THE INFLUENCE OF NURSE MANAGER TRANSFORMATIONAL LEADERSHIP
ON NURSE AND PATIENT OUTCOMES: MEDIATING EFFECTS OF
SUPPORTIVE PRACTICE ENVIRONMENTS, ORGANIZATIONAL CITIZENSHIP
BEHAVIOURS, PATIENT SAFETY CULTURE, AND NURSE JOB SATISFACTION

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ABSTRACT

The Canadian Adverse Events Study (Baker, et al., 2004) revealed that the rate of adverse events in Canadian hospitals is 7.5 percent and almost 37% of these are preventable. Given these statistics, it is essential that healthcare organizations develop strategies and engage in leadership practices, which will address the complexity of healthcare processes and ensure that care is provided in a consistent, reliable manner in order to achieve the desired outcomes (Frankel, Gandhi & Bates, 2003). It is equally vital that leaders create supportive practice environments that promote a non-punitive culture of learning, continuous improvement, inter professional collaboration, and professional autonomy, thus engaging nurses in safe practice aimed at improving patient outcomes (Aiken, 2008; Pronovost et al., 2003). In order to understand how nursing leadership affects outcomes, it is important to assess what leadership behaviours are most effective in promoting a patient safety culture.

This study tested a hypothetical model which predicted the influence of nurse manager Transformational Leadership behaviour on staff nurse perceptions of supportive practice environments, organizational citizenship behaviours, patient safety culture, job satisfaction and objective measures of selected nurse sensitive outcomes. Findings supported the hypothesized model χ^2 (df = 22) = 40.72, p = .008; CFI = .958; TLI = .916; RMSEA = .079; SRMR = .045 linking transformational leadership to nurse and patient outcomes through supportive practice environments, organizational citizenship behaviours, safety culture and job satisfaction. Transformational Leadership had a significant indirect effect on patient falls (β = -.08, p<.05) through supportive practice environments and job satisfaction and on medication errors ((β = -.04, p<.05) through supportive practice environments and organizational citizenship behaviours.

These results provide a unique contribution to the body of literature and understanding about the role Transformational Leadership might play in optimizing nursing practice environments and patient outcomes. Therefore it has important implications for the professional development of nurse managers and leadership curriculum design. Findings will also potentially influence strategic planning within the organization and broader policy development at a LHIN or provincial level.

Keywords: Transformational Leadership, Nursing Practice Environments, Organizational Citizenship Behaviours, Patient Safety Culture, Nurse Job Satisfaction, Nurse Sensitive Outcomes

CO-AUTHORSHIP STATEMENT

Ann Higgins performed the work of this dissertation under the supervision of Dr. Heather Laschinger, Dr. Carol Wong and Dr. Rick Hackett who will be co-authors on publications resulting from Chapters 2, 3 and 4.

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CHAPTER 1

INTRODUCTION AND STUDY PURPOSES

Introduction

Since the release of the Institute of Medicine (IOM) seminal publication *To Err is Human* (Kohn, Corrigan & Donaldson, 2000), ensuring patient safety has been on the healthcare agenda at the national, provincial and organizational level. The more recent release of the *Canadian Adverse Events Study* (Baker et al., 2004) revealed that the rate of adverse events in Canadian hospitals is 7.5 percent and almost 37% of these are preventable. As healthcare delivery becomes increasingly complex, the risk to patient safety likewise increases. Berwick and Leape (2004) identify four key challenges to achieving safe healthcare delivery: "technical complexity, complex relationships, the high rate of change, and the personal and emotional stakes" (p.viii). Given these challenges, it is essential that healthcare organizations develop leadership strategies that address the complexity of healthcare processes and ensure that care is provided in a consistent, reliable manner in order to achieve the desired outcomes (Frankel, et al., 2003). Since nurses make up the majority of health professionals providing care to patients both in acute care facilities and in the community, they play a critical role in developing environments and processes that ensure the delivery of safe, quality care to patients/clients. Therefore, it is equally vital that leaders create supportive practice environments that promote a non-punitive culture of learning, continuous improvement, inter professional collaboration, and professional autonomy, thus engaging nurses in safe practice aimed at improving patient outcomes (Aiken, 2008; Pronovost et al., 2003, Sexton et al, 2006).

Based on the experience of other high risk industries such as commercial aviation and nuclear power, influential healthcare organizations such as the Joint Commission for Accreditation of Healthcare Organizations (JCAHO), Accreditation Canada (AC) and the Agency for Healthcare Research and Quality (AHRQ) recommend that healthcare organizations develop and regularly measure their patient safety culture. In order to achieve the goal of a non-punitive patient safety culture, leadership is required at both the senior level and at the middle management level (Ginsberg et al., 2005). Several studies examine the relationship between patient safety outcomes and organizational structures such as nursing work environments, skill mix, hours of nursing care, workload. However, they point out that further work is needed to examine the relationship between nursing leadership and nursing sensitive patient safety outcomes. In order to understand how nursing leadership affects outcomes, it is important to assess what leadership behaviours, and how these leadership behaviours, are most effective in promoting a patient safety culture.

Study Purpose

The purpose of this study is to test a model examining the influence of nurses' perceptions of their managers' transformational leadership behaviour on their perceptions of supportive practice environments, their use of organizational citizenship behaviours, patient safety culture, and selected patient and nurse outcomes. The model was developed drawing upon theory and research in the management and nursing literature and integrates Transformational Leadership Theory (Bass & Avolio, 1994), Social Exchange Theory (Cropanzano & Mitchell, 2005) and High Reliability Theory (Weick & Sutcliffe, 2001). The components of the model and their linkages will be developed through a detailed review of the literature in the upcoming sections. The results of this

study will be useful to nursing and other healthcare leaders in identifying the leadership

behaviours that are most effective in promoting a strong culture of patient safety and

achieving desired outcomes.

CHAPTER 2

REVIEW OF THE LITERATURE AND THEORETICAL FRAMEWORK

This literature review examines the theoretical and empirical literature related to the impact of nursing leadership on nursing work environments, organizational citizenship behaviours, patient safety culture and nurse job satisfaction. Literature regarding the impact of these variables on patient and nursing outcomes such as falls, medication errors, hospital acquired infections and nurse absenteeism is also explored. Gaps in the literature are identified and how this study addresses those gaps is explicated. Operational definitions and relationships among concepts are described to provide the foundation for the hypothesized model.

A comprehensive search was conducted of the relevant literature within nursing, organizational behaviour, psychology, business and management. Peer reviewed journal articles were retrieved from online data bases: CINHAL, Medline, Psych INFO, and ProQuest for the period of 1980 – present. Keywords/phrases related to the theoretical constructs and operational definitions were used including: culture, empowerment, healthcare, healthy work environments, leadership, nursing, nurse job satisfaction, nursing sensitive outcomes, organizational citizenship behaviour, organizational change, organizational justice, patient safety, span of control, supportive practice environments, and transformational leadership. Reference lists from key articles were reviewed for additional salient articles or books which resulted in the retrieval of material prior to 1980. The broad search yielded over 1500 possible articles including research studies, theoretical papers and literature reviews. All were given an initial review of the abstract, introduction and conclusions. After this initial review, 628 articles were selected for full review based on relevance to the concepts and premise of the study. Finally, gray

literature such as relevant reports from the Association of Healthcare Research in Quality (AHRQ), Canadian Nurses Association (CNO), Ministry of Health and Long Term Care (MOHLTC), Ontario Hospital Association (OHA) and Registered Nurses Association (RNAO) was also reviewed along with conference/symposia presentations, unpublished articles and several books from the popular literature on management/leadership.

Leadership

Various approaches to leadership have been developed over the last few decades; however the primary purpose of "leading" is to achieve established goals. Shortell and Kaluzny (2000) defined leadership as "the process through which an individual attempts to intentionally influence another individual or a group to accomplish a goal" (p. 109). Hogan, Curphy and Hogan (1994) propose a somewhat altruistic definition of leadership which emphasizes the collective good: "leadership involves persuading other people to set aside for a period of time their individual concerns and to pursue a common goal that is important for the responsibilities and welfare of a group" (p. 3). This definition aligns well with the variables of transformational leadership and organizational citizenship in this model.

In a systematic literature review on leadership research in healthcare, Gilmartin and D'Aunno (2007) found over 1000 articles but only 60 were empirical studies, indicating a need for further research in this area. They identified four key themes: 1) transformational and transactional leadership; 2) leadership and nurse job satisfaction, retention and performance; 3) leader effectiveness; and 4) leadership-development programs. The authors conclude that leadership likely affects behaviour and characteristics at an organizational level. The organizational goals most relevant to hospitals are optimal patient outcomes and in order to achieve that, it is important to

ensure a sustainable, satisfied, high performing staff. Therefore this section will review

several different views of leadership with particular reference to those approaches that are

deemed most effective in achieving these positive organizational goals.

Effective Leadership

Hogan, Curphy and Hogan (1994) suggest that it is difficult to define effective

leadership because there are so many extraneous variables that can thwart even the best

efforts of the most effective leader. However, despite that limitation they do describe an

effective leader as one "who can build a team" (p.3). While very simplistic it forms the

foundation of several other definitions which refer to the extent to which the leader's

group performs their task successfully to achieve their desired goals. Hamlin (2002) adds

the dimension of context to his definition by referring to the achievement of expected

goals "within the constraints imposed by the organization and socio-economic

environment" (p. 246). He suggests that leadership effectiveness can only be measured

within the context of what is *expected* to be achieved. Different organizations may

require different skills to achieve different goals at different times. The ability of the

leader to adjust to these situational differences and to help the group adjust, will often be

the determining factor in whether they are deemed effective (Hamlin, 2002; Hogan,

Curphy & Hogan, 1994). Even when the objectives are explicit, perceptions of a leader's

effectiveness can vary between subordinates, peers and superiors. Harris and Hogan

(1992) conducted a study where subordinates and bosses were asked to evaluate the

effectiveness of their respective managers. They found that although both subordinates

and bosses were consistent in their evaluations of overall effectiveness, the factors that

influenced that rating was different. Where senior leaders judge effectiveness based on

superior problem solving, subordinates are likely to rate their manager more effective

based on a sense of integrity or trust.

Gilmartin and D'Aunno (2007) found similarities across studies regarding the attributes of effective leaders including: flexibility, inclusivity, sense of vision and high standards of performance. In recent years, hierarchical, authoritarian and task oriented leadership models have given way to more democratic, inclusive and relational models of leadership which emphasize the importance of subordinates' needs, goals and potential contributions to the organizational goals. A relational approach is distinguished by the notion that the leader works in partnership with their subordinates to a great extent and both gain something from the experience. Features of this approach include charisma, emotional intelligence, inclusivity, authenticity, personal engagement, relationship building, personal reflection and growth (Avolio & Gardner, 2005;Bass & Avolio,1994; Kouzes & Posner, 2002).

Trust is another key feature of an effective relationship between a leader and their subordinates. Leaders and organizations that foster trust will be more effective in influencing staff performance and achieving positive organizational outcomes (Firth-Cozens, 2004; Vogus & Sutcliffe, 2007). Conchie and Donald (2009) examined the relationship between safety specific trust, transformational leadership and citizenship behaviour related to safety in the construction industry. Safety specific trust was defined as an individual's willingness to rely on the leader based on the expectation that he/she will act, or intend to act safely. Data from 139 subordinate-supervisor dyads were collected and analyzed using a hierarchical regression model. Results showed that safety specific trust moderated the relationship between safety specific transformational leadership (a leader who emphasizes a safety environment) and safety citizenship behaviours such as raising concerns, helping others with safety activities and reporting

safety violations. In conditions of high and moderate safety-specific trust, leaders had a significant effect on subordinates' safety citizenship behaviour. However, in conditions of low safety-specific trust, leaders did not significantly influence subordinates' safety citizenship behaviour. Therefore, trust was shown to be a key determinant of the impact of managers' transformational leadership behaviours on staff behaviours.

