.021	.344**	.384**	.413**	.436**	1
	Sig. (2-tailed)	.000	.765	.712	.000	.000	.000	.000	
PBC-IND-23x24Comb.-6-Physicians are not supportive	Pearson Correlation	.281**	.031	.132*	.587**	.579**	.601**	.597**	.516**
	Sig. (2-tailed)	.000	.592	.020	.000	.000	.000	.000	.000
PBC-IND-23x24Comb.-7-Policies don't support speaking up	Pearson Correlation	.209**	.074	.114*	.521**	.543**	.546**	.560**	.394**
	Sig. (2-tailed)	.000	.193	.045	.000	.000	.000	.000	.000
PBC-IND-23x24Comb.-8-Worry about confrontation if I speak up	Pearson Correlation	.245**	.015	.079	.549**	.532**	.584**	.514**	.478**
	Sig. (2-tailed)	.000	.787	.165	.000	.000	.000	.000	.000

** Correlation is significant at the 0.01 level (2-tailed). * Correlation is significant at the 0.05 level (2-tailed).

13		PBC-IND-23x24Comb.-6-Physicians are not supportive	PBC-IND-23x24 Comb.-7-Policies/ procedures don't support speaking up	PBC-IND-23x24 Comb.-8-Worry about confrontation if I speak up
I expect to speak up.	Pearson Correlation	—	—	—
	Sig. (2-tailed)	—	—	—
I want to speak up.	Pearson Correlation	—	—	—
	Sig. (2-tailed)	—	—	—
I intend to speak up	Pearson Correlation	—	—	—
	Sig. (2-tailed)	—	—	—
ATT-DIR-Harmful or beneficial	Pearson Correlation	—	—	—
	Sig. (2-tailed)	—	—	—
ATT-DIR-Unpleasant or pleasant	Pearson Correlation	—	—	—
	Sig. (2-tailed)	—	—	—
ATT-DIR-Wrong or right	Pearson Correlation	—	—	—
	Sig. (2-tailed)	—	—	—
ATT-DIR-Bad or good practice	Pearson Correlation	—	—	—
	Sig. (2-tailed)	—	—	—
ATT-IND-17x18Comb.-1-Safeguard my patient	Pearson Correlation	—	—	—
	Sig. (2-tailed)	—	—	—
ATT-IND-17x18Comb.-2-Duty to Advocate	Pearson Correlation	—	—	—
	Sig. (2-tailed)	—	—	—
ATT-IND-17x18 Comb.-3-Timely Intervention	Pearson Correlation	—	—	—
	Sig. (2-tailed)	—	—	—
ATT-IND-17x18Comb.-4-Promote healthy work environment	Pearson Correlation	—	—	—
	Sig. (2-tailed)	—	—	—

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

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

14		PBC-IND-23x24 Comb.-6-Physicians are not supportive	PBC-IND-23x24 Comb.-7-Policies/ procedures don't support speaking up	PBC-IND-23x24 Comb.-8-Worry about confrontation if I speak up
ATT-IND-17x18Combined-5-Protecting myself legally	Pearson Correlation	___	___	___
	Sig. (2-tailed)	___	___	___
ATT-IND-17x18Combined-6-Promote safety policy awareness	Pearson Correlation	___	___	___
	Sig. (2-tailed)	___	___	___
ATT-IND-17x18Combined-7-Cause conflicts w/ pts,family,staff	Pearson Correlation	___	___	___
	Sig. (2-tailed)	___	___	___
SN-DIR-1-Most people think I should NOT speak up.	Pearson Correlation	___	___	___
	Sig. (2-tailed)	___	___	___
SN-DIR-2-It is expected of me to speak up.	Pearson Correlation	___	___	___
	Sig. (2-tailed)	___	___	___
SN-DIR-3-I feel under social pressure to speak up.	Pearson Correlation	___	___	___
	Sig. (2-tailed)	___	___	___
SN-DIR-4-People important to me WANT me to speak up.	Pearson Correlation	___	___	___
	Sig. (2-tailed)	___	___	___
SN-IND-20x21Comb.-1-Team member's social pressure	Pearson Correlation	___	___	___
	Sig. (2-tailed)	___	___	___
SN-IND-20x21Combined-2-Patient/Family social pressure	Pearson Correlation	___	___	___
	Sig. (2-tailed)	___	___	___
SN-IND-20x21Comb.-3-Nursing/regulatory organiz. social pressure	Pearson Correlation	___	___	___
	Sig. (2-tailed)	___	___	___
SN-IND-20x21Comb.-4-Hospital Safety Committee social pressure	Pearson Correlation	___	___	___
	Sig. (2-tailed)	___	___	___
SN-IND-20x21Comb.-5-Inexperienced RN's social pressure	Pearson Correlation	___	___	___
	Sig. (2-tailed)	___	___	___

