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UNIVERSITY OF SAN DIEGO
Hahn School of Nursing and Health Science
DOCTOR OF PHILOSOPHY IN NURSING

The Effect of Organizational Commitment, Organizational Based
Self Esteem and Work Engagement on Nurses' Perception of
Medication Errors

by

Vanessa V. Wertheim

A dissertation presented to the

FACULTY OF THE HAHN SCHOOL OF NURSING AND
HEALTH SCIENCE

UNIVERSITY OF SAN DIEGO

In partial fulfillment of the

Requirements for the degree

DOCTOR OF PHILOSOPHY IN NURSING

February 8, 2016

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UNIVERSITY OF SAN DIEGO
Hahn School of Nursing and Health Science
DOCTOR OF PHILOSOPHY IN NURSING

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TITLE OF DISSERTATION:

The Effect of Organizational Commitment, Organizational
Based Self Esteem and Work Engagement on Nurses'
Perception of Medication Errors

DISSERTATION COMMITTEE:

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Abstract

Background: Organizations rely on the accurate reporting of medication errors or omissions by bedside nurses to improve the medication delivery system in order to prevent further errors from occurring in the future. In a time where nurses are managing more complex patients with shorter lengths of stay, full engagement in the role is essential. Literature from other disciplines suggests that many factors can influence work engagement (Chughtai & Buckley, 2011; Schaufeli, Salanova, González-Romá & Bakker, 2002; Schaufeli & Bakker, 2003). Two of these factors include organizational commitment and organizational-based self-esteem (Allen & Meyer, 1990; Bowling, Eschleman, Wang, Kirkendall & Alarcon, 2010).

The aim for this non-experimental, cross-sectional correlational study was to test an investigator developed conceptual model to determine if relationships exist between organizational commitment (OC), organizational-based self-esteem (OBSE), work engagement and nurses' perception of medication errors from a sample of RNs working in acute care facilities throughout the United States.

Methods: This study took place at two national nursing conferences in the United States during the fall of 2015. Nurses spending at least 50% of their time at the bedside in an acute care facility were asked to participate. A paper survey measuring organizational commitment, organizational-based self-esteem, work engagement and nurse perception of medication errors was administered and results analyzed using SPSS version 23 and AMOS/mPlus software.

Results: The findings from this study indicated that there was a significant negative relationship between OBSE and nurses' perception of medication errors and that

no statistically significant relationships existed between organizational commitment, nurse work engagement and nurses' perception of medication errors. Additionally, nurse and facility attributes did not statistically contribute to nurses' perception of medication errors with the independent variables accounting for only 18% of the variance.

Conclusion: This study is the first of its kind to evaluate the relationships between organizational commitment, nurse work engagement and OBSE on nurses' perception of medication errors. The results of this study suggest that as OBSE increases, perceived medication error reporting decreases. Further research is needed to better understand OBSE in the nursing profession and its implications in other areas of nursing research.

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Dedication

This is dedicated to my amazing children – Ethan and Julia. I love you more than you will ever know and I hope that I have inspired you to never give up on your dreams. As long as you have Passion, Attitude and Drive (your PAD), you can achieve anything you set your mind to. Don't let anyone ever hold you back from achieving your goals and dreams in life – you can do it!

Acknowledgements

To my “Dream Team” Dissertation Committee: Dr. Urden, Dr. Mayo and Dr. Georges – thank you so much for all of your time, patience and wisdom over the last few years. I would not be the nurse scholar I am today without you.

To all of my professors – I am forever grateful for the pearls of knowledge you have passed on to me during my time here at USD. I plan to continue gaining pearls and passing them along as learning is a lifelong endeavor.

To my truly amazing PhD gang – Julie, Jodi, Ginger, Mark, Marcel, Marissa, Valerie, Vicki, Kim, Mohammed, Monique, Tammie, Kathy, Essie and Teri – we made it! I am so blessed to have each of you in my life. We knew from the beginning that we were more than colleagues...we are truly a family.

To Eric – you have walked this journey with me since Day 1. Thank you for your support, encouragement, patience and understanding during one of the most challenging periods in my life. Thank you for being there every step of the way.

To my sister, Erica – thank you for always being there in the good times and bad. Sisters are forever...

To my parents – Look what your 29-week, 1100g preemie did! Thank you for always believing in me. I grew up watching you build your own success through hard work and perseverance. You have inspired me to do the same. Thank you for that gift - I love you!

“What you get by achieving your goals is not as important as what you become by achieving your goals.” — Henry David Thoreau

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Chapter 1

Introduction

Adoption of the Affordable Care Act and major changes to Medicare reimbursement has changed the way hospitals do business. Nurses have taken on more responsibility with less available resources, which can severely impact engagement in their role, organization and profession (Kutney-Lee et al., 2009). Organizations cannot afford to have a disengaged nursing workforce. Previous studies highlight a direct association between nurse engagement and patient complications and mortality (Aiken et al., 2012; Duffield et al., 2011; Needleman, Buerhaus, Mattke, Stewart & Zelevinsky, 2002). These studies reveal the association between poor quality outcomes on nurse sensitive indicators such as Central Line-associated Bloodstream Infections (CLABSI) and low nurse engagement (Kavanagh, Cimiotti, Abusalem & Coty, 2012). In fact, organizations with low nurse engagement pay out significantly more in malpractice claims than organizations with high nurse engagement (Charmel & Frampton, 2008).

Adverse drug events (ADEs) due to medication errors further contribute to the rising cost of healthcare. According to the 2001 Institute of Medicine (IOM) report *To Err is Human: Building A Safer Health System*, roughly two out of every 100 admissions experience a preventable ADE, at an expense of approximately \$2 billion annually (Kohn, Corrigan & Donaldson, 2000).

Organizations rely on the accurate reporting of medication errors or omissions by bedside nurses to improve the medication delivery system – prescription to administration, in order to prevent further errors from occurring in the future.

Unfortunately, many nurses do not report medication errors either for fear of disciplinary action or for lack of understanding of what constitutes a medication error (Hewitt, 2010). With higher acuity patients and less resources for nurses, this continues to be a significant topic for the nursing profession.

This chapter will introduce the reader to the purpose of this study, the specific aims for the study, as well as the proposed theoretical model associated with the study.

Background

Work engagement has been a heavily researched topic in recent nursing literature. In a time where nurses are managing more complex patients with shorter lengths of stay, full engagement in the role is essential. Literature from other disciplines suggests that many factors can influence work engagement (Chughtai & Buckley, 2011; Schaufeli, Salanova, González-Romá & Bakker, 2002; Schaufeli & Bakker, 2003). Two of these factors include *organizational commitment* – the emotional attachment that an employee has to an organization and *organizational-based self-esteem* – how an employee believes that he or she provides a valuable contribution to an organization (Allen & Meyer, 1990; Bowling, Eschleman, Wang, Kirkendall & Alarcon, 2010).

Organizational commitment has been a topic of interest since the 1950s. A pioneer in the area of commitment, Becker (1960) identified the challenges associated with defining organizational commitment and proposed one of the first theories on the concept of commitment. Since Becker's 1960 landmark paper, many psychologists

and sociologists have refined the concept of commitment and proposed their own theories. The three-component model of commitment proposed by Meyer and Allen (1991), along with the instrument based on their concept will be used for this research study. Further discussion of the Meyer et al. three-component model will take place in chapter two.

Organizational-Based Self-Esteem (OBSE), first introduced by Pierce, Gardner, Cummings and Dunham (1989), found its roots in Korman's (1970) self consistency-theory. The theory is based on the belief that employees wish to uphold a consistent level of self-esteem and will shape their attitude and performance in the workplace to reflect their view of themselves (Bowling et al., 2010).

Over the past 25 years, Pierce and colleagues have defined, developed and validated a measurement tool designed to measure OBSE. With only a small amount of literature available identifying OBSE in the nursing workforce, this is an opportunity to expand this concept and tool into the nursing profession. Further discussion of the concept of OBSE will be discussed in chapter two.

Bedside nurses are the primary administrators of medication in the acute care setting. The administration of medication to patients places a significant amount of responsibility and liability on the nurse (Gladstone, 1995). In order to properly administer medication, the nurse at a minimum must first understand the mechanism of action, the proper route, the side effects, the timing of the dose as well as the correct dose for the type of patient treated with the medication (O'Shea, 1999). As stated earlier, many nurses do not report medication errors either for fear of disciplinary action or for lack of understanding of what constitutes a medication error

(Hewitt, 2010). At least five years before the IOM report came out identifying the importance of reconciling medication errors, Gladstone (1995) accurately identified the problem within our profession and presented factors that may contribute to the errors and underreporting. Despite our effort to reduce medication errors, adverse drug events continue to cause significant harm and deaths without regard to age, sex, race or location (Hewitt, 2010). In-depth discussion on this topic will be continued in chapter two.

Study Purpose

The purpose of this non-experimental, cross-sectional correlational study was to test an investigator developed conceptual model to determine if relationships exist between organizational commitment (OC), organizational-based self-esteem (OBSE), work engagement and nurses' perception of medication errors from a sample of RNs who work in acute care facilities throughout the United States. Through an investigator-designed conceptual model, it was hypothesized that OC and OBSE will have a positive effect on nurse work engagement and perception of medication errors. The specific aims for the study are as follows:

Specific Aims

1. Describe organizational commitment (affective, normative and continuance commitment), OBSE, work engagement (vigor, absorption and dedication), organizational characteristics (facility type; magnet status; size and geographic location), nurse characteristics (age; education; unit type, hours worked and role; and tenure in organization and profession), and nurses' perception of medication errors.

2. Test the conceptual model that relationships are present between organizational commitment (affective, normative and continuance commitment), OBSE, work engagement (vigor, dedication and absorption) and nurses' perception of medication errors (**Figure 1**).
3. Test the relationship of organizational characteristics (facility type; magnet status; size and geographic location) on nurses' perception of medication errors.
4. Test the relationship of nurse attributes (age; education; unit type, hours worked and role; and tenure in organization and profession) on nurses' perception of medication errors.

Conceptual Model

The proposed conceptual model for this study was a blending of concepts from Meyer and Allen's three-component model of organizational commitment, Pierce, Gardner, Cummings and Dunham's organizational based self esteem concept, and Schaufeli and Bakker's concept of work engagement (see **Figure 1**). The conceptual model serves to describe the proposed relationships between the variables of organizational commitment, OBSE and work engagement on nurses' perception of medication errors. Additionally, this study serves to determine, which, if any, demographic (nurse or organizational) variables have a significant influence on the proposed model.

Chapter two will address in more detail the concepts outlined in the proposed conceptual model and chapter three will further define the variables to be used in the study.

Summary

Mitchell Rabkin, M.D., former president of Beth Israel Hospital, once wrote: "Hospitals are primarily nursing institutions, where 'doctoring' is episodic and hospital success is due to a collegueship and partnership between physician and nurse" (Fasoli, 2010). In our ever evolving and challenging healthcare environment, it is imperative that we create an environment where all disciplines are engaged in their role and that all patients receive the best possible care. Work engagement, organizational commitment and organizational based self esteem can play a role in determining how well nurses are caring for our patients. It is anticipated that this study will help highlight these relationships and provide insight into this understudied topic of nursing.

Figure 1 – Proposed Conceptual Structural Equation Model

Chapter 2

Literature Review

Introduction

In this chapter, a summary of the literature regarding organizational-based self-esteem, organizational commitment, work engagement and perception of medication errors will be presented. A comprehensive literature search was completed using the Cumulative Index to Nursing and Allied Health Literature (CINAHL), Google Scholar, and references obtained from cited articles. Key words used in the search included “OBSE”, “Organizational-Based Self-Esteem”, “Organizational Commitment”, “Work Engagement”, “Nursing”, “Nursing Profession”, “Nursing Engagement”, “Medication Error”, “Nursing Medication Error” and “Perception of Medication Error”.

Organizational Based Self Esteem

As mentioned in chapter one, OBSE, first introduced by Pierce et al. (1989), found its roots in Korman’s (1970) self consistency-theory. The theory is based on the belief that employees wish to uphold a consistent level of self-esteem and will shape their attitude and performance in the workplace to reflect their view of themselves (Bowling et al., 2010). Prior to the development of the concept of OBSE, psychologists and sociologists were at a loss on how to accurately study self-esteem in the workplace. Pierce et al. (1989) discuss their rationale for the concept:

Many of the constructs that are traditionally employed in organizational paradigms, such as turnover, climate, commitment, and citizenship, are oriented toward employees and their role within a total organization, and it is at the total work

environment level of analysis that there is a need for an appropriate measure of self-esteem. To our knowledge, however, no construct-validated measure of self-esteem exists that is anchored in an organizational frame of reference, even though many important constructs in the organizational sciences are organization-based. We directed the present research effort toward the development and initial validation of such a measure of self-esteem, hoping that such a measure will better enable researchers to examine the effects of self-esteem in relation to other organization-based constructs. (p.624)

Pierce and his colleagues believed that by using Korman's self consistency theory as the foundation for their OBSE construct, they could make a case that one's overall self-esteem - *global self esteem* can be related to *task-specific self esteem* – that is, individual experiences within an organization that can determine an individuals organizational-based self-esteem (Pierce et al., 1989). Thus, OBSE can be defined as the degree to which an employee feels that he/she is a capable, significant and worthy member of an organization (Pierce et al., 1989; Peirce & Gardner, 2004; Gardner, Huang, Niu, Pierce & Lee, 2014; Chen et al., 2015).

Over the past 25 years, OBSE has been researched in various disciplines around the world. Researchers in business administration, industrial and organizational psychology and sociology have tested the concept and measure to enrich their areas of study. Only one study, however, has been found to date using OBSE as a measure for bedside nurses (Chen et al., 2015). Chen et al. (2015) utilized the OBSE construct and instrument to determine the factors associated with

Taiwanese nurses' intention to stay in a Taiwan hospital. Chen et al. (2015) found a significant correlation between intention to stay and high OBSE.

Although no current studies could be found for using the OBSE construct on nurses in the United States, one study on Emergency Medical Technicians (EMTs) researched the effect of OBSE on career commitment and quality of care (Carson, Carson, Lanford, & Roe, 1997). Carson and her colleagues found that EMTs with high OBSE were more committed to their career and valued providing quality care as opposed to those EMTs with low OBSE (Carson et al., 1997).

Other studies in OBSE literature focused on topics such as pay level and its impact on OBSE and performance (Gardner, van Dyne & Pierce, 2004), OBSE and narcissism in organizations (Gardner & Pierce, 2011), organizational uncertainty and the moderating effects of OBSE (Hui & Lee, 2000), and the concept of 'organizational care' and its influence on OBSE (McAllister & Bigley, 2002). Additionally, two studies focused on OBSE and the supervisor-subordinate role. Sekiguchi, Burton and Sablynski (2008) focused on the concept of job embeddedness and its relationship to OBSE and Panaccio and Vandenberghe's (2011) study focused on role clarity, OBSE and commitment to supervisors. One study by Lapointe, Vandenberghe and Panaccio (2011) combined the factors of organizational commitment and OBSE in observing emotional exhaustion and turnover. The concept of organizational commitment will be addressed next.