It is reasonable to assume that patient safety, quality care and optimum outcomes are goals shared at the individual, unit and hospital level. Thus it is important to understand how nursing leaders effectively influence staff to achieve those patient related goals. Wong and Cummings conducted a systematic review in 2007 examining the relationship between nursing leadership and patient outcomes in which 7 studies met the inclusion criteria and were retained. This review was replicated in 2013 and out of 20,383 articles retrieved, 121 full articles were reviewed and an additional 13 articles were retained for a total of 20 that satisfied the inclusion criteria (Wong, Cummings & Ducharme, 2013). Nineteen outcome variables were reported which the authors categorized into the following five themes: 1) patient satisfaction, 2) patient mortality and patient safety outcomes, 3) adverse events, and 4) complications, and 5) patient healthcare utilization. "Over all studies, a total of 43 relationships between leadership and patient outcomes were examined and 63% of these were significant" (Wong, Cummings & Ducharme, 20130. Positive relationships were found between relationship oriented leadership behaviours (such as increasing information exchange, facilitating interpersonal connections among staff and fostering diverse thinking/ideas) and patient satisfaction (Doran et al, 2004; McNeese-Smith, 1999). Inverse relationships were found between relationship oriented leadership and patient mortality (Houser, 2003, Capuano, 2005 and Tourangeau, 2007), complications (Houser, 2003; Pollack & Koch, 2003) and adverse

events (Houser, 2003). This review highlights the need for more research to determine the impact of leadership on patient outcomes and more importantly, the mechanisms through which it works.

The degree to which a leader is able to influence others is a function of the different characteristics of the individuals being led and the context in which they perform (Cropanzano & Mitchell, 2005). Therefore, leaders often must adapt their approach to the individuals, groups or task at hand. What is required in a crisis situation is different than what is needed in a board room. Similarly, the decision making process in a business environment may be different than that in a clinical setting. Regardless of the context, there are many commonalities in how leaders are effective in helping followers achieve personal and organizational goals. Relational leadership models reflect the characteristics of effective leadership mentioned above and fall within social exchange theory (Cropanzano & Mitchell, 2005). Three relational leadership models that have particular salience for nursing will be discussed in the upcoming section.

Authentic Leadership

Avolio & Gardner (2005)drew upon positive organizational behaviour to develop a theoretical model of authentic leadership comprising four main characteristics: balanced processing, internalized moral perspective, relational transparency and self awareness. Balanced processing refers to objectively analyzing the available information before making a decision. Relational transparency refers to the ability to effectively build trusting relationships through openly sharing information and feelings appropriate to the situation. This transparency creates a positive climate that fosters commitment from staff. Self awareness refers primarily to understanding one's own strengths, weaknesses and view of the world as well as being in tune with and able to manage one's emotions.

However, self awareness is not limited solely to one's self. It also suggests an awareness of how we relate to the values and perspectives of others. Further, Avolio and Gardner describe authentic leadership as a "root construct" meaning these abilities are not limited to any one style of leadership but rather, are foundational to several leadership approaches.

Other authors postulate that one is not born a leader nor does one possess any particular leadership "traits"(Avolio, Walumba, & Weber, 2009; George, Sims, McLean & Mayer, 2007;Walumba et al., 2008;Wong & Cummings, 2009). Further, one does not have to hold a formal leadership position to be an authentic leader. George and colleagues conducted a large study involving 125 leaders from a variety of professional, racial, and socioeconomic backgrounds. Story telling was a key approach to the study and the authors found that authentic leaders continually engage in self reflection and continuous learning. They learn from their experiences or "stories" to develop increased self awareness. Similar to the inclusive leaders described by Nembhard and Edmondson (2006) authentic leaders ask for, and listen to, honest feedback. Shirey (2006) identifies the attributes of authentic leadership as: genuineness, trustworthiness, reliability, compassion, and believability. Wong and Cummings (2009) propose authentic leaders role model honesty, integrity, and high ethical standards.

Finally, Goffee, Jones and Gareth (2005) describe what they see as a paradox inherent in the application of authentic leadership. One of the core elements of authentic leadership is being clear about and true to one's set of values. Authentic leaders must be seen to "walk the talk" and true to what they preach. However, it is equally important to be aware of the values and different perspectives of others in order to engage them and enlist their support. Therefore, strong authentic leaders will read their audience and

adjust their approach as needed to get that support. Some people see "changing faces depending on the situation" as manipulative and difficult to reconcile with the concept of authenticity. However, this should not be interpreted as manipulative but rather a genuine expression of self, matched with a keen sense of the situation and the needs of those they seek to influence. Both positive and negative past experiences provide authentic leaders with a greater insight into what works and when. One might argue that this approach is akin to earlier situational or contingency leadership theories (Fiedler 1996; House 1971). However, Ogbonna and Harris (2000) refer to this as "context sensitive" leadership which better accounts for the intuitive, sensitive features that authentic leadership brings to the assessment of the situation and the players within it. This ability to read and respond to the situation enables authentic leaders to be highly effective in a variety of settings and to sustain performance goals over a long period.

A few studies examined the viability of this leadership model. Wong, Laschinger and Cummings (2010) tested a model in which they hypothesized that the effects of authentic leadership on voice behaviour (speaking up with questions or concerns) and unit care quality are mediated by personal (with leader) and social (with work group) identification, trust in manager and work engagement. A questionnaire was sent to a random sample of 600 RNs working in acute care hospitals in Ontario yielding a 48% response rate. Results confirmed several of the hypothesized relationships. For example, authentic leadership had a significant but small indirect positive effect on voice ($\beta = .09$) and unit care quality ($\beta = .12$). In addition, authentic leadership had a significant positive direct effect ($\beta = .43$) on trust, which in turn had a significant positive effect on work engagement ($\beta = .19$).

Shirey (2009) conducted a descriptive qualitative study to examine the relationships between authentic leadership, organizational culture and healthy work environments. A purposive sample of 21 nurse managers at 3 acute care hospitals participated in a 14 question interview and responses were analyzed to detect differences in themes. They used the American Academy of Critical Care Nurses (AACN) standards to define healthy work environment which include: 1) skilled communication, 2) true collaboration, 3) effective decision making, 4) appropriate staffing, 5) meaningful recognition and 6) authentic leadership. Positive organizational culture was determined by the investigator based on the nurse manager's responses to the interview questions. If the responses included features of the AACN healthy work environment standards, the investigator deemed the organizational culture to be positive. If the responses did not reflect the AACN standards, the organizational culture was designated as negative. Of the 21 nurse manager participants, 12 were deemed to be working in a positive organizational culture while 9 were assigned to the negative organizational culture group. Based on these qualitative findings, the authors concluded that organizational culture played a role in the nurse managers' perceptions of empowerment, decreased stress and role satisfaction. In units where the organizational culture was positive, the manager's leadership behaviours were positively influenced and they believed they engaged in more authentic leadership behaviours than those managers who worked in units with a negative organizational culture. Further, their positive perceptions allowed them to foster an optimistic and healthy work environment.

While there is some demonstrated evidence of the effectiveness of this leadership model, it was not selected for this study because it reflects a generic set of principles or even traits that the leader must possess regardless of their leadership approach.

Authenticity and the ability to relate to others based on individual or contextual differences are elements employed in the transformational leadership model. However, authentic leadership does not adequately address the sense of vision that leaders must possess and communicate to staff in order to achieve a common organizational goal such as patient safety.

Leader-Member Exchange (LMX)

Early renditions of LMX theory emphasize relationship building (Graen & Uhl – Bien, 1995) and are based on "relational transactions" between the leader and the follower (Uhl- Bien, 2006). These earlier version propose the leader provides something for the follower in exchange for something in return. These mutually beneficial transactions are based on trust and reciprocation and each relationship is built on individual needs and goals. The quality of these relationships consists of 4 dimensions: 1) contribution (performing work beyond what is expected); 2) affect (friendship and liking); 3) loyalty; and 4) professional respect (Gerstner & Day, 1997; Graen & Uhl – Bien, 1995). The quality of the relationship will range from low to high depending on the type and number of positive transactions. More recent work focuses on strong LMX relationships with all subordinates across the group.

High quality LMX relationships have a positive relationship with a number of outcomes related to nursing work environments and overall performance. Ilies, Nahrgang and Morgeson, (2007) conducted a meta-analysis of the relationship between the quality of leader-member exchanges (LMX) and employees' citizenship behaviours. Fifty independent samples (N = 9,324) were reviewed and results indicate a moderately strong, positive relationship between LMX and citizenship behaviours (r = .37). In addition, high quality LMX relationships were significantly and more strongly related to

individual-targeted citizenship behaviours than to organizational targeted citizenship behaviours (r = .38 vs. r = .31). Similarly, studies have demonstrated positive relationships between high quality LMX and staff nurse trust in their supervisors, perception of support and staff organizational citizenship behaviours (Chen, Wang, Chang & Hu, 2008; Wang, Law, Hackett, Wang & Chen, 2005). Laschinger, Purdy and Almost (2007)tested a theoretical model linking nurse managers' perceptions of the quality of the relationship with their supervisors, and empowerment to job satisfaction. A sample of 141 hospital-based nurse managers were surveyed and results revealed that high quality LMX relationships were associated with increased structural and psychological empowerment and job satisfaction. Core self evaluation was also a significant contributor to each of the relationships in their model, suggesting that the quality of LMX was not the sole predictor of job satisfaction. In a more recent study, Laschinger, Finegan and Wilk (2009), surveyed 3,156 nurses from 217 acute care hospitals to test the relationship between group level perceptions of leader-member exchange quality and unit level structural empowerment on individual nurses' psychological empowerment and organizational commitment. As predicted, they found that unit level leader-member exchange and unit level structural empowerment both had a direct positive effect on individual nurses' sense of psychological empowerment (β = .41 and β = .67 respectively) and organizational commitment (β = .44 and β= .39 respectively).

Given the empirical support for the positive outcomes associated with high quality LMX relationships, LMX theory is important to consider in future research. However, it was not selected for this study because LMX theory was considered less comprehensive partly because it has predominantly been focused on the relationship and impact at the

individual level versus a unit or organizational level. This study assessed effects

primarily at the unit level and the ability of leaders to "push" staff to go above and

beyond the regular expectations of duty. Thus Transformational Leadership theory was

deemed more suitable.

Transformational Leadership

Avolio and Bass (2004) describe effective leadership as being pro – active,

whereas ineffective leadership is passive or avoidant. Their relational model originally

developed in 1994, is grounded in the notion that transformational leaders have the ability

to motivate followers to do *more* than the expected. After several refinements,

Transformational leadership was conceptualized as one component in a "full range of

leadership" (Avolio & Bass, 2004).

Full Range Leadership Model

The Full Range Leadership Model (FRLM) (Figure 1) proposes a continuum of

effectiveness ranging downward from active forms of leadership such as transformational

leadership (highly motivational, inspirational and charismatic) to "transactional

leadership" (effective managerial type leadership where focus is on managing the day to

day operations); to "passive/avoidant" (ineffective leadership) to laissez faire (an absence

of leadership).

Transformational Leadership

Transformational leadership (TL) is described as a "higher order exchange" based

on a mutual relationship that creates a fundamental shift in orientation, with both long

and short term implications for development and performance. Further, the focus of the

relationship is on developing the individual and the leader to their fullest potential in

pursuit of the organization's goals (Avolio & Bass, 2004).