** Correlation is significant at the 0.01 level (2-tailed). *Correlation is significant at the 0.05 level (2-tailed).

15		PBC-IND-23x24 Comb.-6-Physicians are not supportive	PBC-IND-23x24 Comb.-7-Policies/procedures don't support speaking up	PBC-IND-23x24 Comb.-8-Worry about confrontation if I speak up
PBC-DIR-1-I am confident that I could speak up if I wanted.	Pearson Correlation	—	—	—
	Sig. (2-tailed)	—	—	—
PBC-DIR-2-It is difficult for me to speak up.	Pearson Correlation	—	—	—
	Sig. (2-tailed)	—	—	—
PBC-DIR-3-Decision to speak up is beyond my control.	Pearson Correlation	—	—	—
	Sig. (2-tailed)	—	—	—
PBC-DIR-4-Whether I speak up or not is entirely up to me.	Pearson Correlation	—	—	—
	Sig. (2-tailed)	—	—	—
PBC-IND-23x24 Comb.-1-No management support	Pearson Correlation	—	—	—
	Sig. (2-tailed)	—	—	—
PBC-IND-23x24 Comb.-2-No team member support	Pearson Correlation	—	—	—
	Sig. (2-tailed)	—	—	—
PBC-IND-23x24 Comb.-3-No open communication	Pearson Correlation	—	—	—
	Sig. (2-tailed)	—	—	—
PBC-IND-23x24 Comb.-4-No culture of safety	Pearson Correlation	—	—	—
	Sig. (2-tailed)	—	—	—
PBC-IND-23x24 Comb. 5-I lack good verbal communication skills	Pearson Correlation	—	—	—
	Sig. (2-tailed)	—	—	—
PBC-IND-23x24 Comb.-6-Physicians are not supportive	Pearson Correlation	1	—	—
	Sig. (2-tailed)		—	—
PBC-IND-23x24 Comb.-7-Policies/procedures don't support speaking up	Pearson Correlation	.608**	1	—
	Sig. (2-tailed)	.000		—
PBC-IND-23x24 Comb.-8-Worry about confrontation if I speak up	Pearson Correlation	.658**	.608**	1
	Sig. (2-tailed)	.000	.000	