Organizational Commitment

As introduced in chapter one, the concept of commitment has had a great deal of attention since the 1950s. A pioneer in the area of commitment, Becker (1960)

identified the challenges associated with defining organizational commitment and proposed one of the first theories on the concept of commitment. Becker's theory stemmed from the idea that employees are committed because they make "side bets", or hidden investments by remaining in an organization (Becker, 1960; Powell & Meyer, 2003; Cohen, 2007). Meaning, over a period of time, an employee has made a number of investments such as time, effort and tenure in an organization. If the employee were to leave, these investments would be lost. For some employees, the potential loss of these investments and lack of alternatives to make up for the loss, keep them committed to their organization (Becker, 1960; Powell et al., 2003; Cohen, 2007).

Since Becker's (1960) introduction of his concept and theory on commitment, many researchers have attempted to expand and redefine the concept into organizational and sociological research. Kanter (1968), as part of her dissertation research, focused on the idea that employee commitment can be broken down into three types: *cognitive-continuance commitment* – commitment to social roles, *cathectic-cohesion commitment* – attachment to social relationships, and *evaluative-control commitment* – commitment to the norms or "inner convictions that morally obligate an individual" (p.501). Other researchers have defined organizational commitment as "...the relative strength of an individual's identification with and involvement in a particular organization" (Mowday, Steers & Porter, 1979, p.226; Meyer & Herscovitch, 2001, p.302), "...the totality of normative pressures to act in a way which meets organizational goals and interests." (Weiner, 1982, p.421; Meyer et

al., p.302) and “...a bond or linking of the individual to the organization.” (Mathieu & Zajac, 1990, p.171; Meyer et al., 2001, p.302).

In the mid 1980s Meyer and Allen refined Becker’s side-bet theory and built on Kanter’s (1968) commitment types using social norms, believing that side-bets are actually attitudes toward commitment due to the belief that employees show “awareness” of costs associated with leaving (Meyer & Allen, 1984; Ko, Price & Mueller, 1997; Powell et al., 2003; Cohen, 2007). To this extent, Meyer and Allen sought to measure the employee’s perception as to the amount and degree of side-bets he or she has made (Meyer et al., 1984).

In the early 1990s, Meyer and Allen redefined organizational commitment as “...a psychological state that binds the individual to the organization (i.e., makes turnover less likely)” and proposed a three-component model of conceptualization of organizational commitment (Allen & Meyer, 1990, p.14). Meyer and Allen’s model is considered by many to be the leading model in organizational commitment research (Solinger, van Olffen & Roe, 2008). The three components in their model are affective commitment, normative commitment and continuance commitment.

Affective Commitment

Affective Commitment, the first of the three-component model, is based on the emotional attachment that an employee has with the organization. With this component of commitment, the employee wants to stay with the organization based on his or her emotional attachment and identification with the organization (Allen et al., 1990; Allen &

Meyer, 1996; Irving, Coleman & Cooper, 1997; Meyer, Stanley, Herscovitch & Topolnytsky, 2002; Erdheim, Wang & Zickar, 2006). This emotional attachment stems from a feeling of comfort in the organization and a sense of purpose or job challenge (Meyer, Allen & Gellatly, 1990).

Normative Commitment

Normative Commitment, the second component of the three-component model, is based on the theory that employees feel a sense of obligation to their organization and stay because it is the right thing to do (Allen et al., 1990; Allen et al., 1996; Meyer & Parfyonova, 2010). Cohen (2007) took it one step further by adding “normative commitment is affected in the main by socialization and/or culture prior to entry into an organization” (p.340). In other words, the values and beliefs an employee brings into the organization will drive their commitment to the organization.

Continuance Commitment

Continuance Commitment, the final component of the three-component model, is based on the costs associated with leaving an organization (Allen et al., 1990; Allen et al., 1996). In other words, an employee may want to leave an organization, but realize that the costs associated with leaving, such as time invested, position attained, salary and lack of alternatives, are too high (Meyer et al., 1990). Thus, the employee stays committed to an organization because they feel that they have to stay. This component of commitment stems from Becker’s (1960) “side-bet” theory of commitment (Cohen, 2007).

Organizational Commitment in Nursing

Organizational commitment has been a topic of interest in the nursing profession in recent years. Due to the potential nursing shortage of experienced nurses in the United States and internationally, a majority of research on this topic focuses on the relationship between organizational commitment and nursing turnover (De Gieter, Hofmans & Pepermans, 2011; Carter & Tourangeau, 2012). For this study, Allen and Meyer's model will be used to determine the relationship between organizational commitment and work engagement, and subsequently its impact on nurses' perception of medication errors.

Work Engagement

Work engagement is a broad term that has been subject to many variations in terminology and definitions. Fasoli (2010) defines *work engagement* as "an employee's psychological commitment to one's job and workplace" (p.19). This sounds very similar to our previous definition of *affective commitment*. It makes sense, though, to consider that to be engaged in one's job, an employee should have an emotional attachment to their work.

Arnold Bakker, a leader in engagement research, defines individuals who are engaged in their work as " [those with] positive emotions, including happiness, joy, enthusiasm; [who] experience better health; create their own job and personal resources; and transfer their engagement to others." (Bakker & Demerouti, 2008, p.215). In addition, Schaufeli & Bakker (2004) define work engagement as "a positive, fulfilling, work-related state of mind that is characterized by vigor, dedication, and absorption...[and] engagement refers to a persistent and pervasive

affective–cognitive state that is not focused on any particular object, event, individual, or behavior.”(p.295)

Schaufeli et al. (2004) operationalized their definition of work engagement into the three dimensions in the Utrecht Work Engagement Scale (UWES). The three dimensions are vigor, dedication and absorption. The first dimension, *vigor*, is described as the energy and enthusiasm one brings to his/her work, and the resilience and persistence to overcome work-related challenges (Schaufeli et al., 2004; Spence-Laschinger, Wilk, Cho & Greco, 2009). The second dimension, *dedication*, is described as the pride, inspiration and sense of significance one brings to his/her work (Schaufeli et al., 2004; Spence-Laschinger et. al, 2009). The final dimension, *absorption*, refers to the feeling one gets when time passes quickly while immersed in his/her work (Schaufeli et al., 2004; Spence-Laschinger et al., 2009).

Work engagement has been studied extensively in the nursing workforce. Topics such as empowerment, experience and work engagement (Laschinger, Wilk, Cho & Greco, 2009); moral distress, critical reflective practice and work engagement (Lawrence, 2011); drivers of nurse work engagement (Rivera, Fitzpatrick & Boyle, 2011); predictors of work engagement among medical-surgical nurses (Simpson, 2009); work engagement and patient-centered care (Abdelhadi & Drach-Zahavy, 2011) and work engagement related to nurse retention (Tillott, Walsh & Moxham, 2013) are a sampling of the topics found in nursing literature.

Although a significant amount of research is occurring on work engagement, only 18% of the nursing workforce is actively engaged in their work, leaving 82% that are not engaged or actively disengaged (Blizzard, 2002; Fasoli, 2010). Clearly,

work engagement in the nursing profession continues to be an unresolved issue. This study aims to add further insight into the work engagement literature and bring our profession closer to having a more engaged nursing workforce.

Nurse Perceptions of Medication Errors

Bedside nurses are the primary administrators of medication in the acute care setting. The administration of medication to patients places a significant amount of responsibility and liability on the nurse (Gladstone, 1995). Although many active and latent system failures must occur in order for a medication error to reach a patient, as the administrator of the medication, nurses are held accountable (Gladstone, 1995; Fry & Dacey, 2007; Ulanimo, O’Leary-Kelley & Connolly, 2007; Mahmood, Chaudhury & Valente, 2011; Maiden, Georges & Connelly, 2011).

The National Coordinating Council for Medication Error Reporting and Prevention (NCCMERP) provides the most succinct definition of *medication error* found to date:

“Any preventable event that may cause or lead to inappropriate medication use or patient harm while the medication is in the control of the healthcare professional, patient, or consumer. Such events may be related to professional practice, prescribing; order communication; product labeling; packaging and nomenclature; compounding; dispensing; distribution; administration; education; monitoring; and use.” (National Coordinating Council for Medication Error Reporting, 2015, para.1)

Although the definition provided by NCCMERP is comprehensive, a majority of the studies on nurses' perception of medication errors found that nurses interpret or redefine what constitutes a medication error based on their current situation (Ulanimo et al., 2007; Osborne et al., 1999; Mayo and Duncan, 2004; Hewitt, 2010). For organizations that rely on accurate self-reporting of medication errors by bedside nurses, this can lead to misleading, inaccurate and incomplete data when attempting to improve the medication delivery system (Hewitt, 2010).

According to Osborne et al. (1999) an estimated 25% of all medication errors are reported. This leaves 75% of all medication errors unreported. Redefining and/or self-interpreting medication errors are only two reasons why medication errors go unreported. Many nurses do not report errors for fear of the psychological, professional and financial repercussions for doing so (Gladstone, 1995; Osborne et al., 1999; Mayo et al., 2004; Ulanimo et al., 2007).

Nurses go into nursing to care for the sick. When a medication error occurs, it goes against the fiber of our profession. The psychological toll and loss of self-esteem and confidence the nurse experiences can be personally and professionally paralyzing. Although medication errors have been studied since the 1960s, they continue to occur (Cohen, M., 2007). With nurses on the front lines, this research study hopes to add to current literature and provide another angle to view this important area of nursing science.

Summary

Gladstone (1995) points out that "In the relationship between patient and nurse, there is an implicit trust that the nurse will always be working for the well-

being and benefit of the patient...this trust is violated when a nurse makes a drug administration error” (p.628). Medication errors continue to harm our patients and rattle nurses practicing at the bedside. As stated in chapter one, according to the 2001 Institute of Medicine (IOM) report *To Err is Human: Building A Safer Health System*, roughly two out of every 100 admissions experience a preventable ADE, at an expense of approximately \$2 billion annually (Kohn et al., 2000). This study aims to add further insight into the potential relationship of organizational commitment and OBSE and its impact on nurse work engagement and perception of medication errors. Chapter three will explain the design of the study, the research sample and setting along with the variables, instruments and data collection methods.

Chapter 3

Methods

Introduction

This chapter will provide an outline of the methodology for the research study, including: purpose; research design and sample; protection of human subject considerations; variables and operational definitions; and data collection instruments and analysis.

Purpose

The purpose of this non-experimental, cross-sectional correlational study was to test an investigator developed conceptual model to determine if relationships exist between organizational commitment (OC), organizational-based self-esteem (OBSE), work engagement and nurses' perception of medication errors from a sample of RNs who work in acute care facilities throughout the United States. Through an investigator-designed conceptual model (see **Figure 1**), it was hypothesized that OC and OBSE will have a positive effect on nurse work engagement and perception of medication errors. The specific aims for the study are as follows:

1. Describe organizational commitment (affective, normative and continuance commitment), OBSE, work engagement (vigor, absorption and dedication), organizational characteristics (facility type; magnet status; size and geographic location), nurse characteristics (age; education; unit type, hours worked and role; and tenure in organization and profession), and nurses' perception of medication errors.

2. Test the conceptual model that relationships are present between organizational commitment (affective, normative and continuance commitment), OBSE, work engagement (vigor, dedication and absorption) and nurses' perception of medication errors (**Figure 1**).
3. Test the relationship of organizational characteristics (facility type; magnet status; size and geographic location) on nurses' perception of medication errors.
4. Test the relationship of nurse attributes (age; education; unit type, hours worked and role; and tenure in organization and profession) on nurses' perception of medication errors.

Research Design

This non-experimental, cross-sectional correlational study examined the relationships between affective commitment (AC), normative commitment (NC), continuance commitment (CC) (which make up OC), OBSE and vigor, dedication and absorption (which make up work engagement) on nurses' perception medication errors. According to Polit and Beck (2012), non-experimental correlational studies describe the relationship between variables without the ability to ethically manipulate the variables.

Setting

This study took place during two different national conferences occurring in two different United States locations in the fall of 2015. Exhibitor space was acquired for each conference as a platform to carry out sample recruitment, survey distribution and survey collection. The first conference was the annual American Nurses

Credentialing Center (ANCC) National Magnet Conference that occurred October 7-9, 2015 in Atlanta, GA. The second conference was the annual National Association of Neonatal Nurses (NANN) conference that occurred October 22-25, 2015 in Dallas, TX.

Research Sample

The research sample for this study was a purposive, non-randomized sample of RNs attending two national professional conferences in Atlanta, GA and Dallas, TX. Registered nurses meeting the inclusion criteria were solicited to complete the survey. Recruitment of the research sample took place through the use of exhibitor space during breaks, lunches and free time between sessions at the professional conferences. The exhibit booth had information available describing the research study, consent forms and the research survey.

As a secondary measure to collect data, attendance at local chapter meetings (in California) as well as mailings to members of the following professional groups: American Association of Critical Care Nurses, Academy of Medical Surgical Nurses and the National Association of Neonatal Nurses would have been requested if the sample size for the study was not met. As a “thank you” for the time spent on the survey, nurses completing the survey received a give-away gift valued at \$5 USD.

Inclusion and Exclusion Criteria

Registered Nurses (RNs) working in an acute care setting were invited to participate in the study. Exclusion criteria included RNs working in home health care, nursing homes, as a private duty nurse, as a travel nurse, or working as a nurse outside of the United States.

Sample Size

Structural Equation Modeling (SEM) was used in the study to address the specific aims stated at the beginning of this chapter. Determining appropriate sample sizes for studies using SEM can be challenging. As highlighted by Wolf, Harrington, Clark & Miller (2013):

“One of the strengths of SEM is its flexibility, which permits examination of complex associations, use of various types of data (e.g., categorical, dimensional, censored, count variables), and comparisons across alternative models. However, these features of SEM also make it difficult to develop generalized guidelines regarding sample size requirements.” (p.914).

Sample size is generally determined by model complexity. Since there is no “one-size-fits-all” approach to determining sample size using SEM, the *N:q rule* will be used to determine sample size for this study (Kline, 2011). The *N:q rule* is the ratio of cases (N) to the number of model parameters that require statistical estimates (q). The *N:q rule* is used for SEM research that intends to use the maximum likelihood (ML) method of estimation, which is most often used in SEM (Kline, 2011).

A widely accepted *N:q* ratio in SEM is 20 cases for every 1 model parameter, or $N:q = 20:1$ (Kline, 2011). Using this ratio, the sample size needed for this study with the ML method, is 380 nurses (20 cases: 19 parameters = $20 \times 19 = 380$) (see Table 1 for list of parameters). Further discussion of SEM will take place in the data analysis section.

Protection of Human Subjects

In 1974, the National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research was created to protect individuals participating in human subjects research. The commission developed guidelines to assist researchers in following basic ethical principles of respect of persons (autonomy), beneficence and justice (US Department of Health and Human Services, 1979). These guidelines are followed today through the use of individual Institutional Review Boards (IRB). It is the responsibility of individual IRBs to provide oversight, using established federally mandated guidelines, in order to guide researchers conducting human subject research. For this research study, IRB consent for oversight was obtained from the University of San Diego Institutional Review Board.

Protection of confidentiality and anonymity during and after data collection included coding the survey and demographic questionnaire with a de-identified numeric coding system. All surveys and questionnaires are currently kept in a locked filing cabinet that only for which the research team has access. No electronic copies of the surveys or questionnaires have been made. Potential risks to participants in the study included loss of confidentiality and evoking strong feelings about the topics questioned in the survey.

Variables/Operational Definitions

Variables/Operational Definitions

Variables/Operational Definitions for the study are listed in **Table 1**.