Active =
Effective

Passive/Avoi
dant =
Ineffective

Idealized
Influence
(IA) B*uilds
trust*

Idealized
Influence (IB)
*Acts with
Integrity*

Inspirational
Motivation
(IM)
Inspires

Intellectual
Stimulation
(IS)
E*ncourages*

Individualized
Consideration
(IC)
*Needs Based
Coaching*

Contingent Rewards (CR)
Rewards Achievements

Management by Exception – Active
Monitors Mistakes

Management by Exception – Passive
Responds to Crisis

Laissez Faire
Avoids Involvement

Transformational
Leadership

Transactional
Leadership

Adapted from MLQ Pty. Ltd., Melbourne, Australia , www.mlq.com.au

Figure 1. Full Range Leadership Model (FRLM) (Bass & Avolio, 2002)

Transformational leaders embody attributes such as charisma and vision and

employ behaviours such as mutual problem solving and attending to the individual needs

of staff members to literally "transform" individuals and organizations by 1) raising

followers' levels of consciousness about the importance and value of specified and

idealized goals; 2) getting followers to transcend their own self-interest for the sake of the

team or organization; and 3) moving followers to address higher level needs (Bass &

Avolio, 1994). Participants in Bass & Avolio's research described their most memorable

leaders as inspirational, charismatic, intellectually stimulating, visionary, challenging, and oriented toward mutual development. From this, they initially formulated three factors which characterize transformational leadership: *charisma, intellectual stimulation, and individualized consideration*. Further work on the model resulted in several modifications including the deconstruction of charisma into 3 factors: *idealized influence-attributes, idealized influence-behaviours and inspirational motivation*. The additional two factors of *intellectual stimulation and individualized consideration* remain the same, producing five transformational factors in all (Avolio and Bass 2004).

Idealized influence – attributes (IA) refers to the charismatic qualities of the leader. They are perceived as having high ideals and a strong sense of ethics. They are seen as often putting their own needs second to those of others which engenders trust and respect from their followers who may even want to emulate them. Idealized influence – behaviours (IB) refer to a leader's consistent conduct based on underlying principles, ethics and values. Their actions reflect the behaviours set out in a code of conduct and expected of all staff in the organization. They are seen to "walk the talk".

Inspirational motivation (IM) is closely related to idealized influence. It manifests itself in leader behaviours which generate optimism and hope in followers. The leader uses stories, personal anecdotes, symbolism and other strategies to help followers find meaning in their work and envision attractive future states. Intellectual stimulation (IS) challenges followers to be innovative by questioning assumptions, reframing problems, finding solutions and acting proactively. A non punitive response to mistakes is fundamental as these are considered as opportunities for learning. Individual Consideration (IC) gives personal attention to the individual needs of each follower. The leader acts as a coach and mentor and creates a supportive learning environment where

followers are developed to ever higher levels of potential. Transformational leaders

employ varying combinations of these behaviours depending on the context, the situation,

and the individual or group needs to elicit superior performance and the achievement of

individual and organizational goals.

Transactional Leadership

Transactional leadership is a separate construct described as a "lower order" but

effective set of leadership behaviours based on reciprocal "transactions". These

transactions are aimed at achieving specified work objectives where rewards are usually

contingent on performance. Avolio and Bass, 2004 identified two factors in this type of

leadership: *transactional contingent reward* and *management by exception – active.*

Contingent reward clarifies expectations and makes clear what

compensation/reward can be expected when performance goals are achieved such as pay

for hours worked or an adjustment in scheduled shifts in exchange for overtime. The

leader expresses satisfaction and offers recognition when followers meet expectations.

Management by exception – active also clarifies what constitutes effective versus

ineffective performance and what consequences will result from the latter. However, the

focus of the leader's attention is deviation from the standards and avoiding error. Leaders

use a proactive approach to monitor follower behaviour, anticipate problems and take

corrective action before they occur (Judge & Piccolo, 2004).

Ineffective Leadership

Further down the continuum, is m*anagement by exception- passive*. While Judge

and Piccolo (2004) include this factor as one of transactional leadership, Avolio and Bass

(2004) describe this approach as "passive/avoidant" and therefore categorize it as

ineffective leadership. Leaders who use this approach are reactive rather than proactive.

They do not approach situations and problems systematically and avoid clarifying

expectations and performance objectives. Rather, they respond only when problems arise

in what is commonly referred to as "crisis management" which has a negative impact on

staff and outcomes.

Augmentation Effect

Optimally, the most effective leaders use a combination of both transformational

and transactional leadership behaviours. "Transactional leadership provides a basis for

effective leadership, but a greater amount of Extra Effort, Effectiveness, and Satisfaction

is possible from employees by augmenting transactional with transformational

leadership" (Avolio & Bass, 2004, p. 21) depicted below in Figure 2.
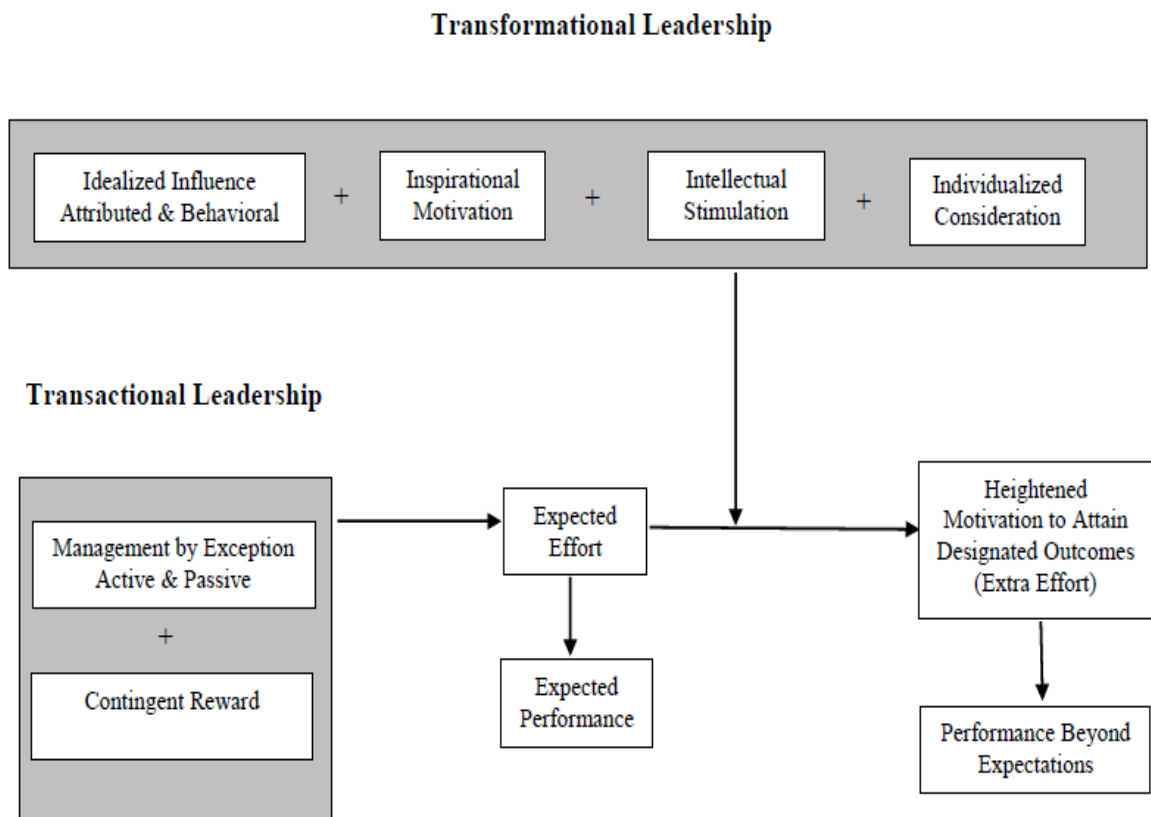
Figure 2. Augmentation Model of Transactional & Transformational Leadership
    (Avolio & Bass, 2004)

Put another way, transactional leadership is used to achieve management objectives such as clarifying work expectations and maintaining quality of performance, while transformational leadership is related to long term development and change, producing higher levels of effort and satisfaction in followers, which translate to greater productivity and quality outcomes for the organization (Judge & Piccolo, 2004; Stone, 1992). In the hospital setting, the ultimate goals of the organization and the leaders within it are to provide safe quality care to patients. Therefore, transformational leaders will not only provide the environmental infrastructure to support the delivery of safe care, they will also inspire staff (nurses) to exhibit "higher levels of effort" to ensure patients are safe and well cared for. This "higher level of effort" may well be likened to behaviours that are described by Van Dyne, Cummings and McLean–Parks (1995) as "extra role behaviour" or "organizational citizenship" behaviours as defined by Organ, Podsokoff and MacKenzie (2006). These behaviours go above and beyond what is generally expected in the performance of one's duties with a view to improving organizational goals of safe care. Further, Avolio and Bass (2004) emphasize that "transformational leadership does not replace transactional leadership; it *augments* transactional leadership in achieving the goals of the leader, associate, group and organization" (p. 20). This moderating effect is depicted in Figure 2.

A few studies have tested this augmentation effect. Zohar and Luria (2004) examined the moderating effect of transformational leadership on the relationship between supervisor transactional leadership style and safety climate (level and strength) and staff safety outcomes. Transactional leadership style was conceptualized as behavioural patterns used by supervisors in making decisions. They describe three attributes of these behavioural patterns. The first attribute, *pattern orientation,* refers to

the ability of the supervisor to convey a consistent message as to the prevailing priority amongst other competing priorities. The second attribute, *pattern variability*, refers to the consistency of supervisory actions under similar or dissimilar circumstances. The final attribute, *pattern simplicity,* suggests that when more factors have to be taken into account when making a decision, the more complex is the supervisory pattern. The authors proposed that transformational leaders are better at conveying the information needed to understand the supervisor's behaviour patterns. Hence, they predicted that transformational leadership would moderate the relationship between supervisors' safety behaviours/decisions and staff perceptions of safety climate. The sample consisted of 2,024 infantry soldiers in 81 platoons and their respective platoon commanders. Safety climate, leadership and other combat readiness questionnaires were completed and data related to "workplace injuries" was obtained from the infirmary over a six month period post survey. Results revealed a positive correlation between each of the three transactional types of behaviour patterns (orientation, variability and simplicity patterns) on safety climate and strength. However, transformational leadership was more strongly correlated than transactional leadership behaviours to both safety climate ($\beta = .58$) and strength ($\beta = .54$). Further, the interaction of transformational leadership with each of these behaviour patterns enhanced the effect: TL x orientation ($\blacktriangle R^2 = .41$), TL x variability ($\blacktriangle R^2 = .44$) and TL x simplicity ($\blacktriangle R^2 = .33$). The authors concluded that supervisory safety practices predict the level and strength of safety climate and that transformational leadership moderates or strengthens this relationship.

Bycio, Hackett and Allen (1995) conducted a study which tested the augmentation effect on three outcome variables: performance and satisfaction, intent to leave, and organizational commitment. They hypothesized that transformational leadership would

add additional explained variance beyond transactional leadership in positively predicting performance and satisfaction and negatively predicting intent to leave the profession or the job. Findings confirmed their hypotheses and supported the augmentation effect. For example, the correlation between transactional leadership and extra effort (performance) was $r = .71$ but this increased to $r=.85$ when the transformational scales were added into the equation. Similarly, each of the three transformational subscales had a significant but modest negative relationship with intent to leave the profession (charisma $r = -.27$; individual consideration $r = -25$; and intellectual stimulation $r = -.23$). As expected, strong correlations were also found between affective commitment and each of the transformational scales. However, in both performance and intent to leave, findings revealed that *charismatic* leadership alone was more strongly predictive than charisma, intellectual stimulation, individualized consideration and contingent reward combined. Thus they questioned the discriminant validity of the five-factor transformational/transactional model proposing a two factor – active/passive – model as a viable alternative. Several subsequent authors similarly challenged the discriminant validity of the five factor model. Rather than simplifying their model, Avolio and Bass chose to address this concern by deconstructing the charisma factor into three separate factors (idealized influence – attributes, idealized influence – behaviours, inspirational motivation) while maintaining the other two factors (intellectual stimulation and individualized consideration).