**Correlation is significant at the 0.01 level (2-tailed). * Correlation is significant at the 0.05 level (2-tailed).

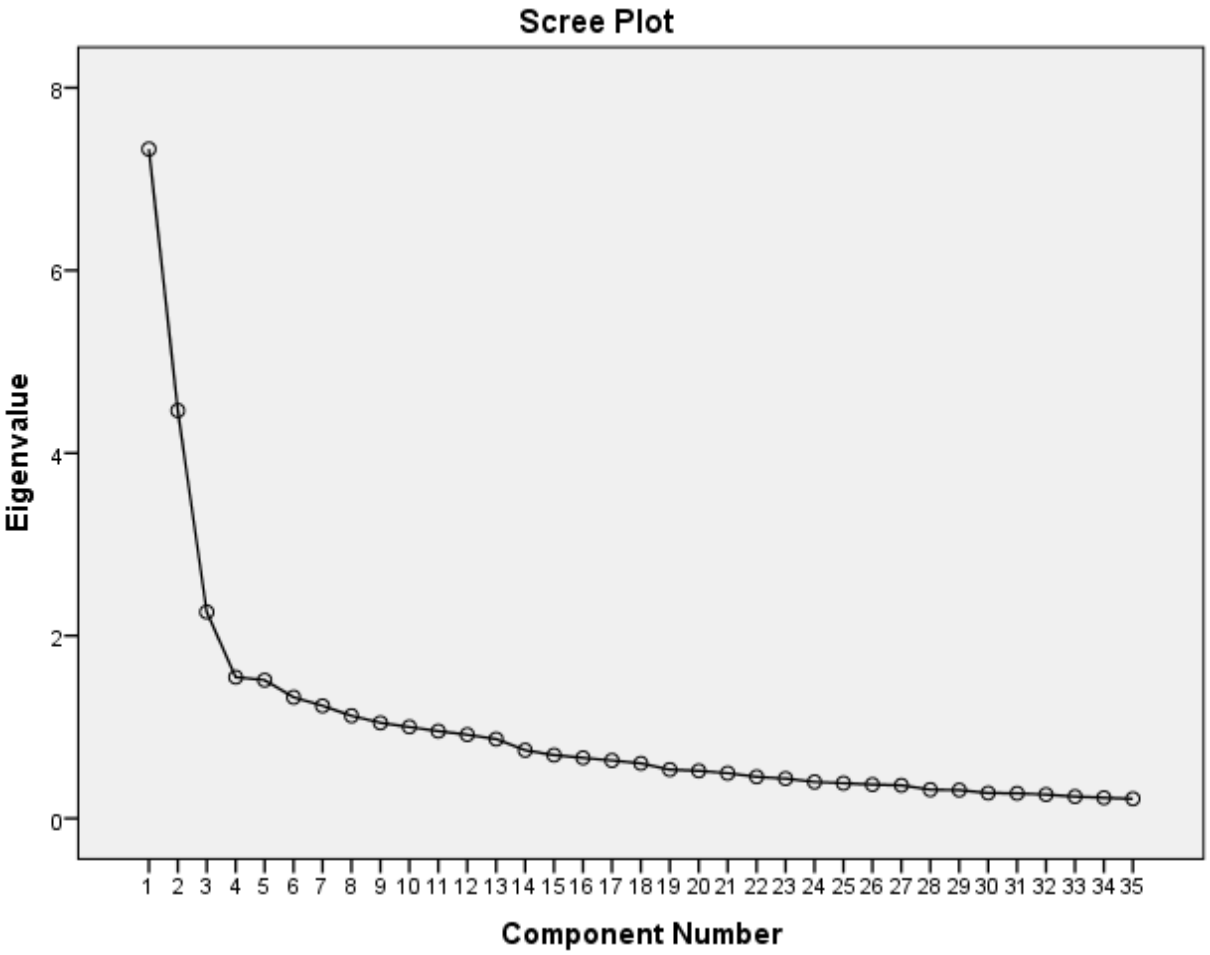
Appendix I. Total Variance Explained (Initial 10 Factor Solution)

Component	Initial Eigenvalues			Extraction Sums of Squared			Rotation
	Total	% of	Cumulative	Total	% of	Cumulative	Total
1	7.329	20.939	20.939	7.329	20.939	20.939	4.035
2	4.465	12.759	33.698	4.465	12.759	33.698	5.626
3	2.259	6.456	40.154	2.259	6.456	40.154	3.113
4	1.546	4.416	44.570	1.546	4.416	44.570	3.202
5	1.514	4.327	48.897	1.514	4.327	48.897	2.002
6	1.326	3.789	52.686	1.326	3.789	52.686	3.011
7	1.232	3.521	56.207	1.232	3.521	56.207	3.101
8	1.124	3.212	59.418	1.124	3.212	59.418	1.499
9	1.047	2.990	62.409	1.047	2.990	62.409	1.552
10	1.001	2.861	65.270	1.001	2.861	65.270	1.523
11	.955	2.729	67.998				
12	.917	2.619	70.617				
13	.868	2.481	73.098				
14	.747	2.134	75.232				
15	.693	1.980	77.212				
16	.663	1.893	79.105				
17	.634	1.811	80.917				
18	.603	1.721	82.638				
19	.534	1.525	84.163				
20	.521	1.490	85.653				
21	.495	1.414	87.067				
22	.456	1.302	88.369				
23	.436	1.246	89.615				
24	.399	1.141	90.756				
25	.386	1.102	91.858				
26	.370	1.057	92.914				
27	.362	1.035	93.949				
28	.314	.897	94.846				
29	.310	.885	95.732				
30	.278	.794	96.526				
31	.274	.784	97.310				
32	.262	.748	98.058				
33	.238	.681	98.739				
34	.226	.647	99.385				
35	.215	.615	100.000				

Extraction Method: Principal Component Analysis.

a. When components are correlated, sums of squared loadings cannot be added to obtain a total variance.