Dimension	Concept/Variable	Operational Definition	Measurement Tool
Organizational Commitment (OC) <u>Independent Variable</u>	1. Affective Commitment 2. Normative Commitment 3. Continuous Commitment	1. The emotional attachment that an employee has with the organization. 2. The sense of obligation an employee feels to their organization and stay because it is the right thing to do. 3. An employee that stays committed to an organization because they have to – they have too much invested to leave.	Three Component Model of Organizational Commitment Survey (Allen & Meyer, 1990; Allen & Meyer, 2004)
Organizational Based Self Esteem (OBSE) <u>Independent Variable</u>	4. OBSE	4. The degree to which an employee feels that he/she is a capable, significant and worthy member of an organization.	Organizational Based Self Esteem Survey (Pierce, Gardner, Cummings & Dunham, 1989)
Work Engagement <u>Independent Variable</u>	5. Vigor 6. Dedication 7. Absorption	5. The energy and enthusiasm one brings to his/her work, and the resilience and persistence to overcome work-related challenges. 6. The pride, inspiration and sense of significance one brings to his/her work. 7. The feeling one gets when time passes quickly while immersed in his/her work.	Utrecht Work Engagement Survey (Schaufeli & Bakker, 2003)
Perception of Medication Errors <u>Dependent Variable</u>	8. Medication Errors	8. “Any preventable event that may cause or lead to inappropriate medication use or patient harm while the medication is in the control of the healthcare professional, patient, or consumer.” (National Coordinating Council for Medication Error Reporting, 2015, para.1)	Modified Gladstone Survey – Question 46 (Osborne, Blais & Hayes, 1999)
Organizational Characteristics <u>Independent Variable</u>	9. Facility type 10. Magnet status 11. Bed Size 12. Geographic location	[9-12] All defined as organizational characteristics	Investigator Questionnaire
Nurse Attributes <u>Independent Variable</u>	13. Age 14. Education 15. Unit type 16. Hours worked/wk 17. Role 18. Tenure in organization 19. Tenure in profession	[13-19] All defined as demographics	Investigator Questionnaire

Table 1. Variables and Operational Definitions

Data Collection

Measurement tools for the study included an investigator designed nurse and facility demographic questionnaire, the 18-item Three-Component Model of Employee Commitment, the 10-item Organizational Based Self Esteem Scale, the 17-item Utrecht Work Engagement Scale and the 14-Item Modified Gladstone. All instruments except for the demographic questionnaire and Modified Gladstone were measured on a five-point Likert scale. All instruments exhibited acceptable reliability with Cronbach α exceeding .70 for all scales. All instruments were presented in paper-pencil format and took 20-25 minutes to complete.

Instruments

Registered Nurse and Facility Investigator Questionnaire

In order to properly determine the impact of nurse attributes or facility characteristics on organizational commitment, OBSE, work engagement and nurses' perception of medication errors, the investigator had created a 13-item demographic questionnaire distributed with the four-instrument survey for the study. Respondents were asked to provide personal information including: age, education, unit type, hours worked per week, role in unit and tenure at facility and in profession. In addition, respondents were asked to provide information on their facility, including: facility type, magnet status, bed size and geographic location (state and rural/urban) (See Appendix A).

Three-Component Model of Employee Commitment Survey

The three-component model of employee commitment developed by Allen and Meyer in 1990 is considered the “gold standard” in commitment research

(Solinger et al., 2008). The survey consists of three scales, each measuring one component of the three-component model. All three scales include six items, and are all measured on a five-point disagree-agree Likert response scale (1 = Strongly Disagree; 5 = Strongly Agree). Some items are reversed keyed to prevent response bias. There was a total of 18 items for this instrument, six items for each scale.

The first scale is the *affective commitment scale (ACS)*. As reviewed in chapter two, affective commitment is based on the emotional attachment that an employee has with the organization. Examples of statements on this scale include: “I would be very happy to spend the rest of my career with this organization”; “This organization has a great deal of personal meaning for me”; I do not feel like ‘part of the family’ at my organization”; and “I do not feel ‘emotionally attached’ to this organization”. Internal reliability for this scale has ranged from coefficient $\alpha = .79 - .89$, with a majority of the studies reporting coefficient $\alpha = .84 - .89$ range (Allen et al., 1996; Powell et al., 2004).

The second scale is the *normative commitment scale (NCS)*. As stated in chapter two, normative commitment occurs when employees feel a sense of obligation to their organization and stay because it is the right thing to do. Examples of statements in this scale include: “I do not feel any obligation to remain with my current employer”; “Even if it were to my advantage, I do not feel it would be right to leave my organization right now”; “I owe a great deal to my organization” and “This organization deserves my loyalty”. Internal reliability for this scale has ranged from coefficient $\alpha = .73 - .89$, with a majority of the studies reporting coefficient $\alpha = .73 - .89$ range (Allen et al., 1996; Powell et al., 2004).

The third scale is the *continuance commitment scale (CCS)*. As discussed in chapter two, continuance commitment is based on the costs associated with leaving an organization. Examples of statements in this scale include: “It would be very hard for me to leave my organization right now, even if I wanted to”; “Too much in my life would be disrupted if I decided I wanted to leave my organization now”; “I feel that I have too few options to consider leaving this organization”; and “If I had not already put so much of myself into this organization, I might consider working elsewhere”. Internal reliability for this scale has ranged from coefficient $\alpha = .70 - .85$, with a majority of the studies reporting coefficient $\alpha = .79 - .85$ range (Allen et al., 1996; Powell et al., 2004).

Organizational Based Self Esteem Survey

The organizational-based self-esteem survey developed by Pierce et al. in 1989 is the most widely used scale for organizational-based self-esteem. The scale contains 10 items measured on a five point Likert-type disagree-agree scale (1 = Strongly Agree; 5 = Strongly Disagree). Examples of statements included in the scale include: “I am taken seriously”; “I am trusted”; “I am important”; “I can make a difference”; “I am valuable”; and “There is faith in me”. Internal reliability for this scale has ranged from coefficient $\alpha = .86 - .96$, with a majority of the studies reporting coefficient α of .91 (Pierce et al., 1989; Kanning & Hill, 2012).

Utrecht Work Engagement Survey

The Utrecht work engagement survey developed by Schaufeli et al. in 2003 has been extensively used in business, psychology, sociology and healthcare research. The survey is also referred to the “Work and Well-being Survey”. The survey

contains 17 statements that are measured on a seven-point never-always Likert response scale (0 = Never; 6 = Always). The 17 statements cover the three engagement dimensions of vigor (6 items), dedication (5 items) and absorption (6 items) outlined in chapter two. Examples of statements included in the scale include: “At my work, I feel bursting with energy”; “Time flies when I’m working”; “At my job, I am very resilient, mentally”; “When I get up in the morning, I feel like going to work”; and “I find the work that I do full of meaning and purpose”. Internal reliability for this scale has ranged from coefficient $\alpha = .83 - .90$ (Chughtai et al., 2011; Lawrence, 2011).

Modified Gladstone Survey

The Modified Gladstone Survey, adapted by Osborne et al. (1999) from Gladstone’s (1995) questionnaire, has been reliably used to determine nurses’ perception of medication errors. The survey consists of 27 items. The first 14 items in the survey address nurses’ perception of medication errors; the remaining 13 items are demographic questions that will not be used for this study. Survey responses for this instrument include ranking 10 statements (1-10) as to the frequency of medication errors (“most frequent” = 1 to “least frequent” = 10) (1 item); nurse’s estimation of percentage of medication errors reported to nurse managers: “x” marked on a line from 1% - 100% (1 item); medication error scenarios asking the nurse to identify a possible medication error, and if it warranted reporting to the physician and/or nurse manager (6 items); and “yes/no” questions on views of medication error reporting (6 items). The Modified Gladstone instrument originally had five scenario questions. Mayo and Duncan (2004) added a sixth scenario regarding digoxin levels

in their study of 983 registered nurses. Ulanimo et al. (2007) used Mayo et al.'s (2004) six-scenario question format in their study of 61 registered nurses. To retain consistency, the digoxin scenario was kept in the instrument for this study. Examples of statements included in the survey include: "Have you ever failed to report a medication error because you were afraid you might be subject to disciplinary action or even lose your job?" and "I am usually sure of what constitutes a medication error". Using the test-retest method, Osborne (1999) established reliability of the modified instrument at $\alpha = .78$. A total score is not calculated for this instrument; therefore survey question number 48 (nurse's estimation of percentage of medication errors reported to nurse managers: "x" marked on a line from 1% - 100%) was used to represent nurse perceptions of medication errors for the structural equation modeling calculations.

Data Analysis

Data analysis was performed using SPSS and AMOS/mPlus software. SPSS was used to analyze the descriptive statistics (mean, median, mode, standard deviation and percentages) of nurse attributes and facility characteristics. AMOS/mPlus software was used to analyze the proposed conceptual model described in **Figure 1** through the use of structural equation modeling (SEM) and confirmatory factor analysis (CFA).

Confirmatory Factor Analysis (CFA)

CFA is a measurement model that is used to study relationships between observed variables (also known as "*indicators*" indicated by a rectangle shape) and latent variables (also known as "*factors*" indicated by an oval shape). Many consider

CFA as first step in the SEM process. Typically theory driven, CFA can assist in the identification of covariation among identified indicators amid a limited amount of factors. This can assist the researcher in building a proposed structural equation model to test hypothesized relationships.

Structural Equation Modeling (SEM)

SEM is a statistical multivariate regression method that allows a researcher to confirm/validate a proposed process or model involving complex relationships between one or more independent and dependent variables through indirect or direct observation (Hoyle, 2012). Many refer to SEM as a cross between an analysis of variance (ANOVA)/regression and a form of factor analysis. Through confirmatory analysis, SEM (1) can assist the researcher in determining if the proposed model is adequate through goodness of fit statistics; (2) can confirm how much variance in the dependent variable(s) is associated with the independent variable(s); and (3) can describe group differences (Hoyle, 2012).

Summary

Nurses play a vital role in the delivery of care. In an ever changing and complex healthcare environment, the outcomes from this research study aim to facilitate dialogue between organizations and their nursing staff to improve work engagement, and subsequently, improve patient safety and outcomes.

Chapter 4

Results

Introduction

The main purpose of this study was to test an investigator developed conceptual model to determine if relationships exist between organizational commitment (OC), organizational-based self-esteem (OBSE), nurse work engagement (NWE) and nurses' perception of medication errors from a sample of RNs working in acute care facilities throughout the United States. Specific aims of this study were to describe nurses' perceptions of medication errors, the facilities they work in (facility type; magnet status; size and geographic location), as well as their nursing career attributes (age; education; unit type, hours worked and role; and tenure in organization and profession). Additional aims for this study included evaluating the relationship between nurses' perception of medication errors on nurse attributes and on organizational characteristics.

This chapter begins with a detailed description of the study's participant sample including nurse attributes and facility/organization characteristics. The chapter continues with an in-depth description of the participants' perceptions of medication errors in general, and specific to their personal practice. Next, a description of data cleaning, composite score creation and reliability will be discussed. Finally, a detailed description of the data analysis and results will be presented.

Description of Participant Sample

A total of 351 participants took part in this study, with an average age of 38 ($SD = 9.87$) and 38.27 ($SD = 7.51$) average hours worked per week. The majority of the sample had a BSN degree ($n = 236$, 67.6%) as their highest degree, had 4 to 6 years ($n = 71$, 20.3%) of tenure as a nurse, and had been with their organization between 1 and 3 years ($n = 92$, 26.2%).

Most of the participants worked in either the Medical/Surgical unit ($n = 72$, 20.8%) or the Neonatal ICU unit ($n = 69$, 19.9%). The largest role that the participants had was a Bedside/Charge RN ($n = 168$, 48.6%), while 78.9% ($n = 276$) did not answer if they had another role in the unit. The majority of participants had stated that they worked in a Magnet designated facility ($n = 217$, 61.8%), while those who were not in a Magnet designated facility stated that their organization was on the Magnet journey ($n = 123$, 35.0%). Most of the participants stated that they worked in an urban facility ($n = 271$, 77.2%) that was almost evenly spread across different states with a slightly higher group from Texas ($n = 33$, 9.4%).

Between adult and pediatric facilities, 68.7% ($n = 241$) stated that they worked in an adult facility, while 44.2% ($n = 155$) stated they worked in a pediatric facility. Most participants stated that their facility was not trauma designated ($n = 245$, 69.8%) and also stated that they did not work in a teaching facility ($n = 179$, 51.0%) or a community facility ($n = 230$, 65.5%). Finally, most participants stated that they worked in a large facility with greater than 500 beds ($n = 121$, 34.5%). For all frequencies and percentages of descriptive data, see **Table 2**. For all means and standard deviations for descriptive data, see **Table 3**.

Table 2

Demographics	<i>n</i>	%
Highest Nursing Degree		
Diploma	6	1.7
and	42	12.0
BSN	236	67.6
MSN	62	17.8
DNP	3	0.9
Time with Organization		
< 1 year	13	3.7
1 – 3 years	92	26.2
4 – 6 years	64	18.2
7 – 10 years	60	17.1
10 – 15 years	53	15.1
15 – 20 years	28	8.0
20 – 25 years	15	4.3
25 – 30 years	13	3.7
> 30 years	13	3.7
Type of Unit		
ICU Adult	49	14.2
ICU Pediatric	13	3.8
ICU Neonatal	69	19.9
Medical	22	6.4
Surgical	16	4.6
Medical/Surgical	72	20.8
Rehabilitation	10	2.9
OR	16	4.6
PACU	13	3.8
Hem/Onc	9	2.6
Transplant	1	0.3
LD	15	4.3
ED	23	6.5
Peds	7	2.0
Psych Peds	3	0.9
Resource Pool	4	1.2
Stepdown	4	1.2
Role in Unit		
Bedside RN	140	40.4
Bedside/Charge RN	168	48.6
Resource RN	9	2.6
Educator/CNS	29	8.4
Other Role in Unit		
Clinical Supervisor 50%	1	0.3
Educator	3	0.9
Educator CNS	1	0.3
Educator RN	1	0.3
Educator/CNS	1	0.3
Lead	1	0.3
Neo Response RN	1	0.3
PPS Coordinator	1	0.3

Rapid Response RN	1	0.3
Relief Charge	1	0.3
Resource RN	23	6.6
Scheduling	1	0.3
Specialty/Head RN	1	0.3
Stabilizing RN	1	0.3
Transport RN	1	0.3
Wound Ostomy Consultant	1	0.3
Did not answer	311	88.3
Tenure as RN		
< 1 year	6	1.7
1 – 3 years	61	17.4
4 – 6 years	71	20.3
7 – 10 years	52	14.9
10 – 15 years	33	9.4
15 – 20 years	48	13.7
20 – 25 years	29	8.3
25 – 30 years	24	6.9
> 30 years	26	7.4
Magnet Designated Facility		
Yes	217	61.8
No	130	37.0
Did not answer	3	1.2
On Magnet Journey		
Yes	123	35.0
No	11	3.1
Did not answer	217	61.9
Location of Facility		
Rural	70	19.9
Urban	271	77.3
Did not answer	10	2.8
State		
AZ	5	1.4
CA	24	6.8
CO	6	1.7
CT	3	0.9
DC	3	0.9
DE	2	0.6
FL	22	6.3
GA	17	4.8
IA	3	0.9
ID	1	0.3
IL	10	2.8
IN	10	2.8
KS	2	0.6
KY	6	1.7
MA	1	0.3
MD	6	1.7
MI	1	0.3
MN	2	0.6
MO	1	0.3