Despite this change, concerns re multicollinearity persist. Judge and Piccolo (2004) conducted a meta-analysis of 87 studies from the transformational leadership literature testing several hypotheses, one of which relates to the augmentation model: "Transformational leadership will significantly predict leadership criteria controlling for

the three transactional leadership behaviours and laissez-faire leadership" (p.758).

Results revealed that transformational leadership significantly predicted three out of four leadership criteria: follower satisfaction with leader (β = .52), follower motivation (β = .32) and leader effectiveness (β = .37). However, contingent reward was more strongly related to leader job performance than transformational leadership (β = .45 versus β = .02). While the authors acknowledge the "impressive support" for the transformational leadership model and the augmentation effect, they urge caution in interpreting the effect size of studies that use the leadership outcome measures included in the MLQ survey. They suggest that by using the leadership outcome measures from the same source at the same time, the relationship between leader behaviour and outcomes could be falsely inflated. Therefore they propose that in those studies where independently collected measures of outcomes are used (as in this study), findings of strong relationships between transformational leadership behaviours are more credible. Further, they also found evidence of multicollinearity within the full range model which makes it difficult to determine the unique effects of each of the leadership behaviours within the model. For example, transformational leadership was strongly correlated with both contingent reward transactional leadership (p = .80) and laissez-faire behaviours (p = -.65). They advocate the need for further research in this area.

Cascade Effect

Finally, a characteristic of transformational leadership is that these behaviours are applied not only in an effort to achieve organizational goals but in an effort to mentor and foster transformational leadership capabilities in subordinates, peers and superiors alike. This phenomenon is referred to by Avolio and Bass (2004) as the "cascading effect". They propose that when someone is working with, or for, a truly transformational leader,

the skills are passed from one to another and they too will develop those attributes and behaviours. Several studies have evaluated Bass' proposed "cascading effect" with inconclusive results.

Leach (2005), found that when nurse executives exhibit TL behaviours, their nurse managers are likewise rated more highly transformational (r = .26). Similarly, nurse managers who reported to nurse executives who engaged in more transactional behaviours were found to be more transactional in their approach (r = .23). Baloga-Alteri (2008) found evidence of a cascade effect between the perceived TL behaviours of nurse executives and nurse managers in both magnet (r = .37) and non-magnet (r = .44) hospitals. Although it is reasonable to expect transformational behaviours to flourish in the supportive environment provided in a magnet hospital, the fact that the results were very similar in non magnet hospitals suggests that leadership behaviours of senior leaders have more impact on subordinates' leadership behaviours than does the organizational context or structure.

However Strodeur, Vandenbuerghe and D'hoore (2000) found evidence to the contrary. In a study of eight hospitals, 41 units and 464 staff (nurses, head nurses and associate directors), they examined two hypotheses, one of which stated: Transformational and transactional leadership styles of high level leaders are significantly and positively correlated with those of low-level leaders (the cascading effect of leadership). Staff nurses evaluated their head nurses and head nurses evaluated their associate directors using the MLQ – X5 survey. Results did not support the hypothesis and revealed no significant correlation between head nurse TL and associate director TL (r = -.05). Similarly, the correlation between head nurse and associate director contingent reward leadership was minimal (r = -.06). The authors attribute their findings to a highly

regulated organizational context which inhibits the ability of the senior leader to role model the transformational behaviours in a way that would influence their subordinates. Thus they recommend further study of this phenomenon.

Transformational Leadership and Outcomes

As previously stated, Judge and Piccolo (2004) found that transformational leadership had consistently strong correlations with important work outcomes across multiple settings and study designs. They also found that transformational leadership was more strongly correlated with criteria that reflect follower satisfaction whereas transactional leadership was more strongly correlated with group or organizational effectiveness criteria suggesting that both leadership styles are important.

In an earlier meta-analysis of 22 published and 17 unpublished studies using the MLQ measurement tool, Lowe, Kroeck and Sivasubramaniam (1996) examined the moderating effects of the following variables on the relationship between the transformational and transactional MLQ scales and leader effectiveness: organizational structure (public or private), level of leader in the organizational hierarchy and type/ source of outcome criterion. Contrary to the authors' hypothesis, results revealed significantly higher means for public versus private organizations for each of the three transformational scales. For example, the mean *charisma* score for leaders in public organizations was 2.61 versus 2.37 in private organizations. Similarly, the mean scores for *individual consideration* for public versus private organization leaders were 2.58 and 2.36 respectively. Another unexpected finding was that lower level leaders were perceived to exhibit more transformational leadership behaviours ($M = 2.66$) than higher level leaders ($M = 2.39$; $z = 10.85$). Moreover, transformational leadership style was predictive of effectiveness regardless of the level of the leader within the organizational

hierarchy. A significant moderator in the relationship between transformational leadership and leader effectiveness is the source of the criterion for evaluating leader effectiveness. The authors acknowledge Judge and Piccolo (2004) assertion that single source data creates a bias and may falsely inflate the effect size. Their hypothesis that significantly higher positive relationships would be found based on subordinate perceptions of effectiveness (i.e. the MLQ criterion) as compared to external organizational performance criteria, was supported. For example mean corrected correlation of subordinate ratings of leader effectiveness were .81 versus .35 for external organizational measures ($z = 16.01$). However, they argue that the use of external organizational performance indicators may be too narrow and hence incapable of capturing some of the outcomes of transformational leadership (e.g. performing beyond expectations). Therefore it is likely that the true effect falls somewhere in between and, in light of this, they recommend that all future studies consider source of outcome measures as a moderator of the magnitude of effects sizes for transformational leadership. However, overall, research has shown stronger positive effects for transformational than for transactional leadership behaviours.

Transformational leadership influences several nursing and organizational outcomes, including organizational commitment, job satisfaction, turnover, organizational citizenship and perceived manager effectiveness (Stordeur, Vandenberghe & D'hoore, 2000; Dunham – Taylor, 2000; Gellis, 2000; Corrigan, 2002; Xirasagar et al, 2005; Skinner & Spurgeon, 2005). Doran et al (2004) studied the relationship between transformational leadership, span of control and outcomes in a sample of 717 nurses and 41 nurse managers from 51 acute care units across seven hospitals. Similar to other studies, findings demonstrated a significant positive relationship between

transformational leadership and nurses' job satisfaction. However, a key finding was that when managers have a larger span of control, this positive relationship was diminished indicating that even with strong leadership, other environmental factors can have a deleterious effect on nurse job satisfaction and performance. While the nurse executive leadership behaviours had a positive impact on the organizational commitment of their managers, the nurse managers' leadership behaviours had little impact on frontline nurses' reports of organizational commitment(Leach 2005). Finally, there was a significant negative correlation between nurses' "alienative" organizational commitment (they stay because they feel trapped) and nurse executives' transactional leadership ($r = -.31$) and transformational leadership ($r = -.24$) scores.

Several studies examine the moderating effects of certain variables on the perception of leader effectiveness. Adadevoh (2003) found that younger, less experienced nurses were more likely to rate their managers as effective on the MLQ questionnaire and Morrison, Jones and Fuller (1997) found that nurses with less education were more likely to do so as compared to nurses with advanced academic/professional preparation. Other studies show that the context in which leadership occurs can have a significant moderating effect on the perception of leader effectiveness. Al- Mailam (2004) administered a survey to 266 nurses working at 4 private and public hospitals in Kuwait. Contrary to the findings of Lowe, Kroeck and Sivasubramaniam (1996), staff in private hospitals were more likely to perceive their leaders as transformational, than were employees in public hospitals. Although the authors were not able to provide conclusive reasons for this, it is possible, that the private hospitals provided the resources, structural support and cultural climate to support transformational leadership behaviours.

In response to a shortage of experienced occupational therapy (OT) professionals

to fill positions in education programs, Riess (2000) compared leadership characteristics of OT directors in technical and professional education programs, and OT clinic administrators. The purpose of the study was to ascertain the perceived leadership styles and effectiveness of each of these three groups and particularly to ascertain if there were differences between education leaders as compared to leaders in clinical practice.

Fifty-six OT professional education directors, 41 OT technical education directors and 50 OT clinic administrators completed a self evaluation using the Multifactor Leadership Questionnaire Form 5x short. In addition, two to five members of their respective staff also returned MLQ rater questionnaires. Ratings for transformational leadership behaviours and effectiveness differed among OT administrators in different institutional contexts. Although no significant differences in transformational leadership scores were identified between the three groups of leaders, the OT professional education directors (and particularly male directors) scored significantly higher on the management by exception-passive scale (F = 7.81).

Similarities were found between the OT technical education directors and the OT clinic administrators so these two groups were combined and compared with the OT professional education director group. The technical education/clinic administrator group scored significantly higher than the professional education group on two transformational scales: idealized influence-attributes (M = 3.25; 3.04) and intellectual stimulation (M = 3.01; 2.77). In addition, the technical education/clinic administrator group also scored higher on the satisfaction with leader subscale (M = 3.01) than did the professional education directors (M = 2.97; F = 6.10). In both groups transformational leadership was positively correlated with organizational effectiveness. In contrast, there was a significant negative correlation between transactional leadership and organizational effectiveness.

In a group of restaurant workers, Barling, Loughlin and Kelloway (2002) studied the impact of transformational leadership on safety consciousness and perceived safety climate (B = .36. and B = .30 respectively, p<.01) which subsequently predicted safety events (B = -.39, p<.01) which in turn predicted occupational injury (B= .64,p<.01). Kelloway, Mullen and Francis (2006) built upon this work by examining both the positive effects of transformational leadership versus the negative effects of passive leadership on safety consciousness (R2 = .17 and R2 = .09 respectively), safety climate (R2 = .32 and R2 = .12 respectively), safety events (R2 = .03 and R2 = .13), and injuries (R2 = .05 and R2 = .07 respectively). The model in this study extends this knowledge in three ways. First, the relationship between transformational leadership and safety outcomes is applied to the health care sector. Second, Barling, Loughlin and Kelloway conceptualized safety consciousness as both knowledge and behaviours that promote safety. This study uses OCBs as a more concrete reflection of the behaviours that might impact patient safety culture, job satisfaction and ultimately outcomes. Third, the impact of transactional leadership was assessed which was not included in either of the Barling or Kelloway studies.

In summary, due to the increasing complexity and rapid change occurring in healthcare, achieving organizational goals such as creating a culture of patient safety to improve patient outcomes often requires significant and transformative change. The achievement of those goals in a complex organization like an acute care hospital often requires what Robbins and Langton (2003) refer to as "Second – order" change. It involves not only radical process changes but a fundamental shift in thinking and behaviour amongst staff. It often involves a change in values, and an adoption of a common goal or vision within the organization. This requires leaders to inspire and

motivate staff using higher order, or transformational leadership behaviours (Avolio & Bass, 2004; Stone, 1992).

Transformational leadership embodies many of the attributes deemed essential for effective leadership such as trusting leader-follower relationships; awareness of self, context and the needs of others; ability to inspire/motivate others in adopting a similar vision and high performance expectations. The empirical evidence supports this approach as an effective means to achieving desired outcomes. According to Avolio and Bass, in order to effectively transform an organization (or unit), a combination of transactional and transformational leadership behaviours are required whereby the transformational behaviours enhance or boost the transactional efforts to create a supportive practice environment, greater effort, commitment and performance from staff which in turn, fosters a strong culture of patient safety and the achievement of organizational goals or outcomes.

H[1]: At the unit level, staff nurses perceptions of their manager's transactional leadership behaviours have a positive effect on perceptions of their unit as a supportive practice environment (1a). This relationship is moderated (i.e. stronger) when nurses perceive their manager to exhibit more transformational leadership behaviour (1b).