Appendix J. Scree Plot for Initial 10 Factor Solution



Appendix K. Initial 10 Factor Solution with Direct Oblimin Rotation: Component Matrix[a]

	Component									
	1	2	3	4	5	6	7	8	9	10
PBC-DIR-1-I am confident that I could speak up if I wanted.	.656									
PBC-IND-23x24Combined-6-Physicians are not supportive	.620	-.541								
ATT-IND-17x18Combined-6-Promote safety policy awareness	.609	.341								
I expect to speak-up.	.600			.328						
ATT-IND-17x18Combined-3-Timely Intervention	.599	.410								
ATT-IND-17x18Combined-5-Protecting myself legally	.557									
ATT-IND-17x18Combined-4-Promote healthy work environment	.538	.476								
PBC-IND-23x24Combined-7-Policies/procedures don't support speaking up	.534	-.517								
SN-DIR-2-It is expected of me to speak up.	.523						-.477			
SN-IND-20x21Combined-3-Nursing/regulatory organization. social pressure	.514									
ATT-IND-17x18Combined-2-Duty to Advocate	.479	.462	-.363							
ATT-DIR-Bad or good practice	.472	.412	-.443							
ATT-IND-17x18Combined-1-Safeguard my patient	.457	.349						.361		
SN-IND-20x21Combined-4-Hospital Safety Committee social pressure	.440		.410							
SN-IND-20x21Combined-2-Patient/Family social pressure	.395		.323							
PBC-IND-23x24Combined-3-No open communication	.531	-.638								
PBC-IND-23x24Combined-4-No culture of safety	.500	-.636								
PBC-IND-23x24Combined-1-No management support	.511	-.606								
PBC-IND-23x24Combined-2-No team member support	.540	-.598								
PBC-IND-23x24Combined-8-Worry about confrontation if I speak up	.556	-.557								
PBC-IND-23x24Combined 5-I lack good verbal communication skills	.386	-.469								
ATT-DIR-Wrong or right	.426	.344	-.477							
SN-IND-20x21Combined-1-Team member's social pressure	.358		.417							
SN-DIR-1-Most people think I should NOT speak up.	.336		.375			.360				
I want to speak-up.			-.323	.662						
I intend to speak-up	.552			.557						
SN-DIR-3-I feel under social pressure to speak up.					.697					
PBC-DIR-2-It is difficult for me to speak up.	.399				-.607					
PBC-DIR-3-Decision to speak up is beyond my control.					-.432	.498				.336
ATT-DIR-Harmful or beneficial	.372						.486			
SN-DIR-4-People important to me WANT me to speak up.	.405		.340				-.463			
ATT-DIR-Unpleasant or pleasant								.382		
PBC-DIR-4-Whether I speak up or not is entirely up to me.								-.330	.330	
ATT-IND-17x18Combined-7-Cause conflicts with patients, family, and staff			.347					.347		.494
SN-IND-20x21Combined-5-Inexperienced RN's social pressure			.339					.364		-.472

Extraction Method: Principal Component Analysis.

a. 10 components extracted.

Appendix L. Initial 10 Factor Solution, Pattern Matrix after Direct Oblimin Rotation[a]

	Component									
	1	2	3	4	5	6	7	8	9	10
ATT-IND-17x18Combined-5-Protecting myself legally	.735									
ATT-IND-17x18Combined-4-Promote healthy work environment	.667									
ATT-IND-17x18Combined-6-Promote safety policy awareness	.650									
ATT-IND-17x18Combined-3-Timely Intervention	.594		-.387							
ATT-IND-17x18Combined-2-Duty to Advocate	.500		-.492							
PBC-IND-23x24Combined-3-No open communication		-.858								
PBC-IND-23x24Combined-2-No team member support		-.856								
PBC-IND-23x24Combined-1-No management support		-.849								
PBC-IND-23x24Combined-4-No culture of safety		-.827								
PBC-IND-23x24Combined-6-Physicians are not supportive		-.768								
PBC-IND-23x24Combined-7-Policies/proced. don't support speaking up		-.756								
PBC-IND-23x24Combined-8-Worry about confrontation if I speak up		-.744								
PBC-IND-23x24Combined 5-I lack good verbal communication skills		-.523								
PBC-DIR-1-I am confident that I could speak up if I wanted.		-.330								
ATT-DIR-Wrong or right			-.738							
ATT-DIR-Bad or good practice			-.686							
ATT-IND-17x18Combined-1-Safeguard my patient			-.661							
I intend to speak-up				.829						
I want to speak-up.				.804						
I expect to speak-up.				.660						
SN-DIR-3-I feel under social pressure to speak up.					.838					
PBC-DIR-2-It is difficult for me to speak up.					-.721					
SN-IND-20x21Combined-4-Hospital Safety Committee social pressure						.747				
SN-IND-20x21Combined-3-Nursing/regulatory organiz. social pressure						.730				
SN-IND-20x21Combined-2-Patient/Family social pressure						.608				
SN-DIR-4-People important to me WANT me to speak up.							-.782			
SN-DIR-2-It is expected of me to speak up.							-.758			
SN-DIR-1-Most people think I should NOT speak up.							-.534			
ATT-IND-17x18Combined-7-Cause conflicts w/ pts,family,staff								.820		
ATT-DIR-Unpleasant or pleasant								.603		
PBC-DIR-4-Whether I speak up or not is entirely up to me.									.689	
ATT-DIR-Harmful or beneficial									.554	
SN-IND-20x21Combined-5-Inexperienced RN's social pressure										-.705
SN-IND-20x21Combined-1-Team member's social pressure										-.535
PBC-DIR-3-Decision to speak up is beyond my control.						.369				.456