MT	1	0.3
NC	9	2.6
ND	1	0.3
NE	1	0.3
NH	5	1.4
NJ	2	0.6
NY	13	3.7
OH	13	3.7
OK	1	0.3
OR	7	2.0
PA	17	4.8
RI	2	0.6
SC	4	1.1
SD	3	0.9
TN	9	2.6
TX	33	9.4
VA	3	0.9
WA	1	0.3
WI	6	1.7
WV	1	0.3
Did not answer	94	26.8
Adult Facility		
Yes	241	68.7
No	108	30.8
Did not answer	4	0.5
Pediatric Facility		
Yes	155	44.2
No	195	55.5
Did not answer	1	0.3
Trauma Facility		
Yes	105	29.9
No	245	69.8
Did not answer	1	0.3
Teaching Facility		
Yes	171	48.7
No	179	51.0
Did not answer	1	0.3
Community Facility		
Yes	119	33.9
No	230	65.5
Did not answer	2	0.6
Size of Facility (Beds)		
< 200	40	11.4
200 – 300	77	21.9
301 – 400	67	19.1
401 – 500	45	12.8
> 500	121	34.5
Did not answer	1	0.3

Table 2. *Frequencies and Percentages for Demographic Information*

Table 3

	<i>Min.</i>	<i>Max.</i>	<i>M</i>	<i>SD</i>
Age	22	62	37.60	9.87
Hours/Per Week	6	72	38.27	7.51

Table 3. Means and Standard Deviations for Demographic Variables

Nurses' Perception of Medication Errors

Causes of Medication Errors

Using the Modified Gladstone instrument, nurses' perception of medication errors was recorded and evaluated. Participants were near even when they thought drug errors occurred when the nurse failed to check the patients' name with that on the Medication Administration Record (MAR), with 15.7% ($n = 55$, 15.7%) participants believing this was a frequent cause and 13.1% ($n = 46$, 13.1%) participants believing this was an infrequent cause. Close to half of the participants believed that illegible physician handwriting was not a frequent cause ($n = 143$, 40.7%) of medication errors. This may be due to the implementation of computerized physician order entry (CPOE) in most hospitals over the last decade. Poor medication labels were also considered to be an infrequent cause ($n = 73$, 20.8%) of medication errors. Confusion between drugs, physician prescribing the wrong dose, nurses miscalculating dose, using the wrong infusion device, and using infusion devices incorrectly were all rated in the middle of being frequent and infrequent causes of medication errors. There was no strong belief among participants that these variables either played a strong or weak role in medication errors. However, being distracted by others was rated as a frequent cause ($n = 113$, 33.3%) of medication errors, as was

exhaustion ($n = 88$, 25.1%). All frequencies and percentages for the variables affecting medication errors are presented in **Table 4**.

Table 4

Modified Gladstone – Causes of Med Errors Ranking	<i>n</i>	%
Failed to check MAR		
Most Frequent	55	15.7
2	33	9.4
3	43	12.3
4	28	8.0
5	25	7.1
6	33	9.4
7	25	7.1
8	27	7.7
9	31	8.8
Least Frequent	46	13.1
No Answer	5	1.4
Illegible Physician Writing		
Most Frequent	22	6.3
2	20	5.7
3	27	7.7
4	15	4.3
5	21	6.0
6	18	5.1
7	16	4.6
8	25	7.1
9	38	10.8
Least Frequent	143	40.7
No Answer	6	1.7
Poor Medication Labels		
Most Frequent	16	4.5
2	14	4.0
3	25	7.1
4	29	8.3
5	30	8.5
6	36	10.3
7	42	12.0
8	43	12.2
9	73	20.8
Least Frequent	36	10.3
No Answer	7	2.0
Confusion Between Drugs		
Most Frequent	16	4.6
2	23	6.6
3	33	9.4
4	46	13.1
5	44	12.5
6	38	10.8

7	53	15.1
8	52	14.8
9	31	8.8
Least Frequent	12	3.4
No Answer	3	0.9
MD Prescribes Incorrect Dose		
Most Frequent	31	8.8
2	21	6.0
3	33	9.4
4	56	16.0
5	61	17.4
6	34	9.7
7	37	10.5
8	36	10.3
9	32	9.1
Least Frequent	5	1.4
No Answer	5	1.4
Nurse Miscalculates Dose		
Most Frequent	13	3.7
2	21	6.0
3	35	10.0
4	33	9.4
5	45	12.8
6	47	13.4
7	53	15.1
8	48	13.7
9	28	8.0
Least Frequent	25	7.0
No Answer	3	0.9
Incorrect Infusion Device		
Most Frequent	22	6.3
2	47	13.4
3	45	12.8
4	44	12.5
5	39	11.1
6	51	14.5
7	35	10.0
8	33	9.4
9	29	8.3
Least Frequent	4	1.1
No Answer	2	0.6
Incorrect Use of Infusion Device		
Most Frequent	9	2.6
2	15	4.3
3	28	8.0
4	34	9.7
5	40	11.3
6	37	10.5
7	47	13.4
8	48	13.7
9	50	14.2

Least Frequent	41	11.7
No Answer	2	0.6
Distracted by Others		
Most Frequent	117	33.3
2	70	19.9
3	38	10.8
4	24	6.8
5	21	6.0
6	20	5.7
7	18	5.3
8	12	3.4
9	13	3.7
Least Frequent	17	4.8
No Answer	1	0.3
Exhaustion		
Most Frequent	88	25.1
2	84	23.9
3	38	10.8
4	36	10.3
5	23	6.6
6	25	7.1
7	14	4.0
8	11	3.1
9	14	4.0
Least Frequent	17	4.8
No Answer	1	0.3

Table 4. *Frequencies and Percentages of Possible Medication Error Causes*

Drug Error Scenarios

In addition to ranking the causes of medication errors, participants were asked to read six scenarios in which a drug discrepancy occurred. After reading each scenario, participants were presented with three questions: (1) Did a medication error occur, (2) Should the physician be notified, and (3) Should an incident report be completed.

In the first scenario, a patient misses a dose of antibiotic due to an extended stay in the radiology department. Over half ($n = 206$, 58.7%) of participants stated that the missed dose was not a drug error, but the majority ($n = 279$, 79.5%) said that

the doctor should be notified, and just over half stated ($n = 210$, 59.8%) said that an incident report would not need to be filed.

In the second scenario, four patients receive their dose of antibiotics four hours late. The majority of participants ($n = 243$, 69.2%) in this scenario stated that this was a drug error, 84.0% ($n = 295$) stated they would notify a doctor, and 71.8% ($n = 252$) said they would file an incident report.

In the third scenario, a patient receives an infusion at an incorrect rate for the first three hours of a 24-hour infusion. In this scenario, a majority of participants ($n = 336$, 95.7%) said that this was a drug error, that the doctor would be notified ($n = 316$, 90.0%), and that an incident report would be filed ($n = 338$, 96.3%).

In the fourth scenario, a nurse omits a 6am nebulizer for an asthmatic patient because he/she is asleep. Just over half ($n = 188$, 53.6%) of the participants for this scenario believed this constituted a drug error, 73.4% ($n = 254$) said that they would notify the doctor, and 53.8% ($n = 189$) said they would file an incident report.

The fifth scenario, a patient is ordered 1-2 tabs of pain medication every four hours. At 4pm, the patient received one tab for pain. Two and one-half hours later (6:30pm), he requests and is administered another tab for pain. The majority of participants ($n = 221$, 63.0%) in this scenario said that this was not a drug error, 61.0% ($n = 214$), said that they would not notify a doctor, and 65.2% ($n = 229$) said they would not file an incident report.

In the final scenario, a patient's cardiac medication is held due to a delayed lab results. The patient's lab results the previous day was on the high side of normal. A majority of participants - 81.2% ($n = 285$) said that this was not a drug error, 61.0%

($n = 214$) said they would notify a doctor, and 76.6% ($n = 269$) said they would not file an incident report. All frequencies and percentages for the medication error scenarios are presented in **Table 5**.

Table 5

Perception of Medication Errors -- Scenarios	<i>n</i>	%
Scenario 1 – Missed Dose (Drug Error)		
Yes	134	38.2
No	206	58.7
No Answer	11	3.1
Scenario 1 – Missed Dose (Notify MD)		
Yes	279	79.5
No	65	18.5
No Answer	7	2.0
Scenario 1 – Missed Dose (Incident Report)		
Yes	131	37.4
No	210	59.8
No Answer	10	2.8
Scenario 2 – Late Dose (Drug Error)		
Yes	243	69.2
No	96	27.4
No Answer	12	3.4
Scenario 2 – Late Dose (Notify MD)		
Yes	295	84.0
No	49	14.0
No Answer	7	2.0
Scenario 2 – Late Dose (Incident Report)		
Yes	252	71.8
No	88	25.1
No Answer	11	3.1
Scenario 3 – Incorrect Pump Rate (Drug Error)		
Yes	336	95.8
No	11	3.1
No Answer	4	1.1
Scenario 3 – Incorrect Pump Rate (Notify MD)		
Yes	316	90.0
No	29	8.3
No Answer	6	1.7
Scenario 3 – Incorrect Pump Rate (Incident Report)		
Yes	338	96.3
No	9	2.6
No Answer	4	1.1
Scenario 4 – Omitted Dose (Drug Error)		
Yes	188	53.6
No	151	43.0
No Answer	12	3.4

Scenario 4 – Omitted Dose (Notify MD)		
Yes	254	72.3
No	91	26.0
No Answer	6	1.7
Scenario 4 – Omitted Dose (Incident Report)		
Yes	189	53.8
No	153	43.6
No Answer	9	2.6
Scenario 5 – Dose Administration (Drug Error)		
Yes	122	34.7
No	221	63.0
No Answer	8	2.3
Scenario 5 – Dose Administration (Notify MD)		
Yes	133	37.9
No	214	61.0
No Answer	4	1.1
Scenario 5 – Dose Administration (Incident Report)		
Yes	111	31.6
No	229	65.3
No Answer	11	3.1
Scenario 6 – Dose Delay (Drug Error)		
Yes	55	15.7
No	285	81.2
No Answer	11	3.1
Scenario 6 – Dose Delay (Notify MD)		
Yes	214	61.0
No	135	38.4
No Answer	2	0.6
Scenario 6 – Dose Delay (Incident Report)		
Yes	73	20.8
No	269	76.6
No Answer	9	2.6

Table 5. *Frequencies and Percentages for Medication Error Scenarios*

Nurses' Views on Reporting Errors

In the final section of the Modified Gladstone instrument, participants were asked about their personal views on reporting medication errors. The majority ($n = 310$, 88.3%) of participants said that they did know what constitutes a medication error, 88.6% ($n = 311$) of participants stated that they know when to file an incident report, 74.9% ($n = 263$) said that medication errors are not reported because of fear of the reaction of their Nurse Manager, and 69.5% ($n = 244$) failed reporting of

medication errors occurred because of fear of their peer's reactions. When asked if the participants themselves failed to report a medication error because they did not think it was serious, the responses were close to even with 42.7% ($n = 150$) stating that they did not report the error and 57.0% ($n = 200$) stating that they did report the error. When asked if a medication error was not reported out of fear for disciplinary action or loss of a job, the majority of participants ($n = 280$, 79.8%) said they had not ever failed to report a medication error out of personal fear. **Table 6** provides frequencies and percentages for the participants' personal views on reporting medication errors.

Table 6

Personal views on Reporting Medication Errors	<i>n</i>	%
What Constitutes Drug Error		
Yes	310	88.3
No	39	11.1
No Answer	2	0.6
When to File Incident Report		
Yes	311	88.6
No	40	11.4
No Answer	0	0.0
Fear of Reported Error (Manager)		
Yes	263	74.9
No	86	24.5
No Answer	2	0.6
Fear of Reported Error (Peers)		
Yes	244	69.5
No	107	30.5
No Answer	0	0.0
Fail to Report Due to Lack of Drug Error Severity		
Yes	150	42.7
No	200	57.0
No Answer	1	0.3
Fear of Reported Error (Self)		
Yes	71	20.2
No	280	79.8
No Answer	0	0.0

Table 6. *Frequencies and Percentages for Personal Views on Reporting Med Errors*

Data Cleaning

A total of 19 variables (see **Table 1**) were tested using four instruments – the Three-Component Model of Employee Commitment Survey, the Organizational Based Self Esteem Survey, the Utrecht Work Engagement Survey, and the Modified Gladstone Survey. All instruments except for the demographic questionnaire and Modified Gladstone were measured on a five-point Likert scale. Four items on the Three-Component Model of Employee Commitment Survey were reverse scored and reverse coded in SPSS. Items for *Affective Commitment* questions 3, 4, and 5 and *Normative Commitment* question 1 were recoded, where 1 = “Strongly Disagree”, 2 = “Disagree”, 3 = “Undecided”, 4 = “Agree”, 5 = “Strongly Agree”. Once complete, composite scores were created by computing the mean for *Affective Commitment (AC)*, *Continuous Commitment (CC)*, *Normative Commitment (NC)*, *Vigor*, *Dedication*, *Absorption*, and *Organizational Based Self-Esteem (OBSE)*. These composite scores were used in the final analyses in this study.

Cronbach’s Alpha

Internal reliability (consistency) is an important measure that quantifies if an instrument’s items all measure the intended concept consistently (Tavakol & Dennick, 2011). For the purpose of this study, the Chronbach alpha is used, with a range of 0 to 1. Cronbach’s alpha values were calculated for the each of the composite scores created. The coefficients were evaluated using guidelines set forth by George and Mallery (2010), where values greater than .90 indicate excellent reliability, values greater than .70 indicate acceptable reliability, and values less than .50 indicate unacceptable reliability. All of the composite scores in the study had

standard acceptable inter rater reliability with $\alpha = 0.62$ to 0.97 . For all of the Cronbach's alpha scores, see **Table 7**.

Table 7

Construct	Standardized α	No. of Items
AC	0.76	6
CC	0.62	6
NC	0.74	6
OBSE	0.97	10
Vigor	0.80	6
Dedication	0.82	5
Absorption	0.76	6

Table 7. *Cronbach's Alpha Reliability for Composite Scores*

Detailed Results

The main purpose of this study was to test an investigator developed conceptual model to determine if relationships exist between organizational commitment (OC), organizational-based self-esteem (OBSE), nurse work engagement (NWE) and nurses' perception of medication errors from a sample of RNs working in acute care facilities throughout the United States (see **Figure 1**).

Figure 1 – Proposed Structural Equation Model

Confirmatory Factor Analysis

A confirmatory factor analysis (CFA) was conducted in order to see if the observed and latent variables for the overall model would be a good fit. The composite scores for AC, CC, NC were all entered under one latent variable (Organizational Commitment). The composite scores for Vigor, Dedication, and Absorption were entered under the latent variable for NWE. Finally, the composite score for OBSE was entered on its own and covaried with OC and NWE. The final variable entered was for perceptions of medication errors, which was only made up of one observed variable.