Preview of Theoretical Model

The relationship between transactional/transformational leadership and patient/staff outcomes is mediated by many factors. For example, the organizational structure and immediate work environment are key to enabling staff to achieve their professional and organizational goals. The following hypothesized model was derived from the literature to explain how transformational leadership affects organizational

mechanisms (supportive practice environments, organizational citizenship behaviour, and patient safety culture) that yield positive nurse and patient outcomes (Figure 3). The relationships in the model will be described briefly followed by a review of the literature supporting them.
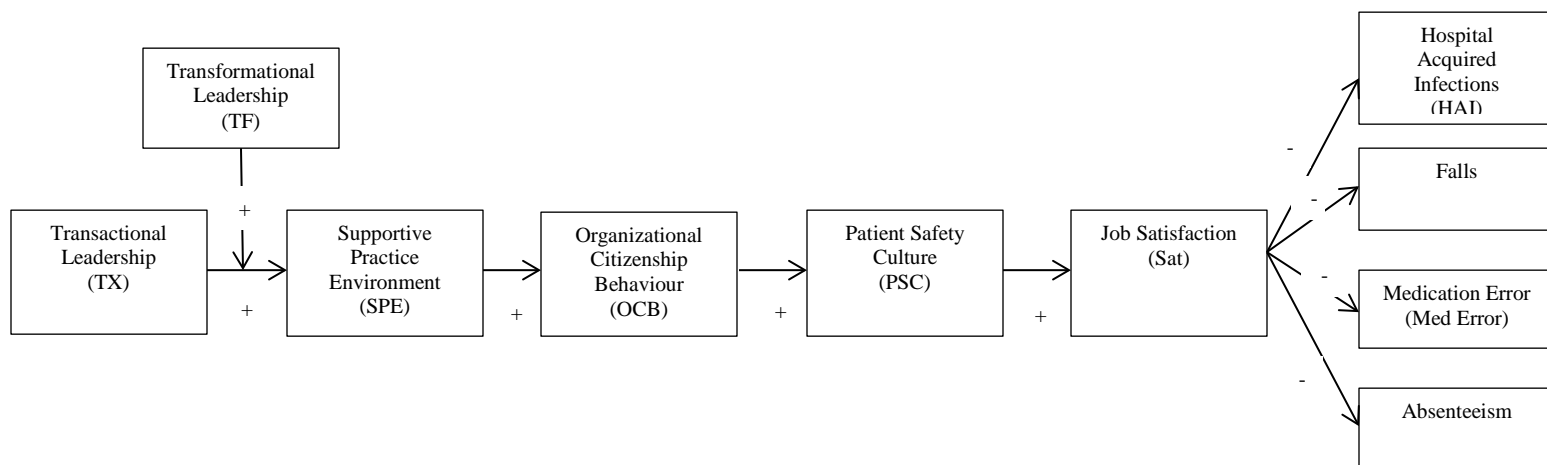
Figure 3. The Influence of Transformational Leadership on Staff Nurses' Perceptions of Supportive Practice Environments, Organizational Citizenship Behaviours, Patient Safety Culture, Nurse Job Satisfaction and Outcomes

Specifically, effective transactional leadership practices are needed to ensure nurses have the resources and supports that enable them to provide quality care based on appropriate standards of practice. When nurses rate their manager as highly transactional, they will likely rate their practice environment to be supportive of professional practice because of the staffing, structural supports, and contingent rewards required for effective practice, are in place. However, when staff perceive their manager to be inspiring, motivational, and invested in the personal needs/aspirations of individual staff members, they are more likely to rate their manager as a transformational leader. Transformational leadership enhances or augments the relationship between transactional leadership and

supportive practice environments because transformational leadership goes beyond simply supporting the daily operations of the unit and staff by creating environments where individuals and teams can realize their full potential. Therefore, the relationship between transactional leadership and supportive professional practice environments would be stronger on units where leaders are rated highly on transformational leadership.

In units where practice environments are seen to be strong or supportive, staff is more likely to reciprocate by going "above and beyond" what is expected in their duties such as staying late to assist shift to shift transitions, attending nurse governance councils or participating in continuous improvement projects. When many nurses on a unit engage in these and other expressions of organizational citizenship, this contributes to a perceived strong patient safety culture where strong teamwork and communication, a shared sense of responsibility and learning from mistakes is fostered. Units rated by nurses as having a strong patient safety culture are more likely to have better patient and nurse outcomes than those with a weak patient safety culture. The literature related to the relationships in this model is presented in the upcoming sections.

Supportive Practice Environments

Supportive practice environments are comprised of features that allow nurses to practice in a way that meets accepted professional standards and achieves the goals of safe, quality nursing care (Aiken, et al. 2008, 2012; Laschinger, Shamian,& Thomson,2001; Laschinger, Finegan, Shamian & Wilk 2001; RNAO, 2007a, 2007b, 2008). Creating a healthy work environment for nursing practice is crucial to maintain an adequate nursing workforce. The stressful nature of the profession often leads to burnout, disability, and high absenteeism and ultimately contributes to the escalating shortage of nurses. Leaders play a pivotal role in retention of nurses by shaping the

healthcare practice environment to produce quality outcomes for staff nurses and patients. When nursing staff feel there is a positive relationship with their manager, and perceive them to be committed to professional development, they are more likely to view the practice environment as having the resources needed to provide quality care (Laschinger et al., 2009). Hinno,Partanen and Vehvilainen-Julkunen (2011), similarly found that increased satisfaction with work environments result in increased positive perceptions about the quality of care. They advocated for more study "to test the predictive ability of work environments on patient, nurse and organizational outcomes" (p. 255) which supports the need for and contribution of this study.

Features of a Supportive Practice Environment

In 2005, the American Association of Critical-Care Nurses released a landmark publication specifying 6 standards (skilled communication, true collaboration, effective decision making, appropriate staffing, meaningful recognition, and authentic leadership) necessary to establish and sustain healthy work environments in healthcare (Barden, 2005). More recently, the Canadian Quality Work life Quality Healthcare Collaborative (QW QHC) released an action plan which stated "A fundamental way to better healthcare is through better healthcare workplaces" (2007, p. ii). The report identifies 11 indicators of healthy work environments which include system, organizational, employee and patient factors such as turnover and vacancy rates, absenteeism, healthcare provider job satisfaction, patient safety and patient satisfaction. The Collaborative encourages leaders at all levels of the healthcare delivery system to monitor and take action to improve on each of these areas demonstrating the important role leadership plays in creating healthy work environments. Furthermore, these indicators demonstrate the link between healthy work environments and patient safety which supports the premise of this model.

According to Laschinger, Finegan et al., (2001) nurse job satisfaction is positively affected when hospital work environments include the features of "structural empowerment" such as access to information, support, resources and opportunities to learn and grow. They further linked this construct to "psychological empowerment", which includes meaning, confidence, autonomy, and impact on patient care and outcomes; all of which are related to professional practice. These authors found that both these constructs combined to create supportive practice environments that result in reduced job strain and increased job satisfaction. Further, supportive leadership plays an important role in creating empowering work environments (Laschinger, Finegan and Wilk, 2009). These results are congruent with Avolio and Bass' (2004) theory that both transactional and transformational leadership behaviours are required to achieve unit or organizational goals. Structural supports are largely addressed through transactional leadership behaviours, whereas psychological supports are more likely to be addressed through transformational leadership behaviours.

Positive perceptions about the unit work environment have also been linked to a perceived increased ability to provide good nursing care (Aiken et al 2008; Hinshaw & Atwood, 1983) and an increased sense of professional practice and autonomy (Lake, 2002). Previous studies (Shortell et al., 1994) suggest that critical care areas are consistently better than general medical/surgical units when it comes to infrastructure and psychological supports (Pronovost et al, 2003; Shortell, 1994). Nurse to patient ratios are usually 1:1 or 1:2 due to the much higher acuity level, but that means the ICU nurse has more time to stay focused on the care needs and goals for that one patient. Critical care nurses have a greater sense of autonomy since they must often make immediate decisions about a patient's care and have additional skill sets to carry out these decisions

(Berenholtz & Pronovost, 2007). They report a better rapport with physicians as decisions are more collaborative and most often face to face versus an order identified simply by a "flag" in the chart. However, results from an international study on work environment (Estabrooks et al., 2002) did not support the premise that critical care units were consistently better practice environments. Interestingly, there was no consistency from hospital to hospital as to what units were rated the best or worst practice environments which suggests infrastructure and psychological supports vary widely across services. While differences among hospitals and among services account for some of the variance, the influence of the nurse manager is not well understood and suggests the need for further study.

Magnet Hospitals

Supportive practice environments feature structural and psychological supports not only at the unit level but at the organizational level as well. The characteristics of a supportive practice environment are analogous to several of those associated with magnet hospitals, that is, hospitals that attract and retain nurses (American Nurses Association, 2010). These include: strong nursing leadership, participative management, autonomous decision making, patient centered nursing care model, perceived high quality care, adequate resources, collegial interdisciplinary teams, mentorship and professional development opportunities. According to research on magnet hospitals, nurses are attracted to and remain committed to hospitals that foster practice autonomy, control over practice environment and positive physician-nurse relationships (Aiken, 2000; Armstrong & Laschinger, 2009; Laschinger, Almost & Tuer-Hodes, 2003). The superiority of magnet hospital environments with regard to quality and safety outcomes has been documented (Aiken et al 2008). Armstrong, Laschinger and Wong (2009) found that both

structural empowerment and magnet hospital characteristics (i.e. adequate resources, a sense of autonomy, strong nurse-physician relationships) contributed significantly to nurses' perceptions of patient safety climate. Similarly, Adams and Bond (2000) describe the attributes of magnet hospitals that promote nurses' job satisfaction with particular reference to the organizational culture at the ward level.

The leadership behaviours described in the literature on magnet hospitals are similar to transformational leadership behaviours. However, differences in transformational leadership in magnet versus non-magnet hospitals have not been firmly established. A study done in the NHS in England (Bowles & Bowles, 2000) compared the perceived quality of leadership provided by nurse managers in Nursing Development Units (NDUs) and conventional clinical settings in England. "NDUs were originally conceived as centres of nursing excellence, innovation and leadership development" and might be reasonably compared to magnet hospitals in the US. In their study, Bowles & Bowles administered the Leadership Practices Inventory (LPI) developed by Kouzes and Pozner in the 1990's and based on a model of transformational leadership. The LPI is comprised of five "practices of exemplary leadership": challenge the process, inspire a shared vision, enable others to act, model the way, and encourage the heart. The LPI was administered via telephone interview to 2 matched samples of 70 nurses comprising 14 nurse leaders and 56 of their colleagues.

Results revealed that while the leaders' self evaluations were similar for the NDU group and the non-NDU group, there were differences in how the staff perceived their leaders. Observer scores (staff ratings) for the NDU leaders were higher than those for the non-NDU leaders, in all of the five practices of exemplary leadership. In addition, staff rated the non-NDU leaders lower than the leader self evaluations on all of the five

practices. In contrast, staff rated their NDU leaders more highly than the NDU leader self evaluations on four of the five practices. Further, there were significant inter-group differences in 3 of the 5 practices of exemplary leadership outlined in the LPI. NDU leaders received higher scores on encouraging the heart, inspiring a shared vision and challenging the process. There was no statistical difference between NDU and non-NDU leaders in scores related to modeling the way or enabling others to act. These findings suggest that NDU leaders demonstrate more transformational behaviours than non-NDU leaders and are perceived by staff to be more effective leaders. The differences between these two groups were not fully accounted for within the scope of this study however. Perhaps the NDU leaders were more experienced or talented individuals who would do well in any leadership role in any environment. Alternatively, it may be that there is a reciprocal relationship wherein transformational leadership behaviours are nurtured within NDU leaders through environmental influences, thereby reinforcing a supportive practice environment and magnet hospital characteristics.