Extraction Method: Principal Component Analysis. Rotation Method: Oblimin with Kaiser Normalization.

a. Rotation converged in 28 iterations.

Appendix M. Reliability Statistics: 35 Variables in Correlation Matrix with Item-Total Correlations

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.833	.871	35

	Corrected Item – Total Correlation
General Intention - I want to speak-up.	.145
General Intention - I intend to speak-up	.402
General Intention - I expect to speak-up.	.438
ATT-DIR-Bad or good practice	.276
ATT-DIR-Wrong or right	.237
ATT-DIR-Unpleasant or pleasant	.274
ATT-DIR-Harmful or beneficial	.263
ATT-IND-17x18Combined-1-Safeguard my patient	.282
ATT-IND-17x18Combined-2-Duty to Advocate	.273
ATT-IND-17x18Combined-3-Timely Intervention	.409
ATT-IND-17x18Combined-4-Promote healthy work environment	.375
ATT-IND-17x18Combined-5-Protecting myself legally	.426
ATT-IND-17x18Combined-6-Promote safety policy awareness	.470
ATT-IND-17x18Combined-7-Cause conflicts with patients, family, staff	.055
SN-DIR-1-Most people think I should NOT speak up.	.281
SN-DIR-2-It is expected of me to speak up.	.441
SN-DIR-3-I feel under social pressure to speak up.	-.044
SN-DIR-4-People important to me WANT me to speak up.	.293
SN-IND-20x21Combined-1-Team member's social pressure	.314
SN-IND-20x21Combined-2-Patient/Family social pressure	.340
SN-IND-20x21Combined-3-Nursing/regulatory organization social pressure	.433
SN-IND-20x21Combined-4-Hospital Safety Committee social pressure	.377
SN-IND-20x21Combined-5-Inexperienced RN's social pressure	.167
PBC-DIR-1-I am confident that I could speak up if I wanted.	.586
PBC-DIR-2-It is difficult for me to speak up.	.328
PBC-DIR-3-Decision to speak up is beyond my control.	.141
PBC-DIR-4-Whether I speak up or not is entirely up to me.	.181
PBC-IND-23x24Combined-1-No management support	.519
PBC-IND-23x24Combined-2-No team member support	.559
PBC-IND-23x24Combined-3-No open communication	.531
PBC-IND-23x24Combined-4-No culture of safety	.520
PBC-IND-23x24Combined 5-I lack good verbal communication skills	.401
PBC-IND-23x24Combined-6-Physicians are not supportive	.618
PBC-IND-23x24Combined-7-Policies/procedures don't support speaking up	.575
PBC-IND-23x24Combined-8-Worry about confrontation if I speak up	.609

Appendix N. Final PCA, 4 Factor Solution, Pattern Matrix, 17 Items[a]