The initial results of the CFA did not show good model fit ($\chi^2(19) = 119.02, p < .001, CFI = .87, TLI = .81, RMSEA = .12$). A significant p -value for the Chi-square test indicates that the observed covariance matrix is significantly different from the implied model covariance matrix (Ong & Van Dulmen, 2007). In order to improve

model fit, modification indices were examined to determine which parameter constraints were significantly limiting the model fit of the observed covariance structure. Modification indices are indicators of how the model could be improved (McCoach, Gable & Madura, 2013). The modification indices showed that the error terms of the observed variables for OC and NWE could covary. The results of the CFA with the covariations showed much improved fit, ($\chi^2(12) = 30.84, p = .002, CFI = .98, TLI = .94, RMSEA = .07$). A good model fit is defined as having CFI and TLI values greater than .9 and an RMSEA value less than .06 (Hu & Bentler, 1999). The Chi-square test showed that the model did not fit the data, but the Chi-square test is based upon sample size. The larger the sample size, the more likely the Chi-square test will be significant (Ong & Van Dulmen, 2007). However, one of the assumptions of CFA and SEM is that you have a large enough sample size, so it is more likely that the Chi-square test will be significant. The fit statistics show that the CFA is reasonably specified, even though the RMSEA is a little high. A summary of the model iterations is given in **Table 8**.

Table 8

CFA	χ^2	<i>df</i>	<i>p</i>	<i>CFI</i>	<i>TLI</i>	<i>RMSEA</i>
No MI	119.02	19	< .001	.87	.81	.12
MI	30.84	12	.002	.98	.94	.07

Note. MI = Modification Indices

Table 8. *Confirmatory Factor Analysis Fit Indices*

Structural Equation Model

In order to examine the second aim of this study, a structural equation model (SEM) was created based on the variables used in the CFA. The model was created with the same observed variables used for the latent variable of OC. The same three

observed variables for NWE were also used. The composite score for OBSE was again entered. Finally, the dependent variable (Perception of Medication Errors) was regressed onto the three independent variables. The proposed model is depicted in **Figure 1**.

Model Specification

The initial results of the model did not show good model fit ($\chi^2(16) = 101.79$, $p < .001$, $CFI = .89$, $TLI = .81$, $RMSEA = .12$). A significant p -value for the Chi-square test indicates that the observed covariance matrix is significantly different from the implied model covariance matrix. In order to improve model fit, modification indices were examined to determine which parameter constraints were significantly limiting the model fit of the observed covariance structure. The modification indices showed that the error terms could be covaried. The results of the model with the covariations showed much improved fit, ($\chi^2(10) = 25.09$, $p = .005$, $CFI = .98$, $TLI = .95$, $RMSEA = .07$). With the covariation of the error terms, the fit was improved. The same standards for the CFA fit values apply to the SEM fit values. A good model fit is defined as having CFI and TLI values greater than .9 and an RMSEA value less than .06 (Hu et al., 1999).

The Chi-square test showed that the model did not fit the data, but the Chi-square test is based upon sample size. The larger the sample size, the more likely the Chi-square test will be significant (Ong et al., 2007). However, one of the assumptions of CFA and SEM is that you have a large enough sample size, so it is more likely that the Chi-square test will be significant. The fit statistics show that the

model is reasonably specified, even though the RMSEA is slightly higher than the standard cutoff value. A summary of the model iterations is given in **Table 9**.

Table 9

SEM	χ^2	<i>df</i>	<i>p</i>	<i>CFI</i>	<i>TLI</i>	<i>RMSEA</i>
No MI	101.79	16	< .001	.89	.81	.12
MI	25.09	10	.005	.98	.95	.07

Note. MI = Modification Indices

Table 9. *Structural Equation Model Fit Indices*

Composite Reliability

Composite reliability is measured in the same manner as Cronbach's alpha. Values are measured between 0 and 1, with higher values signifying higher reliability. Values between .70 and .90 are considered satisfactory (Hair Jr., Hult, Ringle, & Sarstedt, 2013). Composite reliability was assessed to determine how well each indicator loaded onto their respective constructs. This is done by taking a ratio of square of summed loadings and the total variance. See equation below (Raykov, 1997):

$$CR = \frac{(\sum \lambda_i)^2}{(\sum \lambda_i)^2 + \sum Var(\epsilon_i)}$$

In the model there were only two latent constructs (OC and NWE). Organizational Commitment had acceptable composite reliability (CR = 0.79). Nurse Work Engagement had great composite reliability (CR = 0.92), suggesting that both constructs were reliable measures. The composite reliability values for each construct are given in **Table 10**.

Table 10

Model	OC	NWE
Structural Equation Model	0.79	0.92

Table 10. *Composite Reliability for Each Construct****Factor Correlations***

After respecifying the model until acceptable fit was achieved, the correlation and regression estimates were examined. The factor correlations were calculated between the two latent and the one observed independent variables. The OC and NWE variables had a correlation coefficient of -0.43, indicating a medium negative relationship. The OC latent variable also was positively correlated with OBSE ($r = 0.13$), indicating a weak positive relationship. The NWE variable was negatively correlated with OBSE ($r = -0.13$). The latent variable correlation matrix is shown in

Table 11.

Construct	OC	NWE	OBSE
OC	-		
NWE	-0.43	-	
OBSE	0.13	-0.13	-

Table 11. *Factor Correlations for Independent Measures****Regression Estimates***

Standardized regression paths were included in the model between each of the independent and dependent latent and observed variables, as well as AC, CC, NC, Vigor, Dedication, and Absorption. The standardized regression path for perception of medication errors regressed on OC showed no significance ($B = -0.06, p = .414$). This indicates that there is no relationship between OC and perception of medication errors. The standardized regression path for perception of medication errors regressed

on NWE also showed no significance ($B = 0.12, p = .065$). This indicates that there is also no relationship between NWE and perception of medication errors. For perception of medication errors regressed on OBSE, there was a significant result ($B = -0.14, p = .010$). This indicates that OBSE had a negative effect on perception of medication errors. For OC regressed on AC, NC, and CC, the paths showed significance. The standardized regression path for AC was 0.77 ($p < .001$). For NC, the standardized path was 0.75 ($p < .001$). For CC, the standardized path was 0.30 ($p < .001$). This indicates that there is a positive relationship between OC, AC, NC, and CC. For NWE regressed on Vigor, Dedication, and Absorption, the paths showed significance. The standardized regression path for Absorption was 0.76 ($p < .001$). For Dedication, the standardized regression path was 0.78 ($p < .001$). For Vigor, the standardized path was 0.91 ($p < .001$). This indicates that there was a positive relationship between NWE, Absorption, Vigor, and Dedication. A summary of the regression results is outlined in **Table 12**. A path diagram with the results of the model is shown in **Figure 2**.

Regression	<i>B</i>	<i>SE</i>	<i>z</i>	<i>p</i>
PME ~ OC	-0.55	3.36	-0.82	.417
PME ~ NWE	0.12	2.53	1.85	.064
PME ~ OBSE	-0.14	1.68	-2.57	.010*
OC				
NC	0.75	0.17	6.10	< .001*
CC	0.30	0.10	3.68	< .001*
AC	0.77	0.16	6.10	< .001*
NWE				
Dedication	0.78	0.05	15.67	< .001*
Absorption	0.76	0.06	14.71	< .001*
Vigor	0.91	0.08	15.67	< .001*

Note. * Indicates a significant relationship. PME = Perception of Medication Error, OC = Organizational Commitment, NWE = Nurse Work Engagement, NC = Normative Commitment, CC = Continuous Commitment, AC = Affective Commitment.

Table 12. *Standardized Regression Paths*

Figure 2. Structural Equation Model with Regression Weights

Multiple Regression

In order to assess aims three and four of this study, a multiple regression was used to test the relationship of organizational characteristics (facility type; magnet status, size, and geographic location) and nurse attributes (age, education, unit type, hours worked, role, and tenure in organization and profession) on perception of medication errors. After adding all of the variables for organizational characteristics and nurse attributes, the results for the overall model were not statistically significant, $F(17, 286) = 0.57, p = .910, R^2 = 0.18$. This suggests that there is no relationship between organizational characteristics, nurse attributes, and perception of medication errors. The independent variables accounted for only 18% (R^2) of the variance in

perception of medication errors. The results of the regression are presented in **Table**

13.

Table 13

Model	<i>B</i>	<i>SE</i>	β	<i>t</i>	<i>P</i>	95% CI
Age	0.09	0.28	0.03	0.31	.758	[-0.47, 0.64]
Nursing Degree	-0.28	2.35	-0.01	-0.12	.905	[-4.91, 4.35]
Hours/Week	-0.11	0.21	-0.03	-0.53	.595	[-0.51, 0.29]
Tenure (Org.)	0.02	1.33	0.00	0.02	.987	[-2.59, 2.63]
Tenure (RN)	0.16	1.51	0.01	0.11	.914	[-2.81, 3.14]
Unit Type	0.32	0.33	0.06	0.97	.333	[-0.33, 0.97]
Role	1.69	1.85	0.06	0.91	.362	[-1.95, 5.33]
Magnet Desig.	2.41	8.81	0.05	0.27	.785	[-14.94, 19.75]
Magnet Jour.	-0.00	0.01	-0.02	-0.09	.930	[-0.02, 0.02]
Location	4.97	3.99	0.08	1.25	.214	[-2.88, 12.83]
Adult	6.42	3.55	0.11	1.81	.072	[-0.57, 13.41]
Pediatric	0.33	3.29	0.01	0.10	.919	[-6.15, 6.81]
Trauma	1.34	3.77	0.02	0.36	.721	[-6.07, 8.76]
Teaching	-1.15	3.42	-0.02	-0.34	.737	[-7.89, 5.59]
Community	-2.95	3.46	-0.05	-0.85	.394	[-9.75, 3.85]
Size	-0.19	1.16	-0.01	-0.16	.873	[-2.48, 2.11]
State	0.03	0.12	0.02	0.28	.781	[-0.20, 0.27]

Note. $F(17, 286) = 0.57, p = .910, R^2 = 0.18$

Table 13. Multiple Regression of Organizational Characteristics and Nurse Attributes on Perception of Medication Errors

Chapter 5

Discussion

Nurses have taken on more responsibility with less available resources, which can severely impact engagement in their role, organization and profession (Kutney-Lee et al., 2009). Scholars from both nursing and economics reveal a direct association between nurse engagement and patient complications and mortality (Aiken et al., 2012; Duffield et al., 2011; Needleman et al., 2002). In fact, according to Charmel et al. (2008), organizations with low nurse engagement pay out significantly more in malpractice claims than organizations with high nurse engagement.

Adverse drug events (ADEs) due to medication errors further contribute to the rising cost of healthcare. According to the 2001 Institute of Medicine (IOM) report *To Err is Human: Building A Safer Health System*, roughly two out of every 100 admissions experience a preventable ADE, at an expense of approximately \$2 billion annually (Kohn et al., 2000). The most recent findings indicate that 3.42 out of every 100 admissions experience a preventable ADE, at an expense of \$2.7 billion to \$5.1 billion annually (CDC, 2014; Lahue, Iwasaki, Blumen, Forray, & Rothschild, 2012). Although it appears that preventable ADEs have become worse since the landmark IOM report, the implementation of Computerized Physician Order Entry (CPOE) software, tall-man lettering and barcoding technology have assisted in reducing some preventable ADEs (Bootman, Wolcott, Aspden & Cronenwett, 2006). It is believed that along with the aids listed above, the ability to report and/or track medication

errors has increased over time, thus leading to a somewhat more realistic picture of the crisis at hand (Bootman et al., 2006).

Organizations rely on the accurate reporting of medication errors or omissions by bedside nurses to improve the medication delivery system – prescription to administration, in order to prevent further errors from occurring in the future. Unfortunately, studies show that many nurses do not report medication errors either for fear of disciplinary action or for lack of understanding of what constitutes a medication error (Hewitt, 2010). With higher acuity patients and less resources for nurses, this continues to be a significant topic for the nursing profession.

The purpose of this non-experimental, cross-sectional correlational study was to test an investigator developed conceptual model to determine if relationships exist between organizational commitment (OC), organizational-based self-esteem (OBSE), work engagement and nurses' perception of medication errors from a sample of RNs who work in acute care facilities throughout the United States. The first aim for this study included describing nurse characteristics (attributes), organizational (facility) characteristics; and the constructs of organizational commitment, OBSE, work engagement and nurses' perception of medication errors. The second aim was to test the investigator developed conceptual model. The third and fourth aims set out to test the relationship of nurse and organizational characteristics on nurses' perception of medication errors. Each of these aims will be discussed next.

Aim 1

The first aim of this study was to describe organizational commitment (affective, normative and continuance commitment), OBSE, work engagement (vigor,

absorption and dedication), organizational characteristics (facility type; magnet status; size and geographic location), nurse characteristics (age; education; unit type, hours worked and role; and tenure in organization and profession), and nurses' perception of medication errors.

Organizational Commitment

The latent construct of organizational commitment was conveyed through the use of Allen and Meyer's (1990) Three-Component Model of Employee Commitment Survey. The survey consists of three scales, each measuring one component of the three-component model. All three scales include six items, and are all measured on a five-point disagree-agree Likert response scale (1 = Strongly Agree; 5 = Strongly Disagree). Some items were reversed keyed to prevent response bias. There are a total of 18 items for this instrument, six items for each scale.

The first scale in this instrument is the *affective commitment* scale (*AC*). As reviewed in chapter two, affective commitment is based on the emotional attachment that an employee has with the organization. Participants in the study had a mean score of 2.19 (0.69) for this observed variable. The second scale is the *normative commitment* scale (*NC*). Normative commitment occurs when employees feel a sense of obligation to their organization and stay because it is the right thing to do. Participants in the study had a mean score of 2.51 (0.75) for this observed variable. The third scale is the *continuance commitment* scale (*CC*). Continuance commitment is based on the costs associated with leaving an organization. Participants in the study had a mean score of 3.15 (.70) for this observed variable. The mean scores for AC, NC and CC remained consistent with previous studies that have used this instrument

(Somers, 2009; Lum, Kervin, Clark, Reid & Sirola, 1998; Powell et al., 2004).

Overall, scores for Organizational Commitment (OC) revealed that participants are committed to their organizations, but do not necessarily feel compelled (due to the costs associated with leaving) to stay if a better opportunity arises.

Confirmation of the relationship of organizational commitment (latent construct) to its observed factors through standardized regression showed significance when OC was regressed on AC, NC, and CC. The standardized regression path for AC was 0.77 ($p < .001$). For NC, the standardized path was 0.75 ($p < .001$). For CC, the standardized path was 0.30 ($p < .001$). This indicates that there is a positive relationship between OC, AC, NC, and CC, which is consistent with previous studies using this instrument.

Organizational Based Self Esteem

The organizational-based self-esteem survey developed by Pierce et al. in 1989 is the most widely used scale for organizational-based self-esteem. The scale contains 10 items measured on a five point Likert-type disagree-agree scale (1 = Strongly Agree; 5 = Strongly Disagree). Participants in this study had a mean score of 1.75 (0.83) for this single factor construct. The mean scores for this study are consistent with previous studies that have used this instrument (Carson et al., 1997; Gardner et al., 2004; Hui et al., 2000). Overall, most participants had relatively high self-esteem as related to work and organizational experiences.

Nurse Work Engagement

The Utrecht work engagement survey developed by Schaufeli et al. in 2003 has been extensively used in business, psychology, sociology and healthcare research.