Conversely, a study by Baloga-Altieri (2008), found that staff nurse perceptions of the transformational (TL) behaviours of nurse executives (NE) and nurse managers (NM) were higher in the *non magnet* hospitals than in their magnet counterparts. Perhaps this was due to higher expectations held by staff nurses in the magnet hospitals. However, changes in the healthcare system and organizational restructuring over the past two decades pose a challenge to achieving the characteristics of a magnet hospital outlined above. Hospitals have flattened the management structure, amalgamated programs/services into larger portfolios and applied business models in the form of program management. In addition, many hospitals have adopted a matrix structure, and centralized services through integration of purchasing and management with other

hospitals within the region. This restructuring has resulted in nursing staff reporting to more than one leader who sometimes is not a nurse. This poses challenges for those leaders to provide the level of engagement and support expected in a transformational leadership style. More importantly, The National Steering Committee on Patient Safety (2002) argues that continual organization restructuring significantly impact the number and types of adverse events and "compromise an organization's ability to identify the issues and implement timely, appropriate strategies to address deficiencies in a coordinated manner" (p. 8).

Smith, Klopper, Paras and Au (2006) state that while matrix structures are intended to achieve flexibility and horizontal coordination of processes, they "require increased coordination and mutual adjustment" between programs/services (p. 193). The reality is that this kind of coordination across the organization is not always well established which poses additional challenges to nurse managers as they try to provide the resources needed to provide safe, efficient quality care. In this context, simply getting enough blood pressure machines or patient lifts or expediting discharges to assist with patient flow are all examples of day to day challenges to providing quality care. Thus, nurse leaders at all levels are charged with overcoming these challenges by creating organizational structures and supports that foster collegial, autonomous practice environments that help them achieve optimum patient outcomes and staff satisfaction. Both transactional and transformational behaviours are required to achieve this goal.

Supportive Practice Environments and Patient/Nurse Outcomes

The IOM statement (Kohn et al., 2000) links healthy work environments to patient safety. Baker et al., (2004) state that a primary focus in improving patient safety, is to improve the work environments which will in turn minimize the chance for error and

adverse events. Several studies have examined the impact of staffing and skill mix on patient safety. Aiken et al (2002) found that for every additional patient per nurse there was a seven percent increase in mortality within 30 days of admission. In addition, Ellis et al. (2006) found several studies linking improved staffing to a decrease in adverse events such as heart attacks, shock, medication error, fall, pressure sores, blood clots, urinary and upper respiratory infections. Blegen, Goode and Reed (1998) retrieved monthly patient and staffing data from 42 units in an 880 bed acute care teaching hospital for the fiscal year 1993. Two nurse staffing variables were analysed: hours of care per patient day and percent hours of care provided by RNs. Patient outcome variables included medication errors, patient falls, decubiti, urinary tract infections, respiratory tract infections, patient and family complaints and death rates. Adverse event rates, specifically medication error and falls were higher on units where the hours of care provided by RNs were lower and in patients with lower acuity. A possible explanation for this latter finding may be found in High Reliability Theory. Staff tend to be more attentive and have a high index of concern when patients are seriously ill due to the unstable nature of their status, whereas, as patients get better (lower acuity), this is often accompanied by a decreased vigilance as problems are less frequent and unexpected. This decreased vigilance often leads to missed cues/symptoms and increased errors in care giving.

Skill mix is the balance of professional staff to non professional staff and several authors found this had more of an impact on patient outcomes than did nursing work hours or staff to patient ratios (Blegen et al 1998; Kovner & Gergen, 1998; McGillis Hall, 2001, Needleman, Buerhaus, Mattke, Stewart & Zelevinsky, 2002). This research has shown that as the ratio of RNs to non professional staff (personal support workers and

health care aids) increased, the incidence of adverse outcomes such as infection rates, falls, decubitus ulcers and medication errors decreased. Of note however, Blegen and Vaughn (1998) found that although there was a decrease in adverse events when the RN proportion increased from 50% to 85%, there was an increase in adverse events when the RN proportion increased from 85% to 100% warranting further study.

Taunton et al. (1994) explored the potential relationships between three organizational factors that impact practice environments (absenteeism, unit separation, and workload) and three patient outcomes (falls, medication error and nosocomial infections). Data were extracted from existing reporting data bases in four acute care hospitals over a 6 month period. Each of the two quarters was analyzed separately to detect replicated findings over time. Results showed moderate to strong relationships between RN absenteeism (captured as time lost) and urinary tract infections ($r = .53 - .77$) as well as blood stream infections ($r = .50 - .76$). While the authors do not commit to any firm explanation, they suggest that unplanned absences and the resulting changes to patient assignments are disruptive to the continuity of care and impede nurses' ability to fully know their patients. Absenteeism unit separation and workload were not significantly related to falls or medication error.

McCutcheon et al (2009) examined the impact of frontline managers' span of control on nurse job satisfaction and patient satisfaction (a proxy for patient outcomes). A sample of 41 nurse managers, 717 staff nurses and 680 patients from 51 units in seven hospitals was surveyed. Staff nurses were asked to rate their manager's transformational leadership behaviours and their job satisfaction. Patients were asked to complete a questionnaire evaluating nursing care as an indicator of patient outcomes. To determine the span of control, nurse managers were asked to provide the total number of nursing

and non nursing staff that report to them. Nurses who perceived their managers to be more transactional or transformational were more satisfied with their jobs but as span of control increased, the positive effects of transformational leadership on job satisfaction were diminished and the negative effects of management by exception were increased. Similar results were obtained in relation to the patient satisfaction variable: as span of control increased, the positive effects of transactional and transformational leadership on patient satisfaction decreased.

Using Lake's (2002) five features of a strong practice environment, Laschinger and Leiter (2006)analysed data from a study of over 8000 hospital based nurses in Alberta and Ontario, to test the relationship between nursing practice environment characteristics, nurse burnout and patient outcomes. They proposed that burnout is an important mediator in the relationship between practice environments and patient outcomes. The most frequently reported adverse patient outcomes were falls, medication errors, nosocomial infections and patient complaints and this group of outcomes were most strongly related to perceived staffing adequacy (r = - .30), emotional exhaustion (r = .30) and depersonalization (r = .34). The method of obtaining patient outcome data is a limitation of this study because nurses relied on recall and judgment as to what they reported as an incident. However the strong fit indices for their structural model (CFI=.90, IFI = .90, RMSEA = .037) indicate a strong relationship worthy of attention.

Lowe (2008) examined work environment features that contribute most significantly to patient safety outcomes within a variety of healthcare settings such as hospitals, laboratory services, community health agencies, emergency services and long term care. Surveys were distributed to 12,000 allied healthcare professionals (including but not limited to pharmacists, occupational therapists, physiotherapists, respiratory

therapists, lab technicians, x-ray technicians, psychologists, public health inspectors) in Alberta with a 53% response rate.   He found that features of strong practice environments such as teamwork, fair processes, learning environments, and supportive, people-centered leadership were key elements in contributing to a culture of patient safety. Further, this patient safety culture promotes positive staff perceptions such as increased job satisfaction and pride in what they do. In addition, Lowe's findings suggest that the relationship between healthy work environments and patient safety culture is mediated by the "propensity of staff to engage in behaviours that go above and beyond the minimum job requirements" or organizational citizenship behaviours. Thus, the inclusion of OCBs in our model, provides validating support for this assumption.

In summary, the literature supports the relationship between supportive practice environments, staff satisfaction and safe outcomes. Positive work environments are a compilation of structural and psychological supports. Of particular interest in this study are those elements that foster strong nursing practice such as collegial teamwork, autonomous decision making, professional development, innovation, adequate staffing and skill mix since these are the elements most closely aligned with patient safety, potential adverse events and patient outcomes (Lake, 2002; Estabrooks et al., 2002). These environments do not simply emerge on their own; they are created by the contributions of both the leader and the staff. Therefore, in order to create these supportive practice environments, leaders must have the vision, problem solving abilities and even the charisma to navigate the complex matrix of the organization to obtain needed structural resources. They also need to engage staff in a way that instils a sense of autonomy, confidence and professionalism. Avolio & Bass' Augmentation Model (Figure 2) indirectly alludes to organizational citizenship behaviours. It states that

transformational leaders motivate and inspire staff to be the best they can be and in so

doing, to exert "extra effort". However unless the infrastructure/environment is there to

support staff in their practice, nurses will experience frustration, fatigue, illness and

burnout. Thus even the best efforts of a motivational and visionary leader will be

unsuccessful in producing extra effort from staff. Social exchange theory (Cropanzano &

Mitchell, 2005) would suggest that when staff perceives their work/practice environments

positively, they are more likely satisfied, and will reciprocate by engaging in extra

role/organizational citizenship behaviours. Therefore, when a leader is seen to be

effective in creating a healthy practice environment, nurses are more likely to engage in

OCBs (Organ, Podsakoff and MacKenzie, 2006).

   H^2**:** At the unit level, staff nurses perceptions of their unit as a supportive practice

   environment has a positive effect on perceptions of organizational citizenship

   behaviours of their nursing co workers.

Organizational Citizenship Behaviours (OCB)

OCB Defined

      Organizational Citizenship Behaviours (OCB) is a concept that has origins in

social psychology and prosocial behaviour. Prosocial behaviour is defined by Brief and

Motowidlo (1986) as any behaviour aimed at improving the welfare of another

individual. It takes many forms such as helping someone stranded on the highway,

carrying parcels to someone's car, giving up a seat on the bus for an elderly person and so

on. In a nursing context, this may be exhibited by helping a colleague with a specific

procedure such as a dressing, staying late to ensure all care for that shift is completed,

orienting new staff to the unit, attending inservices to stay abreast of best practice and so

on. According to Organ, Podsakoff & MacKenzie, 2006, the common characteristic of prosocial behaviour is that it is spontaneously directed toward the benefit of an individual and is dependent on many factors such as: mood, level of stress, time available, and even whether one has been in receipt of previous good fortune themselves. However they also believed there to be a broader application of OCBs beyond the prosocial focus on the individual. They proposed that OCB behaviours could also contribute to the wellbeing of groups of people and by so doing, contribute to the effectiveness of the organization as a whole.

Therefore Organ, Podsakoff and Mackenzie (2006) define OCB as "individual behaviour that is discretionary, not directly or explicitly recognized by the formal reward system and, in the aggregate, promotes the efficient and effective functioning of the organization"(p. 3). Spitzmuller, Van Dyne and Ilies (2008) captured the two dimensions of individual directed and group directed OCBs in a conceptual framework: citizenship targeted at the individual (OCB-I) is interpersonal and based on altruism, whereas, citizenship aimed at the organization (OCB-O) is impersonal and based on compliance with organizational rules and expectations.

Organ, Podsokoff and MacKenzie (2006) suggest that the achievement of the organization's goals is due to the cumulative effect of the aggregated behaviours/efforts of the individuals within that organization. They liken the "aggregate" effect of many people engaging in OCBs to voting. When one vote is cast, there is little effect but when hundreds and thousands of votes are cast, the effect can change history. The "aggregate" refers not only to the sum of many actions of one person over time, but also to the sum of the actions of many different people within a group.

They acknowledge that organizational effectiveness can be difficult to define or

measure. In their simplest terms, a hospital would be considered effective if the care provided meets or exceeds the reasonable expectations of the patients receiving care. From an organizational behaviour perspective, in order to meet those expectations, hospitals have to be responsive to the changing dynamics of both internal and external influences. This is particularly salient given the increasing demands in the clinical setting and the need for healthcare leaders/managers to find multiple strategies that will effectively achieve the organizational goals of patient safety. Therefore managers' approaches/strategies to promote OCBs amongst their staff are important.