	Component [b]			
	1	2	3	4
I expect to speak-up.			**.608**	
I want to speak-up.			**.889**	
I intend to speak-up			**.861**	
ATT-DIR-Wrong or right				**-.894**
ATT-DIR-Bad or good practice				**-.844**
PBC-IND-23x24Combined-1-No management support	**.846**			
PBC-IND-23x24Combined-2-No team member support	**.840**			
PBC-IND-23x24Combined-3-No open communication	**.861**			
PBC-IND-23x24Combined-4-No culture of safety	**.832**			
PBC-IND-23x24Combined-6-Physicians are not supportive	**.788**			
PBC-IND-23x24Combined-7-Policies/proced. don't support speaking up	**.745**			
PBC-IND-23x24Combined-8-Worry about confrontation if I speak up	**.764**			
ATT-IND-17x18Combined-2-Duty to Advocate		**.441**		-.483[b]
ATT-IND-17x18Combined-3-Timely Intervention		**.640**		
ATT-IND-17x18Combined-4-Promote healthy work environment		**.849**		
ATT-IND-17x18Combined-5-Protecting myself legally		**.784**		
ATT-IND-17x18Combined-6-Promote safety policy awareness		**.843**		
Eigenvalues	5.364	3.681	1.551	1.101
% of Variance (Total Cumulative = 68.79%)	31.551	21.656	9.123	6.474
Cronbach Alpha (Overall reliability for 17 item scale =0.859)	0.916	0.839	0.750	0.810

Extraction Method: Principal Component Analysis. Rotation Method: Oblimin with Kaiser Normalization. Note: Factor loadings are those that loaded > .4.

[a] Loadings for each factor are in bold.

[b] Factor 4: ATT-IND-17x18 Combined-2 Duty to Advocate not included; deletion improved Cronbach alpha for this factor to 0.810. Rotation converged in 7 iterations.

Appendix O. Biographical Sketch

BIOGRAPHICAL SKETCH

Provide the following information for the Senior/key personnel and other significant contributors in the order listed on Form Page 2.

Follow this format for each person. **DO NOT EXCEED FOUR PAGES.**

NAME Deborah Ruth Crumpler	POSITION TITLE Nursing Faculty
ERA COMMONS USER NAME (credential, e.g., agency login)	

EDUCATION/TRAINING *(Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable.)*

INSTITUTION AND LOCATION	DEGREE *(if applicable)*	MM/YY	FIELD OF STUDY
1. The University of Michigan, Ann Arbor, Michigan	BSN	05/1971	Nursing
2. The University of Michigan, Ann Arbor, Michigan	MSN	05/1975	Nursing
3. The University of Texas at Tyler, Tyler, Texas	PhD(c)	Expected Graduation 12/2015	Nursing

Please refer to the application instructions in order to complete sections A, B, C, and D of the Biographical Sketch.

A. Personal Statement

I have been a certified critical care nurse (CCRN) for over 20 years in a variety of positions including: staff nurse, critical care educator, nurse manager of a 22-bed ICU, and an instructor in Medical-Surgical Nursing II with nursing students in critical care areas of the hospital. I have seen a number of incidents where nurses struggled to speak up when they knew patients were at risk for harm. I have wondered what motivated some to intervene so easily while others would stay silent. Nurses are often the last line of defense for critically ill patients and they must get better at voicing concerns because errors are bound to happen even with safeguards in place. This study provides a base from which further assessments can be implemented, not only to validate a new instrument but to make others more aware that this is a problem that needs to be solved. While conducting this study, many of the respondents have contacted me by email with stories about how these surveys made them think about their behaviors and the importance of intervening on behalf of those who can't advocate for themselves. I hope to continue this program of research within the academic institution where I teach and share results through publication, speaking, and mentoring of students.

B. Positions and Honors

Clinical Instructor	University of Texas at Tyler	Longview, TX	2003-Present
Adjunct Instructor	University of Texas at Tyler	Longview, TX	2002-2002
Nurse Manager–MICU	Good Shepherd Medical Center	Longview, TX	1995-2002
Nurse Educator	Good Shepherd Medical Center	Longview, TX	1994-1995
Staff Nurse-MICU	Good Shepherd Medical Center,	Longview, TX	1992-1994
Staff Nurse-ICU	St Joseph's Hospital	Paris, TX	1991-1992
Instructor	Paris Junior College, ADN Programs	Paris, TX	1984-1992
Nursing Director	Mc Cuistion Regional	Paris, TX	1981-1984
Clinical Educator	VA Medical Center	Dallas, TX	1979-1981
Head Nurse	VA Medical Center	Dallas, TX	1975-1979
Staff Nurse	University of Michigan Hospital	Ann Arbor, MI	1971-1973

Honors

2015	Awarded by AACN for 20 years of continuous certification in critical care
2011	Who's Who among Students in American Universities and Colleges
2010 – Present	Phi Kappa Phi Honor Society, Tyler, Texas
1975 – Present	Sigma Theta Tau, International, Honor Society of Nursing, Iota Nu Chapter, Board Member Iota Nu Chapter, Senior Counselor, 2009-2011