The survey is also referred to the “Work and Well-being Survey”. The survey contains 17 statements that are measured on a seven-point never-always Likert response scale (0 = Never; 6 = Always). The 17 statements cover the three engagement dimensions of vigor (6 items), dedication (5 items) and absorption (6 items) outlined in chapter two. The first dimension, *vigor*, is described as the energy and enthusiasm one brings to his/her work, and the resilience and persistence to overcome work-related challenges (Schaufeli et al., 2004; Spence-Laschinger, Wilk, Cho & Greco, 2009). Participants in the study had a mean score of 4.35 (0.74) for this factor. The second dimension, *dedication*, is described as the pride, inspiration and sense of significance one brings to his/her work (Schaufeli et al., 2004; Spence-Laschinger et. al, 2009). Participants in the study had a mean score of 4.94 (0.71) for this factor. The final dimension, *absorption*, refers to the feeling one gets when time passes quickly while immersed in his/her work (Schaufeli et al., 2004; Spence-Laschinger et al., 2009). Participants in the study had a mean score of 4.18 (0.71) for this factor. The mean scores for this study are consistent with a study conducted by Bakker, Hakanen, Demerouti & Xanthopoulou (2007) and slightly higher than Lawrence’s (2011) study of ICU nurses.

Confirmation of the relationship of nurse work engagement (latent construct) to its observed factors through standardized regression showed significance when NWE was regressed on Absorption, Dedication and Vigor. The standardized regression path for Absorption was 0.76 ($p < .001$). For Dedication, the standardized regression path was 0.78 ($p < .001$). For Vigor, the standardized path was 0.91 ($p <$

.001). This indicates that there was a positive relationship between NWE, Absorption, Vigor, and Dedication.

Organizational (Facility) Characteristics

A detailed description of organizational characteristics for the participant sample was provided in Chapter 4. Overall, a majority of participants worked in large ($n = 121$, 34.5%) urban ($n = 271$, 77.2%) Magnet designated ($n = 217$, 61.8%) facilities. This is not surprising considering a majority of participants were recruited to participate in the study from the annual Magnet convention.

Nurse (Attributes) Characteristics

A detailed description of nurse characteristics for the participant sample was provided in Chapter 4. Overall, a total of 351 participants took part in this study, with an average age of 38 ($SD = 9.87$) and 38.27 ($SD = 7.51$) average hours worked per week. The majority of the sample had a BSN degree ($n = 236$, 67.6%) as their highest degree, had 4 to 6 years ($n = 71$, 20.3%) of tenure as a nurse, and had been with their organization between 1 and 3 years ($n = 92$, 26.2%). The largest role that the participants had was a Bedside/Charge RN ($n = 168$, 48.6%) and most of the participants worked in either the Medical/Surgical unit ($n = 72$, 20.8%) or the Neonatal ICU unit ($n = 69$, 19.9%). The large number of NICU respondents may be due to recruitment of participants and the annual National Association of Neonatal Nurses conference, slightly skewing the distribution of units represented.

Nurses' Perception of Medication Errors

The Modified Gladstone Survey, adapted by Osborne et al. (1999) from Gladstone's (1995) questionnaire, has been reliably used to determine nurses'

perception of medication errors. The survey consists of 27 items. The first 14 items in the survey address nurses' perception of medication errors; the remaining 13 items are demographic questions that were not used for this study. Survey responses for this instrument include ranking 10 statements (1-10) as to the frequency of medication errors ("most frequent" = 1 to "least frequent" = 10) (1 item); nurse's estimation of percentage of medication errors reported to nurse managers: "x" marked on a line from 1% - 100% (1 item); medication error scenarios asking the nurse to identify a possible medication error, and if it warranted reporting to the physician and/or nurse manager (6 items); and "yes/no" questions on views of medication error reporting (6 items). Overall, participants in the study believe that 58.75% (26.13) of medication errors are reported to nurse managers through the completion of an incident report. A detailed discussion and results of this instrument were provided in Chapter 4.

Aim 2

The second aim in this study was to test the proposed conceptual structural equation model asserting that relationships are present between organizational commitment (affective, normative and continuance commitment), OBSE, nurse work engagement (vigor, dedication and absorption) and nurses' perception of medication errors as presented in **Figure 1**.

Figure 1 – *Proposed Structural Equation Model*

In order to test whether or not the observed and latent variables were a good fit for the model, a confirmatory factor analysis was done (CFA). Composite scores were created for AC, CC, and NC by creating a mean score, which all made up one latent variable – Organizational Commitment (OC). Composite mean scores were also created for Vigor, Dedication, and Absorption, which made up the latent variable – Nurse Work Engagement (NWE). Finally, the composite mean score for OBSE was created and left as its own observed variable in the model.

The initial results of the model did not show good fit. However, after looking at the modification indices and adding covariations to the model, the model fit improved greatly. Model fit for the model with the modification indices showed acceptable model fit overall.

Once an acceptable model fit was established with the CFA, a structural equation model (SEM) was created. Again, the initial results of the model did not

indicate a good fit, however the modification indices were assessed and indicated that several covariations could be added to the model in order to improve the model fit.

The covariations were added and the model was tested again and the model fit improved greatly. Once an acceptable model fit was established, the composite reliability was tested for each of the latent variables. Both OC ($CR = .79$) and NWE ($CR = .92$) showed at least good reliability. The independent measures were then correlated to see if there was a relationship among the variables. OC showed a medium negative relationship with NWE ($r = -0.43$), but a weak positive relationship with OBSE ($r = 0.13$). NWE also showed a weak negative relationship with OBSE ($r = -0.13$). Finally, the regression weights showed that there was no relationship between OC, NWE, and PME (both p 's $> .05$). However, there was a weak negative relationship between OBSE and PME ($p = .010$) (See **Table 12** and **Figure 2**).

Table 12

Regression	<i>B</i>	<i>SE</i>	<i>Z</i>	<i>P</i>
PME ~ OC	-0.55	3.36	-0.82	.417
PME ~ NWE	0.12	2.53	1.85	.064
PME ~ OBSE	-0.14	1.68	-2.57	.010*
OC				
NC	0.75	0.17	6.10	< .001*
CC	0.30	0.10	3.68	< .001*
AC	0.77	0.16	6.10	< .001*
NWE				
Dedication	0.78	0.05	15.67	< .001*
Absorption	0.76	0.06	14.71	< .001*
Vigor	0.91	0.08	15.67	< .001*

Note. * Indicates a significant relationship. PME = Perception of Medication Error, OC = Organizational Commitment, NWE = Nurse Work Engagement, NC = Normative Commitment, CC = Continuous Commitment, AC = Affective Commitment.

Table 12. *Standardized Regression Paths*

Figure 2. *Structural Equation Model with Regression Weights*

This study is the first of its kind to evaluate the relationships between organizational commitment, nurse work engagement and OBSE on nurses' perception of medication errors. Through an investigator-designed conceptual model, it was hypothesized that OC and OBSE will have a positive effect on nurse work engagement and perception of medication errors. It was surprising to see that no significant relationships existed between organizational commitment, nurse work engagement and nurses' perception of medication errors. Even more surprising is the significant negative relationship between OBSE and nurses' perception of medication errors, suggesting that as OBSE increases, perceived medication error reporting decreases.

Revisiting the concept of OBSE from Chapter 2, OBSE can be defined as the degree to which an employee feels that he/she is a capable, significant and worthy member of an organization (Pierce et al., 1989; Peirce et al., 2004; Gardner et al.,

2014; Chen et al., 2015). It is possible that as a nurse feels more secure in the work environment, the more realistic he/she may be about the shortcomings of the organization – in this case, perceived medication error reporting. Further studies are needed using the OBSE instrument in the nursing population.

Aim 3 and Aim 4

The last two aims of this study were to test the relationship of organizational (facility) characteristics - facility type; magnet status; size and geographic location (*Aim 3*) and nurse (attributes) characteristics - age; education; unit type, hours worked and role; and tenure in organization and profession (*Aim 4*) on nurses' perception of medication errors. To satisfy these aims, a multiple regression was used to see if there was a relationship between the demographic variables of organizational characteristics and nurse attributes and perceived medication errors. The results of the overall model were not statistically significant ($p = .918$). The results suggest that there is no relationship between organizational characteristics, nurse attributes, and perceived medication errors. The results of the regression are presented in **Table 13**.

Since this was the first study of its kind to look at the relationship between facility characteristics and nurses' perception of medication errors, it was interesting that not a single organization (facility) characteristic, such as Magnet status, had any impact on nurses' perception of medication errors. Although no other studies could be identified looking at facility characteristics and perception of medication errors, a similar study conducted by Mills and Gillespie (2013) set out to identify differences in failure to rescue and ulcer rates between Magnet and non-Magnet hospitals. In their

study, Mills et al. (2013) were also unable to differentiate between facility characteristics, including Magnet status regarding the two nursing-sensitive outcomes in question. Further studies are needed to continue to add to the knowledge gap pertaining to the role facility characteristics play in patient-centered outcomes.

The relationship between nursing attributes and medication errors have been analyzed in other studies. To date, no studies have found a significant relationship between a single nursing attribute such as education or tenure in the profession and perception of medication errors (Mayo et al., 2004; Maiden et al., 2011; Mahmood et al., 2011; Osborne et al., 1999). This study confirms previous findings and adds to the literature recommending that all nurses, regardless of education or tenure, continue to be educated in identifying and reporting medication errors in their workplace.

Table 13

Model	<i>B</i>	<i>SE</i>	<i>B</i>	<i>t</i>	<i>p</i>	95% CI
Age	0.09	0.28	0.03	0.31	.758	[-0.47, 0.64]
Nursing Degree	-0.28	2.35	-0.01	-0.12	.905	[-4.91, 4.35]
Hours/Week	-0.11	0.21	-0.03	-0.53	.595	[-0.51, 0.29]
Tenure (Org.)	0.02	1.33	0.00	0.02	.987	[-2.59, 2.63]
Tenure (RN)	0.16	1.51	0.01	0.11	.914	[-2.81, 3.14]
Unit Type	0.32	0.33	0.06	0.97	.333	[-0.33, 0.97]
Role	1.69	1.85	0.06	0.91	.362	[-1.95, 5.33]
Magnet Desig.	2.41	8.81	0.05	0.27	.785	[-14.94, 19.75]
Magnet Jour.	-0.00	0.01	-0.02	-0.09	.930	[-0.02, 0.02]
Location	4.97	3.99	0.08	1.25	.214	[-2.88, 12.83]
Adult	6.42	3.55	0.11	1.81	.072	[-0.57, 13.41]
Pediatric	0.33	3.29	0.01	0.10	.919	[-6.15, 6.81]
Trauma	1.34	3.77	0.02	0.36	.721	[-6.07, 8.76]
Teaching	-1.15	3.42	-0.02	-0.34	.737	[-7.89, 5.59]
Community	-2.95	3.46	-0.05	-0.85	.394	[-9.75, 3.85]
Size	-0.19	1.16	-0.01	-0.16	.873	[-2.48, 2.11]
State	0.03	0.12	0.02	0.28	.781	[-0.20, 0.27]

Note. $F(17, 286) = 0.57, p = .910, R^2 = 0.18$

Table 13. Multiple Regression of Organizational Characteristics and Nurse Attributes on Perception of Medication Errors

Limitations

As with any research study, this study has limitations that should be addressed. First, the participant sample was fairly homogenous due to participant recruitment at two national nursing conventions. A majority of nurse participants in the study came from large, urban and Magnet designated hospitals with potentially larger budgets for staffing, education programs and error reporting systems. Thus, the findings in this study may not be generalizable to all nurses in all facilities around the United States. Second, the survey created for this study was composed of four instruments and a demographic questionnaire totaling roughly 100 items. Although

most respondents completed the survey in 15 minutes, participant fatigue may have skewed some participant responses, especially at the end of the survey.

Implications

Clinical Nursing Practice

This study is the first of its kind to evaluate the relationships between organizational commitment, nurse work engagement and OBSE on nurses' perception of medication errors. Since the IOM's landmark report, many important changes such as CPOE, medication and patient barcoding, tall-man lettering and patient safety programs have been implemented. Despite these efforts, medication errors continue to occur. Similar to the Mayo et al. (2004) study, nurses in this study are experiencing a gap between perceived knowledge and actual knowledge. For example, 88% of nurses in this study believed they knew what constituted a medication error, but when presented with medication error scenarios, they were somewhat inconsistent with their responses to the medication error scenarios. With nurses on the front lines, this continues to be concerning. To assist in bridging the gap between perceived and actual knowledge of what constitutes a medication error, the profession as a whole needs to agree on a single definition and work to educate all nurses.

Education

Nursing students begin their nursing education with a pharmacology course and medication calculation tests. To supplement their education, students are brought into the clinical environment to build their medication administration skills. It is at this critical time in learning that an agreed upon definition of what constitutes a medication error should be presented and discussed. In addition, nurses – novice to

expert – should undergo scenario-based medication error questions and debriefings as part of onboarding and continuing education on an annual basis. Literature has shown that when a medication error strikes a patient, it is usually due to a breakdown in the system or process of medication administration. Nurses, however, are the last line of defense before an error strikes and thus hold the trust of the patient and family, along with the entire system, to protect against a medication error.

Leadership

When asked if a medication error was not reported out of fear for disciplinary action or loss of a job, the majority of participants in this study ($n = 280$, 79.8%) said they had not ever failed to report a medication error out of personal fear. Although this is encouraging, there is still work to be done by supervisors, managers and directors to facilitate ongoing discussions around the area of medication errors - including omissions and near misses. The more this topic is embraced by leadership and discussed openly by the team members, the less hesitant a staff member will be to report an error if one should come up. Furthermore, leadership, staff members and the multidisciplinary team need to work together to develop an easily accessible, non-threatening and user-friendly method of error reporting that can be agreed upon by all stakeholders.

Research

This study was conducted to test the relationships of multiple variables on nurses' perception of medication errors. At the completion of this study, a couple of suggestions for further research have become apparent. First, during the study, a number of nurses suggested that they failed to report an error due to the cumbersome

error reporting system at their facility. Future research in this area should include a qualitative component designed to address topics around error reporting, such as poorly designed systems and other barriers to system-wide reporting.

Second, this study provided an introduction to the area of OBSE in the nursing profession as related to work engagement, organizational commitment and perception of medication errors. As the only variable that provided a significant relationship to perception of medication errors, it is imperative that more studies are conducted looking at organizational based self-esteem as a possible cause of underreported medication errors, near misses and omissions. OBSE may also be the missing link to many unanswered questions in other nursing-related outcomes research and warrants a closer look, especially in the areas of nursing engagement, turnover and patient safety.

Conclusion

No one on the healthcare team works in a silo. Medication errors result from a breakdown in the medication delivery system. This systemic breakdown can only be fixed if all medication errors – including near misses and omissions – are reported by all members of the multidisciplinary team in real time. With accurate reporting, education programs can be tailored and solutions proposed at each phase in the medication delivery process to fix gaps in the system. Patient safety is everyone's responsibility - knowledge is power.

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APPENDIX A

Demographic Questionnaire

Part I

Please answer the following questions below. Place fill in the blank or place a check mark or "x" by the answer that best describes you. Thank you!