Types of OCBs

Many types of OCB have been described, which identify different factors or, similar factors which are labelled differently. Some OCBs are directed at individuals (OCB-I) while others are directed at a group or "collective" (Moorman & Blakely, 1995). In a meta-analysis, LePine, Erez and Johnson (2002) suggest that seven factors capture the distinctions among the 40 dimensions of OCB. These are: helping, compliance, sportsmanship, civic virtue, organizational loyalty, self development and individual initiative. Examples of these key factors are summarized in Table 1.

While Organ, Podsakoff and MacKenzie are considered by many to be the pre eminent authors in the field, many different authors have conceptualized these OCB dimensions over the past several decades. All of these conceptualizations were constructed for broad applicability to a variety of organizations and contexts. But many reflect characteristics found in patient safety theory and context. For example, George and Jones (1997) discuss *helping* in terms of helping co workers accomplish tasks and achieve goals. This is very applicable to the nursing realm and to the patient safety

Table 1

Summary of the Key OCB Constructs

Construct	What It Means	Example
Helping	Assisting others problem solve	Helping an overloaded co worker catch up with work (individual focus); coming in on scheduled day off to cover for a sick co-worker (unit/team focus)
Compliance	Adherence not only to the rules but to the "spirit of the rules"	Coming to work in a snowstorm or when slightly unwell; following protocols even when no one is observing
Sportsmanship	"Toughing it out"; not complaining or criticizing	Not complaining about shifts or management decisions
Civic virtue	Constructive involvement in governance/decisions of organization	Participation in unit nursing council; submitting ideas to corporate "Bright Ideas" campaigns
Organizational Loyalty	Supports organization in the face of criticism from others	Self evident
Self Development	Increasing work related knowledge and skills	Attending non mandatory inservices on unscheduled time
Individual Initiative	Voluntary acts of creativity and innovation	Constructively voices concerns; approaches manager with suggestions for improvement; volunteers to work on projects such as policy development or quality improvement projects

tenant of teamwork. Organizational *loyalty* is described by Borman and Motowidlo

(1997) in terms of supporting the organizational goals, and as having concern for the unit

objectives. George and Jones (1997) discuss continuous improvement activities as a

demonstration of *individual initiative*. Alternatively, Van Dyne and LePine (1998)

conceptualize *individual initiative* in a way that is very analogous to the important

concept of *psychological safety* in patient safety literature. They use the term "Voice" to describe the initiative to speak up and challenge with the intent of improving the situation. Not only do these conceptualizations support the notion that OCBs can empower people and enhance their performance, but it can also enhance the group/organization performance. Furthermore, these conceptualizations support the notion that OCBs can be applied in a way that is consistent with, and contributes to, a positive patient safety culture.

One model of OCB that particularly resonates with the context of nursing and patient safety is that of Moorman and Blakely (1995). They base their model on the construct of civic citizenship which presupposes a sense of duty or obligation to the "collective". Individualism is manifested where behaviour and choices are focused on what is best for self; while collectivism reflects thinking and behaving in the interest of the group. In the case of nurses, this collective could be either the patients or the team. They developed a model with four dimensions: interpersonal helping which focuses on helping others in their jobs when needed; individual initiative which refers to efforts to improve individual or group performance; personal industry which refers to the performance of tasks/duties beyond what is expected; loyal boosterism which refers to the promotion of the organization to outsiders. They found a positive relationship between a collectivist view and the OCB dimensions of helping, individual initiative and loyal boosterism. This suggests that nurses who are more collectivist will try to seek out ways to assist the group even if it is not always in their personal best interest.

The key is that OCBs are purely discretionary in that people engaging in OCB are doing this entirely of their own volition. They are not being directed to do it, or intentionally observed while they do it and they receive no planned, formal remuneration

(monetary or otherwise) for it. So the question remains: why do people engage in OCBs?

Fostering OCBs

Although, OCBs are by definition, voluntary behaviours, multiple factors have been identified in the literature as contributing to OCBs (Spitzmuller, Van Dyne & Ilies 2008). Personality traits such as agreeableness and conscientiousness are strongly associated with voice and helping respectively. Recent research has focused on those traits that are related to a prosocial personality such as empathy, helpfulness and perceived self competence. Similar traits have been attributed to those who choose nursing as a profession. Attitudes about the work environment such as job satisfaction and perceived social justice have also been found to predict OCB. Moorman, Niehoff & Organ (1993), examined the relationship between perceived job fairness, job satisfaction and organizational commitment and OCBs. They found that job fairness (measured as procedural justice) was more highly correlated to courtesy ($r = .286$), sportsmanship ($r = .273$), and conscientiousness ($r = .186$), than was job satisfaction ($r = -.028$; $r = .061$; $r = -.010$) or continuance commitment ($r = .067$; $r = .089$; $r = .066$). This suggests the important role of leaders in developing fair work related procedures and in behaving fairly toward subordinates when enacting those procedures.

Libsekal (2006) predicted that nursing leadership styles impact leadership outcomes of extra effort, effectiveness and job satisfaction. The extra effort subscale may reasonably be used as a proxy for citizenship type behaviours. Data was collected from 144 staff nurses using the MLQ Form 5X Questionnaire. A positive relationship was found between transformational leadership and the outcome criterion of *extra effort* ($\beta = .94$, $p < .01$). A similar relationship was found between transactional leadership but to a lesser degree ($\beta = .24$). However, as has been discussed in relation to other studies, the

use of the extra effort subscales on the MLQ, along with the leadership subscales, may inflate the effect due to mono source issues. Gellis (2003) found likewise when studying a sample of 187 social workers from 26 acute care hospital settings. Participants completed all the scales on the MLQ Form 5X and results revealed that the transformational leadership factors most significantly correlated with extra effort were idealized influence-attributes ($r = .73$) and individual consideration ($r = .80$). The transactional leadership factor of contingent reward was also significantly correlated but to a lesser extent ($r = .66$).

Finally, it is reasonable to expect that as nurses notice the OCBs of their colleagues, they too will be more likely to engage in similar behaviours which create a collective thinking or "culture" amongst the team members (Organ, Podsokoff and MacKenzie, 2006).If the OCBs are related to providing optimum care and minimizing potential harm, then a culture of patient safety is promoted. Organ, Podsokoff and Mackenzie suggest several reasons why nurses might be influenced by their colleagues to engage in OCBs: empathy with others, personal satisfaction, altruism, or self interest. Ultimately, it is likely a combination of multiple overlapping reasons. Given the variability, of options, they say the "motives" are not of substantive importance. However they do suggest that more research is needed to better understand both the antecedents and outcomes of OCB. This study addresses this gap by examining transformational leadership and supportive practice environments as predictive of OCB, and OCB as a predictor of patient safety culture, and other beneficial patient and nurse outcomes.

In summary, when staff "go the extra mile", they contribute to the organizational goals communicated by the leader. As previously stated, optimal patient outcomes is a

primary goal of hospitals and this is achieved by ensuring safe, quality care which in turn is fostered within a culture of patient safety. This kind of culture requires staff to go above and beyond what is normally expected –to be highly alert to potential risks and near misses, to be supportive of peers but also to challenge them when required, to help colleagues, mentor new staff and so on. When these behaviours are witnessed by peers, they are increasingly adopted by others as the behaviours become the group norm. This in turn fosters a strong patient safety culture.

H[3]: At the unit level, staff nurses perceptions of co workers organizational citizenship behaviours has a positive effect on perceptions of their unit's patient safety culture.

Patient Safety

Evolution of the Patient Safety Movement

Accreditation Canada defines patient safety as "the prevention and mitigation of unsafe acts within the health care system". The Canadian Patient Safety Institute (CPSI, 2008) expands the definition beyond simply the avoidance of harm: "the pursuit of the reduction and mitigation of unsafe acts within the healthcare system, as well as the use of best practices shown to lead to optimal patient outcomes". In other words patient safety is often described as getting the right care to the right patient in the right way at the right time (Berwick & Leape, 2004).

Patient Safety as a concept has evolved over the last several decades from a limited, individualistic construct held primarily by healthcare practitioners to a more broadly held social construct within the healthcare domain. This shift is reflected in the patient safety literature in which early work focused on clinical outcomes and medication error. Current literature describes patient safety in much broader terms and includes

issues related to organizational behaviour such as teamwork, communication, organizational structures, systems and processes, human factors, high reliability and so on. Earlier conceptualizations of patient safety were predicated on the notion of "do no harm" and rooted in the Nursing Code of Ethics and Nursing Standards of Practice which are still applicable today (CNA, 2008; CNO, 2009). Both consumer and professional expectations of healthcare providers (nurses and physicians alike) were very high. Mistakes were not well tolerated and often were kept hidden behind a curtain of secrecy. However, after the revelations of the IOM report (Kohn et al., 2000), there was an increasing awareness that the complex context of healthcare delivery was contributing to increased patient risk which prompted a campaign to move beyond blaming the nurse (or other care provider) and the tag line "*No blame, No shame*" was frequently used to describe a positive patient safety culture. While this movement was intended to encourage nurses to come forward when they made an error, there was a perception by the public and nurses themselves, that "no blame" implied "no responsibility" (Etchells, Lester, Morgan,& Johnson, 2005). As a result, the "No blame..." phrase was replaced by "N*on punitive*" patient safety culture.

In recent years, there has been a stronger emphasis on consumer rights and patient centered nursing care. This consumer advocacy movement coincided with a greater sense of public accountability and organizational justice. Thus, recent literature describes a "*Just*" culture of patient safety, whereby staff are treated fairly when errors occur, but accountability for actions are evaluated and just consequences are allocated within a philosophy of transparency to patients and public (Beyea, 2004; Frankel, Leonard & Denham, 2006; Leape, Berwick & Bates, 2002; Reason, 1990). While some argue this evolution is merely a change in semantics, a more reasonable proposition is that these

changes reflect an increased knowledge and understanding of the relationship between nursing care, patient safety and the broader context in which both of these are situated. Some of these broader contextual influences will be reviewed next.

Healthcare has undergone significant and rapid change over the past three decades. Hospitals have amalgamated with other hospitals developing large, regional corporations while the "Closer to Home" philosophy promoted a move of services and patients out of the hospital and into the community. Hospitals were managed based on a business model, which emphasized fiscal and organizational leanness. Systems/processes that promoted efficiency were promulgated, such as shortened length of stay and wait times, integration of services to reduce redundancy, automation and computerization. The result was a more complex environment with a concomitant increase in the acuity and complexity of patients remaining in hospital. This in turn put nurses at more risk for making a mistake and put patients at more risk for harm.

Restructuring and downsizing saw the redeployment of many front line nurses, while middle managers were classified as redundant and dismissed. The program management model replaced nursing leaders with non nursing managers, responsible for multiple clinical programs with a large span of control. An examination of the impact of restructuring revealed that it produced an environment of increased mistrust and a reduction in nurse satisfaction(Aiken, Clarke & Sloane, 2000; Baumann, Giovannetti et al., 2001; Davidson, Folcarelli, Crawford, Duprat & Clifford, 1997). Nurses felt at risk to disclose their mistakes fearing punitive action which impeded the disclosure of adverse events to the public. However increasing public awareness and expectations of accountability in healthcare has resulted in hospital policies outlining full disclosure of adverse events and mandatory public reporting on key patient safety indicators including: hospital acquired infections, hand washing compliance, pre surgical antibiotic

prophylaxis, and most recently, the implementation of the surgical safety checklist.