About you:

How old are you?	Age _____
What is your highest nursing degree?	Diploma _____ ADN _____ BSN _____ MSN _____ PhD _____ DNP _____
How many hours per week do you work?	Hours/wk. _____
How long have you been with your organization?	Less than 1 Year _____ 1 – 3 Years _____ 4 – 6 Years _____ 7 – 10 Years _____ 11 – 15 Years _____ 15 – 20 Years _____ 21 – 25 Years _____ 26 – 30 Years _____ Greater than 30 Years _____
What type of unit do you work in?	ICU Adult _____ ICU Peds _____ ICU Neonatal _____ Medical _____ Surgical _____ Medical/Surgical _____ Rehabilitation _____ OR _____ PACU _____ Hem/Onc _____ Transplant _____ Infusion _____ Dialysis _____

What is your role in your unit?	Bedside RN _____ Bedside / Charge RN _____ Resource RN _____ Educator / CNS _____ Other _____
How many years have you been an RN?	Less than 1 Year _____ 1 – 3 Years _____ 4 – 6 Years _____ 7 – 10 Years _____ 11 – 15 Years _____ 15 – 20 Years _____ 21 – 25 Years _____ 26 – 30 Years _____ Greater than 30 Years _____

About your facility/organization:

Does your facility hold Magnet[®] designation?	Yes _____ No _____
If you answered no, is your facility on the Magnet[®] Journey?	Yes _____ No _____
Is your facility located in a rural or urban location?	Rural _____ Urban _____
In what State is your facility located?	State _____
What type of facility do you work in? Check all that apply:	Adult _____ Pediatrics _____ Trauma Designated _____ Teaching _____ Community _____
How large is your organization (in beds)?	Less than 200 _____ 200 – 300 _____ 301 – 400 _____ 401 – 500 _____ Greater than 500 _____

APPENDIX B

Survey Instrument

Part II

The following 17 statements are about how you feel at work. Please read each statement carefully and decide if you ever feel this way about your job. If you have never had this feeling, put a '0' (zero) in the space after the statement. If you have had this feeling, indicate how often you feel it by picking a number (from 1 to 6) that best describes how frequently you feel that way.

	Almost never	Rarely	Sometimes	Often	Very often	Always
0	1	2	3	4	5	6
Never	A few times a year or less	Once a month or less	A few times a month	Once a week	A few times a week	Every day

1. At my work, I feel bursting with energy (VII) _____
2. I find the work that I do full of meaning and purpose (DE1) _____
3. Time flies when I'm working (AB1) _____
4. At my job, I feel strong and vigorous (VI2) _____
5. I am enthusiastic about my job (DE2) _____
6. When I am working, I forget everything else around me (AB2) _____
7. My job inspires me (DE3) _____
8. When I get up in the morning, I feel like going to work (VI3) _____
9. I feel happy when I am working intensely (AB3) _____
10. I am proud on the work that I do (DE4) _____
11. I am immersed in my work (AB4) _____
12. I can continue working for very long periods at a time (VI4) _____
13. To me, my job is challenging (DE5) _____
14. I get carried away when I'm working (AB5) _____
15. At my job, I am very resilient, mentally (VI5) _____
16. It is difficult to detach myself from my job (AB6) _____
17. At my work I always persevere, even when things do not go well (VI6) _____

Part III

The following 10 statements are about how you feel at your organization. Please read each statement carefully and decide how you feel at your organization. Indicate how strongly you agree or disagree with the statement by selecting a number (from 1 to 5) that best describes how you feel.

	1	2	3	4	5
	Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree
18. I count around here (OB1)					_____
19. I am taken seriously (OB2)					_____
20. I am important (OB3)					_____
21. I am trusted (OB4)					_____
22. There is faith in me (OB5)					_____
23. I can make a difference (OB6)					_____
24. I am valuable (OB7)					_____
25. I am helpful (OB8)					_____
26. I am efficient (OB9)					_____
27. I am cooperative (OB10)					_____

Please Continue to Next Page

Part IV

Listed below is a series of statements that represent feelings that individuals might have about the company or organization for which they work. With respect to your own feelings about the particular organization for which you are now working, please indicate the degree of your agreement or disagreement with each statement by selecting a number from 1 to 5 using the scale below.

1	2	3	4	5	
Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree	
28. I would be very happy to spend the rest of my career with this organization (AC1)					_____
29. Right now, staying with my organization is a matter of necessity as much as desire (CC1)					_____
30. I do not feel any obligation to remain with my current employer (NC1)					_____
31. I really feel as if this organization's problems are my own (AC2)					_____
32. It would be very hard for me to leave my organization right now, even if I wanted to (CC2)					_____
33. Even if it were to my advantage, I do not feel it would be right to leave my organization now (NC2)					_____
34. I do not feel a strong sense of "belonging" to my organization (AC3)					_____
35. Too much of my life would be disrupted if I decided I want to leave my organization now (CC3)					_____
36. I would feel guilty if I left my organization now (NC3)					_____
37. I do not feel "emotionally attached" to this organization (AC4)					_____
38. I feel that I have too few options to consider leaving this organization (CC4)					_____
39. This organization deserves my loyalty (NC4)					_____
40. I do not feel like "part of the family" at my organization (AC5)					_____
41. If I had not already put so much of myself into this organization, I might consider working elsewhere (CC5)					_____
42. I would not leave my organization right now because I have a sense of obligation to the people in it (NC5)					_____
43. This organization has a great deal of personal meaning for me (AC6)					_____
44. One of the few negative consequences of leaving this organization would be the scarcity of available alternatives (CC6)					_____
45. I owe a great deal to my organization (NC6)					_____

Part V

Listed below are a series of fourteen questions. Please follow the directions under each section regarding your views on medication errors.

46. In your estimation, what percentage of all drug errors are reported to the Nurse Manager by the completion of an incident report?

(Please make an X on the line that corresponds most closely to your estimation.)

1% _____ 100 % (MG1.01)

47. The following ten statements are all possible causes of medication errors. Please read them carefully and Rank #1 to #10. (#1 most frequent and #10 least frequent)

a.	Drug errors occur when the nurse fails to check the patient's name band with the Medication Administration Record (MAR.)	_____ (MG1.02)
b.	Drug errors occur when the physician's writing on the doctor's order form is difficult to read or illegible.	_____ (MG1.03)
c.	Drug errors occur when the medication labels/packaging are of poor quality or damaged.	_____ (MG1.04)
d.	Drug errors occur when there is confusion between two drugs with similar names.	_____ (MG1.05)
e.	Drug errors occur when the physician prescribes the wrong dose.	_____ (MG1.06)
f.	Drug errors occur when the nurse miscalculates the dose.	_____ (MG1.07)
g.	Drug errors occur when the nurse sets up or adjusts an infusion device incorrectly.	_____ (MG1.08)
h.	Drug errors occur when nurses are confused by the different types and functions of infusion devices.	_____ (MG1.09)
i.	Drug errors occur when nurses are distracted by other patients, coworkers or events on the unit.	_____ (MG1.10)
j.	Drug errors occur when nurses are tired and exhausted.	_____ (MG1.11)

52. A physician orders percocet 1-2 tabs for post-op pain every 4 hours. At 4:00pm the patient complains of pain, requests one pill and is medicated. At 6:30pm the patient requests the second pain pill. The nurse administers the pill.

- a. Drug Error _____ Yes _____ No (MG1.24)
- b. Notify Physician _____ Yes _____ No (MG1.25)
- c. Incident Report Necessary _____ Yes _____ No (MG1.26)

53. A patient is receiving a routine 9 am dose of digoxin everyday. Yesterday's digoxin level was 1.8 (the high side of normal). A digoxin level was drawn at 6 am today. At 9 am the nurse holds the digoxin because the lab value is not available yet.

- a. Drug Error _____ Yes _____ No (MG1.27)
- b. Notify Physician _____ Yes _____ No (MG1.28)
- c. Incident Report Necessary _____ Yes _____ No (MG1.29)

What are your views about reporting medication errors? Please check the most appropriate response:

What are your views about reporting medication errors? Please check the most appropriate response:

54. I am usually sure what constitutes a medication error _____ Yes _____ No (MG1.30)
55. I am usually sure when a medication error should be reported using an incident report _____ Yes _____ No (MG1.31)
56. Some medication errors are not reported because nurses are afraid of the reaction they will receive from the Nurse Manager. _____ Yes _____ No (MG1.32)
57. Some medication errors are not reported because nurses are afraid of the reaction they will receive from their coworkers. _____ Yes _____ No (MG1.33)
58. Have you ever failed to report a drug error because you did not think the error was serious to warrant reporting? _____ Yes _____ No (MG1.34)
59. Have you ever failed to report a medication error because you were afraid that you might be subject to disciplinary action or even lose your job? _____ Yes _____ No (MG1.35)

Thank you so much for taking the time to fill out this survey!

APPENDIX C

Instrument Permissions

Utrecht Work Engagement Scale (UWES)

From UWES Publication:

Schaufeli, W. B., & Bakker, A. B. (2003). UWES–Utrecht work engagement scale: test manual. *Unpublished Manuscript: Department of Psychology, Utrecht University*.

© Schaufeli & Bakker (2003). The Utrecht Work Engagement Scale is free for use for non-commercial scientific research. Commercial and/or non-scientific use is prohibited, unless previous written permission is granted by the authors

Organization-Based Self-Esteem (OBSE)

From PsycTESTS Publication:

Organization-Based Self-Esteem

PsycTESTS Citation:

Pierce, J. L., Gardner, D. G., Cummings, L. L., & Dunham, R. B. (1989). Organization-Based Self-Esteem [Database record]. Retrieved from PsycTESTS. doi: 10.1037/t24110-000

Test Shown: Full

Test Format:

Respondents use a 5-point Likert scale to rate the extent to which they agreed or disagreed with items.

Source:

Supplied by author.

Original Publication:

Pierce, Jon L., Gardner, Donald G., Cummings, Larry L., & Dunham, Randall B. (1989). Organization-based self-esteem: Construct definition, measurement, and validation. *Academy of Management Journal*, Vol 32(3), 622-648. doi: 10.2307/256437

Permissions:

Test content may be reproduced and used for non-commercial research and educational purposes without seeking written permission. Distribution must be controlled, meaning only to the participants engaged in the research or enrolled in the educational activity. Any other type of reproduction or distribution of test content is not authorized without written permission from the author and publisher.

APPENDIX C – Continued

Instrument Permissions

Three Component Model of Commitment (TCM)

From TCM Employee Commitment Survey Academic Users Guide:

Meyer, J. P., & Allen, N. J. (2004). TCM employee commitment survey academic users guide 2004. *London, Ontario, Canada: The University of Western Ontario, Department of Psychology.*

TCM Employee Commitment Survey Academic Users Guide

Based on the Three-Component Model (TCM) of commitment (Meyer & Allen, 1991; 1997), the *TCM Employee Commitment Survey* measures three forms of employee commitment to an organization: desire-based (affective commitment), obligation-based (normative commitment) and cost-based (continuance commitment). The survey includes three well-validated scales, the Affective Commitment Scale (ACS), the Normative Commitment Scale (NCS) and the Continuance Commitment Scale (CCS). Each is scored separately and can be used to identify the “commitment profile” of employees within an organization.

This academic version of the TCM Employee Commitment Survey was prepared for those who intend to use the commitment scales for academic research purposes. Original and revised versions of the scales are provided in Appendix A. This guide provides background information on the development of the commitment scales and addresses general issues pertaining to their use. Appendix B provides a list of references that you can consult for more information.

Modified Gladstone 2005 – Nurse Perception of Medication Errors

Consent for use provided by Dr. Mayo on August 6, 2015 via email

APPENDIX D

Literature Review Table

Organization-Based Self-Esteem/Organizational Commitment

Author/Title	Setting/ Participants	Methodology	Instruments/ Psychometrics	Findings
Chen et al. (2015) Organization-based self-esteem mediates the effects of social support and job satisfaction on intention to stay in nurses.	791 Registered Nurses in a medical center in Northern Taiwan	Quantitative (Survey) Cross-sectional, correlational study	OBSE Scale Promotion Opportunity Scale (Chu, 2001) Social Support Scale (Lin & Shiao, 2005) Work Stress Scale (See et al., 2007) Job Satisfaction Scale (Wang et al., 2006) Intention to Stay in Nursing Scale (Hill, 2011) Data Analysis: SPSS for Descriptive analysis & Smart PLS Software for Structural Equation Modeling	*OBSE along with social support, work stress, job satisfaction affected intention to stay *OBSE has a mediating effect on social support and job satisfaction on intention to stay - meaning, intention to stay increased with enhanced OBSE and perception of social support
Carson, Carson, Lanford, & Roe (1997) The effects of organization-based self-esteem on workplace outcomes: An examination of emergency medical technicians.	46 Emergency Medical Technicians (Non-nursing) in Southeastern United States	Quantitative (Survey)	OBSE Scale Career Commitment Measure (Carson & Bedeian, 1994) Job Satisfaction Index (Brayfield & Rothe, 1951) Career Withdrawal Survey (Mobley et al, 1982)	*OBSE plays a vital role in career commitment of EMTs in the study *Participants high in OBSE had better interactions with consumers than those with low OBSE *Role clarification may help

Author/Title	Setting/ Participants	Methodology	Instruments/ Psychometrics	Findings
			Import of Quality Scale (Garvin, 1988) Data Analysis: One-Way ANOVAs Principal Component Analysis	organizations boost OBSE in their employee population
Gardner, D. G., van Dyne, L., & Pierce, J. L. (2004) The effects of pay level on organization-based self-esteem and performance: A field study.	91 Employees (Non-nursing) Midwest United States	Quantitative (Survey and other data collected) Longitudinal – 12 months (Time 1) Data collected on pay level – yearly compensation for all 91 participants Three months later (Time 2) self-report survey distributed 9 months (after time 2) performance appraisal data collected for past 12 months (Time 3) – 62 participants remain	OBSE Scale Pay Level data as reported from organization Performance Scale developed by organization Data Analysis: Hierarchical regression analysis	*Study interested in finding out how pay level influences/affects employee performance *OBSE can help determine how individual differences may link pay and performance *Pay level is significantly related to OBSE and performance
Gardner, D. G., & Pierce, J. L. (2011) A question of false self-esteem: Organization-based self-esteem and narcissism in organizational contexts.	236 Employees (Non-nursing) United States	Quantitative (Survey)	Narcissism Personality Inventory (Raskin & Terry, 1988) OBSE Survey Job Satisfaction Scale (Brayfield & Rothe, 1951)	*OBSE and Narcissism are very different constructs *First study to look at relationship of narcissism and OBSE *Narcissism

Author/Title	Setting/ Participants	Methodology	Instruments/ Psychometrics	Findings
			<p>Job Involvement Scale (Lodhal & Kejner, 1965).</p> <p>Intrinsic Motivation Scale (Hackman & Oldham, 1980)</p>	<p>correlated positively with job satisfaction, job involvement and intrinsic motivation.</p> <p>*Organizations need to be careful when delivering negative feedback to narcissistic employees – be sure to provide concrete evidence to support statements</p>
<p>Hui, C., & Lee, C. (2000)</p> <p>Moderating effects of organization-based self-esteem on organizational uncertainty: Employee response relationships.</p>	<p>378 Employees (Non-nursing) Hong Kong</p>	<p>Quantitative (Survey)</p> <p>Randomized cross-sectional study</p>	<p>OBSE Survey</p> <p>Intrinsic Job Motivation Scale (Warr, Cook & Wall, 1979)</p> <p>Organizational Commitment Scale (Mowday et al., 1979)</p> <p>Job Insecurity Scale (Caplan et al., 1975)</p> <p>Organizational Change Scale (Ashford et al., 1989)</p> <p>Control Measures: Age, Gender and Tenure in Organization</p> <p>Data Analysis: LISREL package</p> <p>Confirmatory Factor Analysis</p>	<p>*Results confirm OBSE as an “important individual-level” moderator of relationships.</p> <p>* OBSE may assist management in managing employees through organizational changes – especially when job insecurity is evident</p>
<p>McAllister, D. J., & Bigley, G. A. (2002)</p> <p>Work context and</p>	<p>186 Students and alumni from a Southern California</p>	<p>Quantitative (Survey)</p>	<p>OBSE Survey</p> <p>Organizational Care Survey</p>	<p>*Organizational care is an important factor to consider when</p>

Author/Title	Setting/ Participants	Methodology	Instruments/ Psychometrics	Findings
the definition of self: How organizational care influences organization-based self-esteem.	University executive MBA program participated along with members of their respective organizations.		(Eisenberger et al, 1986) Reputational Effectiveness scale (Tsui, 1984) and 1-item from McAllister (1995) Data Analysis: EQS Program Structural Equation Modeling	identifying OBSE *Organizational values and organizations acting in the employees' best interests reported having employees with higher OBSE levels. *Relationship between work context and self-esteem is indirect – mediated by perceptions of job authority fairness and organizational fairness
Sekiguchi, T., Burton, J. P., & Sablinski, C. J. (2008) The role of job embeddedness on employee performance: the interactive effects with leader-member exchange and organization-based self-esteem.	367 Employees (Non-nursing) 41 Supervisors (Non-nursing) 2 Organizations	Quantitative (Survey)	Task Performance Survey (Williams & Anderson, 1991) Organizational Citizenship Behavior Scale (Podsakoff & MacKenzie, 1994) Leader-Member Exchange (LMX) Scale (Graen, Novak & Sommerkamp, 1982) Job Embeddedness Scale (Lee et al., 2004) Data Analysis: Factor Analysis – principal axis factoring with varimax rotation	*Study focused on job embeddedness pertaining to leader-member exchange, OBSE, organizational citizenship behaviors and task performance. *“The role of OBSE becomes more salient when employees are highly embedded in their job and organization, which then influences employee performance either directly or indirectly by interacting with LMX.” (p.785)

Author/Title	Setting/ Participants	Methodology	Instruments/ Psychometrics	Findings
Panaccio, A., & Vandenberghe, C. (2011) The relationships of role clarity and organization-based self-esteem to commitment to supervisors and organizations and turnover intentions.	311 Employees (Non-nursing) Canada/France	Quantitative (Survey)	Organizational Commitment – Meyer et al. (1993) OBSE Survey Commitment to Supervisor Instrument – Stinglhamber et al (2002) Role Clarity Instrument – Rizzo et al. (1970) Data Analysis: LISREL: Confirmatory Factor Analysis	*Study found that high OBSE is related to reduced turnover *OBSE contributes to Affective Commitment by employees
Lapointe, É., Vandenberghe, C., & Panaccio, A. (2011) Organizational commitment, organization-based self-esteem, emotional exhaustion and turnover: A conservation of resources perspective.	260 Employees (Non-nursing) Canada	Quantitative (Survey) Longitudinal study of work attitudes: Test-Retest Time 1/Time 2 1 year apart	Organizational Commitment – Meyer et al. (1993) OBSE Survey Emotional Exhaustion – Maslach Burnout Inventory – general survey Data Analysis LISREL: Confirmatory Factor Analysis	*Relationship between affective, normative and continuance commitment to emotional exhaustion using conservation of resources theory: -Lack of alternatives and normative commitment was related to increased emotional exhaustion over time -Lack of alternatives was exacerbated by an individual's OBSE
De Gieter, S., Hofmans, J., & Pepermans, R. (2011) Revisiting the impact of job	287 Nurses in a variety of hospitals in Belgium	Quantitative (Survey)	PI-developed turnover intention scale Organizational	*organizational commitment and job satisfaction predicted nurse turnover

satisfaction and organizational commitment on nurse turnover intention: An individual differences analysis.			Commitment Scale by Meyer et al. (1993) Job Satisfaction Scale by Hackman and Oldham (1976) Data analysis: Mixed regression models, t-tests, chi square tests	intention *younger nurses and those with less tenure had greater intentions to leave
Carter, M. R., & Tourangeau, A. E. (2012) Staying in nursing: what factors determine whether nurses intend to remain employed?	17,707 nurses working in 390 NHS organizations in the United Kingdom	Quantitative (Survey)	NHS National Staff Survey SPSS – Descriptive Statistics and Cronbach's alpha M-Plus - Structural Equation Modeling (within and between)	*Psychologically engaged nurses are less likely to leave their current job *small relationship between nursing relationship with colleagues and patients and nurse turnover intentions *Intent to leave influenced by opportunities for growth, work pressures and work-life balance

Work Engagement

Author/Title	Setting/Participants	Methodology	Instruments/ Psychometrics	Findings
Laschinger, H. K., Wilk, P., Cho, J., & Greco, P. (2009) Empowerment, engagement and perceived effectiveness in nursing work environments: does experience matter?	Combination of 2 Studies in Canada Study 1: 282 New Graduate RNs identified with less than 3 years of experience on the license renewal in Canada were randomly selected. Study 2: Representative	Quantitative (Survey) Both groups of nurses were combined to reflect a sample size of 185	Conditions of Work Effectiveness – II Utrecht Work Engagement Scale Global Empowerment Scale Data analyzed through Structural Equation	Work engagement can be linked to workplace empowerment. Work engagement and empowerment has an effect on work effectiveness.

	sample of acute care RNs in Canada (n=311)		Modeling	
Lawrence, L. A. (2011) Work engagement, moral distress, education level, and critical reflective practice in intensive care nurses.	28 ICU RNs in 355-bed hospital in the Southwest United States (Magnet facility)	Quantitative (Online Survey) Non-Experimental, descriptive correlational study.	Investigator-designed Demographic survey Utrecht Work Engagement Scale Moral Distress Scale Critical Reflective Practice Questionnaire	*Positive relationship between clinical reflective practice and work engagement *Negative direct relationship between moral distress and work engagement *Education was positively correlated to clinical reflective practice
Rivera, R. R., Fitzpatrick, J. J., & Boyle, S. M. (2011) Closing the RN engagement gap: which drivers of engagement matter?	510 RNs from large urban hospital on the East Coast of the USA.	Quantitative (Survey) 9 Drivers of Engagement 1. Autonomy and input 2. Manager action 3. Non-nurse teamwork 4. Nurse teamwork 5. Passion for nursing 6. Personal growth 7. Recognition 8. Salary and benefits 9. Work environment	Nurse Engagement Survey (Advisory Board) Distributed online Data Analysis: *Pearson R *Chi Squared *Logistic Regression	*Drivers of engagement (= 9) was significantly positively correlated to the engagement index (p<.001, 2-tailed) *Day shift RNs more engaged than other shifts * Sex and education not significant to engagement
Simpson, M. R. (2009) Predictors of work engagement among medical-	167 Medical Surgical RNs working in Medical/ Surgical units within 6	Quantitative (Survey) Descriptive, cross-sectional study	Utrecht Work Engagement Scale Turnover Cognitions	*While nurses are not actively looking for other jobs, many think about quitting.

surgical registered nurses	hospitals in the United States	Relationship between job satisfaction, turnover cognitions, job search behavior and nurse demographics on work engagement Uses Mobley's Model of Turnover as study model	Scale IWS-R Scale (Stamps, 1997) Job Search Behavior Index Investigator-designed demographic questionnaire *Correlation and Regression analysis conducted	*Nurses are least satisfied with their pay followed by task requirements and hospital policies. *Overall, nurses are somewhat satisfied with their job and have moderate levels of work engagement.
Abdelhadi, N. & Drach-Zahavy, A. (2012) Promoting patient care: work engagement as a mediator between ward service climate and patient-centered care.	158 Nurses working in 40 wards of retirement homes in northern Israel	Mixed Methods Quantitative (questionnaires) Structured Observations (Nested, cross sectional research design)	Global Service Climate Scale Work Engagement Scale (Salanova & Agut, 2005). Structured Observations: 3 Patient Centered Care (PCC) observations were recorded by trained (10 hours) graduate students (nurses by profession) 9-item structured observation sheet (Likert scale) used to rate PCC	*Goal of Study: Identify the relationship between patient-centered care, service climate and work engagement *Work engagement is a mediator in the relationship between service climate and patient centered care *Nurses who experience higher levels of work engagement provide greater patient centered care
Tillott, S., Walsh, K., & Moxham, L. (2013) Encouraging engagement at work to improve retention: Sarah	Exploratory paper to reflect on factors that impact workplace culture	Exploratory Paper Review of concepts such as empowerment, engagement and satisfaction in the workplace.	None	Key Findings: *Workplace culture is linked to staff well-being and commitment *Introduces reader to

Tillott and colleagues explore how a social interaction tool can help managers recruit and retain staff, and boost patient care.				<p>SCARF framework</p> <p>S=Status C=Certainty A=Autonomy R=Relatedness F= Fairness</p> <p>*The SCARF framework enables collaborating and influencing of ideas to others</p>
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Nurse Perception of Medication Errors

Author/Title	Setting/ Participants	Methodology	Instruments/ Psychometrics	Findings
Gladstone, J. (1995) Drug administration errors: a study into the factors underlying the occurrence and reporting of drug errors in a district general hospital.	102 Trained nurses randomly selected from a list from payroll (74 full time) (28 part time) 17 Nurse Managers In United Kingdom	Questionnaires: 1. Nurse managers 2. Nurse Perception of Medication Error Nurse Interviews	Two separate questionnaires were distributed, one for managers and one for staff nurses. Both developed by the PI.	Many drug errors are not reported. The term <i>Drug Error</i> is not clearly defined. Fear of discipline and loss of confidence due to errors were recurrent themes in interviews.
Fry, M., & Dacey, C. (2007) Factors contributing to incidents in medicine administration. Part 1	Literature Review of factors contributing to medication errors in the NHS system in the United Kingdom	Literature review revealed 3 categories of human error: 1. Personal 2. Contextual 3. Knowledge base	Literature Review of the themes based on 16 research papers relating to medication errors.	Discussed human error theory and determined that there is a little evidence to show that nurses know the root causes leading to medication errors.
Fry, M., & Dacey, C. (2007) Factors contributing to incidents in medicine administration. Part 2	Cross –section of RNs in the United Kingdom 139 participants in 15 wards	Questionnaires: Demographic 6-part medication error questionnaire	Demographic questionnaire and 6-part medication error questionnaire analyzed through SPSS	Causes of medication errors include: *environmental distractions *differences in training/education * misleading

Author/Title	Setting/ Participants	Methodology	Instruments/ Psychometrics	Findings
				medication packaging *illegible medication charts
Ulanimo, V. M., O'Leary-Kelley, C., & Connolly, P. M. (2007) Nurses' perceptions of causes of medication errors and barriers to reporting	VA Medical Center in California 61 medical/surgical nurses	Descriptive study with convenience sample taking a questionnaire (27 returned questionnaires)	Modified Gladstone Questionnaire	Causes of Medication Errors * distractions * failure to check arm band * confusion over packaging * RN miscalculation *MD prescribing error/poor handwriting
Maiden, J., Georges, J. M., & Connelly, C. D. (2011) Moral distress, compassion fatigue, and perceptions about medication errors in certified critical care nurses.	205 Critical Care RNs around United States	Mixed Methods: Quantitative (Survey) Qualitative (Focus Group) from subset of quantitative participants	Demographic Questionnaire Moral Distress Scale Professional Quality of Life Scale Medication Administration Error Survey Focus Group (for subset of participants – n=5)	Significant correlations between moral distress and compassion fatigue ($r=.21, p<.001$). Moral distress and compassion fatigue were positively correlated with perceived reasons medication errors were not reported.
Osborne, J., Blais, K., & Hayes, J. S. (1999) Nurses' perceptions: when is it a medication error?	Descriptive comparative study of 57 Medical-Surgical RNs in a 700 bed community hospital in South Florida.	Quantitative (Survey)	Modified Gladstone Questionnaire Descriptive and inferential statistics used for data analysis	Key Findings: *Nurses redefine medication errors based on critical thinking skills * RNs believed that other RNs did not report medication errors out of fear from co-workers and manager, but did not fear reporting themselves. Recommend changing "medication error" to "variance in medication

Author/Title	Setting/ Participants	Methodology	Instruments/ Psychometrics	Findings
				administration”
Mayo, A. M., & Duncan, D. (2004) Nurse perceptions of medication errors: what we need to know for patient safety.	United Nurses Association of California. Union of Health Care Professionals RNs in 16 Southern California Hospitals Random Sample 5000 RNS with responses from 983 RNs	Quantitative (Survey) *Replicated Osborne et al. study with larger sample.	Modified Gladstone Questionnaire	Gap identified between nurses' perceived knowledge and actual knowledge of what constitutes a medication error. No specific demographic data was associated with nurse perception / reporting of medication errors.
Hewitt, P. (2010) Clinical Practice Nurses' Perceptions of the Causes of Medication Errors: An Integrative Literature Review	Literature Review 9 studies throughout USA, Japan, United Kingdom and Taiwan.	Review of Literature	Review of 9 studies varying in methods – quantitative and qualitative.	Key points: * Understanding the root causes of why medication errors occur will help reduce errors * punitive measures to combat medication errors will only cause more errors to go unreported * Administration of medication is a complex, multidisciplinary process that requires scrutiny from all directions to ensure the safest system possible.

APPENDIX E

Recruitment Flyer

Research Study Participants Wanted

- Are you an RN working at the bedside?
- Are you a Full-Time, Part-Time or Per-Diem Nurse?

We want to hear from you!!

I am a PhD student at the University of San Diego Hahn School of Nursing and Health Science conducting a study to investigate the relationships between organizational commitment (how committed you are to your organization), organizational-based self-esteem (how you feel about your organization), work engagement (how engaged you are at work) and nurses' perception of medication errors.

What you need to know:

- Information is collected by paper survey.
- The survey should take 15-25 minutes to complete*.
- The survey is anonymous. You will not be asked for your name or facility name.

*All participants will receive a "Peace, Love, Nursing" tote bag and aluminum water bottle for their time

Questions? Want more information?

Contact:

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Action Date: September 9, 2015 *Note: Approval expires one year after this date.*

Action: X Approved Approved Pending Modification Not Approved

Project Number: 2015-09-004
 Researcher(s): Vanessa Wertheim Doc SON
 Dr. Linda Urden Fac SON
 Project Title: The Effect of Organizational Commitment, Organizational Based Self Esteem and Work Engagement on Nurses' Perception of Medication Errors

Note: We send IRB correspondence regarding student research to the faculty advisor, who bears the ultimate responsibility for the conduct of the research. We request that the faculty advisor share this correspondence with the student researcher.

Modifications Required or Reasons for Non-Approval

None

The next deadline for submitting project proposals to the Provost's Office for full review is N/A. You may submit a project proposal for expedited review at any time.

Dr. Thomas R. Herrinton
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