In addition to governmental action, several independent bodies have arisen to advance the patient safety agenda. For example, recent changes in the Accreditation program QMENTUM have made patient safety the underlying driver for all of the standards and required organizational processes (Accreditation Canada, 2007). The CPSI funds patient safety related research and has initiated educational programs for developing competencies and expertise in patient safety practice/issues (CPSI, 2008; CPSI online). The Ontario Hospital Association and College of Nurses of Ontario, and Canadian Nurses Association have created programs and expert panels devoted to patient safety issues (OHA, 2010, CNO, online, I, online)

Finally, changes in professional practice have influenced the way in which nurses provide care and are held accountable for it. Thirty to forty years ago, the relationship of the nurse to the hospital and their physician colleagues was one of unequal authority and influence. No doubt errors occurred but they were often hidden for fear of retribution from superiors and/or the professional bodies (Vincent, Stanhope & Crowley-Murphy, 1999). The shift from task oriented team nursing to a primary nursing model was introduced to provide greater continuity and more holistic care to patients/clients. While there were clear benefits to this change, it may also be argued that the move away from team nursing also cost nurses a sense of shared accountability, and instead perpetuated the sense of sole responsibility if there was a concern or an error. The move to a Baccalaureate as entry to practice ensured a foundation of critical thinking in nursing practice and created further equity vis-à-vis nursing and other healthcare disciplines (Aiken et al, 2003; I, 2009). This set the stage for a greater voice in the decisions regarding care and for improved interdisciplinary communication – a key component of a

positive patient safety culture.

Patient Safety Culture

Robbins and Langton (2003) describe organizational culture as "the glue that holds the organization together, and that sometimes, the entire culture of the organization has to be changed..." (p. 529). There are numerous definitions of organizational culture, each of which encompasses similar features including: shared meanings, patterns of beliefs, symbols, rituals, myths, and practices, which in turn create common understandings among members as to what the organization is and how its members should behave (Huber, 2000; Mark, 1996; Robbins, 1990; Shein, 2004).Schein defines culture as "a pattern of shared basic assumptions that the group learned as it solved its problems of external adaptation and internal integration, that has worked well enough to be considered valid and, therefore, to be taught to new members as the correct way to perceive, think and feel in relation to those problems" (p.17). Denison (1996) distinguishes culture from climate. He refers to culture as a "deep structure of organizations, which rooted in the values beliefs and assumptions held by organizational members" (p. 624). Climate on the other hand is "relatively temporary, subject to direct control, and largely limited to those aspects of the social environment that are consciously perceived by organizational members" (Denison, 1996, p. 624). Sexton et al. (2006) suggest that when using surveys to study group level perceptions, the term "climate" should be used since surveys are unable to capture some of the "other aspects of culture, like behaviour, values, and competencies" (p.2). However, they acknowledge that both terms are frequently used interchangeably in the literature. For the purposes of consistency in this discussion, the term "culture" will be used.

High-reliability organization theory. High-Reliability Organization Theory

(HRO) (Weick & Sutcliffe, 2001), has been applied in other high-risk industries such as aviation and nuclear energy, and provides a useful framework to address the cultural dynamics and processes that contribute to safe, quality care delivery. Cultural features include: proactive leadership, flattened hierarchy (value expertise of the frontline), rewarding expected behaviour, mindfulness and preoccupation with failure (mistakes are expected and strategies are continually developed to mitigate risk). Processes or standard operating procedures are designed to ensure they are carried out consistently and accurately at all times (optimal reliability). Hence they include multiple checks (redundancies), use of forcing functions (i.e. must retrieve your card in order to get your cash at an ATM machine), and flexibility to enable rapid response to changing demands (Tamuz & Thomas, 2006).

Similarly, several authors have described a patient safety culture as one where leadership is committed to learning from errors, hierarchies are flattened, mutual respect and teamwork is fostered, open communication and questioning is encouraged, and a philosophy of continuous improvement and learning is perpetuated (Frankel, et al., 2003; Ginsberg et al., 2005; Leape et al., 2002; Leonard, Graham & Bonacum, 2004).

Pronovost et al (2006) used HRO to develop a framework for measuring patient safety in intensive care units. They focused on measuring incidents of harm and use of best practice in relation to catheter related blood stream infections in over 100 Michigan ICUs. Reliability was enhanced and outcomes improved by adopting evidence based, standardized processes for the insertion and maintenance of central lines. Frontline physicians and nurses helped to design the process which included double checks to minimize anticipated error or omission of a critical step. They obtained baseline data so that they could measure improvement after implementation of these processes and

demonstrated flexibility in making frequent and rapid changes to the processes as required based on feedback from staff and outcome measures.

Roberts, Madsen, Desai and Van Stralen (2005) also used the HRO framework in a pediatric intensive care (PICU) setting. For the first 11 years of the PICU, they employed several of the techniques described above such as regular process audits and refinements based on feedback from frontline staff; delegation of decision to most qualified (not most senior) team member; building redundancy into monitoring (i.e. using two methods). They found that while standardization is important, it is equally important that the processes be derived from a problem solving team approach whereby professional expertise at the frontline is acknowledged and incorporated into the plan (see item number 3 above). This also reflects the characteristics of a strong professional practice environment discussed earlier. They found that when the unit returned to a more hierarchical approach, outcomes such as infant mortality, return to the PICU, and length of stay, were negatively affected.

HRO Theory also forms the basis for many of the patient safety strategies promoted by the Institute of Healthcare Improvement (IHI) and Safer Healthcare Now (SHN). Standardized bundles of care, rapid tests of change, flexibility to modify according to specific units or patient populations, redundancies and deference to expertise are all features of these campaigns.

Justice theory. When examining the relationships between caregivers and patients, and within the interdisciplinary healthcare team itself, they are often characterized by hierarchy and poor communication which is inconsistent with a positive patient safety culture. The application of Social Justice Theory is finding its way into healthcare to address these inequities and thus promote a climate of collegiality, fairness,

and transparency in an environment of continuous learning (Roch & Shanock, 2006; Beyea, 2004). Thus current patient safety literature refers to a "Just Culture of Patient Safety" (Frankel, et al., 2006).

Robbins & Langton (2003), describe three types of organizational justice, two of which relate to the type and allocation of rewards and one that addresses interactions with others in the organization. The first two correspond with transactional leadership behaviours while the latter relates more to transformational leadership behaviours. Baumann, O'Brien-Pallas et al. (2001) state that when nurses perceive an imbalance between the efforts they put into their work and the rewards they receive, they suffer physical and emotional consequences (p. 11). However, health care professionals who are often intrinsically motivated, value monetary rewards less than other kinds of rewards and recognition (Robbins & Langton, 2003). Therefore nurses are more likely to value rewards such as public acknowledgement of a job well done or a "good catch" where an error was avoided; providing time off in lieu of overtime pay; and support to attend professional conferences or academic studies (*Distributive Justice*). Similarly, it is important that managers are seen to apply these rewards equitably among all members of the team based on some established objective criteria versus simply a personal like or dislike of the individual (*Procedural Justice*).

Interactional Justice reflects the flattened hierarchy described in HRO theory and what Frankel et al (2006) refer to as "psychological safety". Regardless of rank or role in the organization, mutual trust and respect among all employees is essential to create a climate where ideas and concerns can be freely shared, learning can occur and innovation can flourish (Weick & Sutcliffe, 2001). Wong, Laschinger and Cummings (2010) found that supportive leader behaviour and trust in management is needed for staff to feel

comfortable voicing their concerns or suggestions for improvement. As part of a larger

study on nursing working conditions, Laschinger (2004) surveyed 500 nurses from acute

care hospitals in Ontario to explore nurses' perceptions of respect. Results showed that

Interactional Justice was a significant contributor to a sense of respect and resulted in

increased job satisfaction, trust in management, higher ratings of nursing quality and

staffing. Chenevert et al., 2013 also found an indirect relationship between

organizational justice (particularly distributive justice) and nurse absenteeism.

  While the concept of patient safety has evolved to assume a more systems

focused, non punitive approach, this important paradigm shift must be balanced with the

concept of accountability in order to be fair and just (Etchells et al., 2005; Reason, 2000).

Frankel, et al., (2006) define a fair and just culture as "one that learns and improves by

openly identifying and examining its own weaknesses" and is willing to expose areas of

weakness as readily as areas of excellence are displayed (p.1692). Hence the

identification and reporting of potential and actual adverse events is considered

fundamental to achieving a culture of patient safety where errors are seen as an

opportunity for learning versus discipline.

  Adverse event reporting. Adverse events are defined as an unintended injury or

complication that results in disability at the time of discharge, death or prolonged hospital

stay and that is caused by health care management rather than by the patient's underlying

disease process" (Baker et al. 2004, p.1679). As previously mentioned, hospital

administrators and consumers, often held the misguided view that healthcare

professionals were somehow infallible. Therefore, there was a low tolerance for errors

when they were exposed which often led to punitive, disciplinary actions against the

professionals involved (Kohn et al., 2000). Consequently, that kind of response resulted

in a reluctance of staff to disclose when they had made an error. This reluctance continues today as evidenced by the fact that adverse events continue to be underreported despite efforts to reassure staff and to build reporting systems that are voluntary, anonymous and easy to use (Evans et al. 2008; Vincent, Stanhope & Crowley-Murphy, 1999; Suresh et al. 2004; Shojania, 2008; Wilson & Bekker, 2008; Berenholtz et al., 2007). In addition, these authors suggest underreporting may be the result of staff being too busy or perceiving it as a waste of time. Regardless of the reporting system used, the focus of the reporting is to uncover the process and system issues that may have contributed to the error so that improvements can be made.

Ensuring patient safety requires more than just having qualified staff and sufficient equipment in place to deliver care. It requires an organizational culture that features a shared commitment to quality care, reliable and standardized processes, collegial teamwork and communication, non punitive response to error and a willingness to learn from mistakes. The development of such a culture requires transformational leaders, who are able to inspire a shared vision, create supportive practice environments and maximize the skills and performance of their staff to achieve optimal patient outcomes. The link between leadership and perceived patient safety culture has been addressed in several studies discussed earlier. However, White & McGillis Hall (2003) point out that further work is needed to examine the relationship between nursing leadership and nursing sensitive patient safety outcomes. Therefore, in order to understand how nursing leadership affects outcomes, it is important to further explore what leadership behaviours are most effective in promoting a patient safety culture.

Leadership and patient safety culture. Healthcare leaders are challenged to identify those priorities that are of particular strategic significance from among many

competing issues. Given the increased requirements at the provincial ministry for reporting patient safety indicators, it is safe to say that all Ontario hospitals are working diligently to effect organizational change in the patient safety realm. If they are to create a vision for organizational change, senior leadership (including the Chief Nursing Executive) need to have a basic understanding of the care/service processes that might affect patient safety. Schein (2004) describes a symbiotic relationship between leadership and organizational culture. He suggests that culture is defined by leadership and ultimately if that culture flourishes, it defines the kind of leadership required. Therefore he proposes that leaders must understand the existing culture in order to help redefine it.

Ruchlin, Dubbs and Callahan (2004) conducted a literature review on the role of leadership in creating a culture of patient safety. They found many recommendations for leadership that draw upon HRO theory including: migration of decision making to the frontline (akin to point of care decision making in nursing); allowing organizational values to drive the patient safety processes rather than external mandates; and shifting patient safety from a priority to a value since priorities are more subject to change than deep seated beliefs.

McFadden, Henagan and Gowen (2009) also utilized HRO to develop and test a theoretical model proposing a "chain" of connections from transformational leaders to the creation of a patient safety culture producing positive patient outcomes. Surveys were sent to 626 hospitals across the US. Completed surveys were received from 371 hospitals but only those hospitals with at least two respondents were included for a total sample of 212 hospitals. Results revealed strong fit indices for a partially mediated model (CFI = .95; RMSEA = .05) where transformational leadership had a direct positive effect on patient safety culture (β = .56) and patient safety initiatives (β = .18) and an indirect

positive effect on patient safety outcomes ($\beta = .35$). Not surprisingly, the relationship between patient safety initiatives and patient safety outcomes was strong ($\beta = .73$) suggesting that the implementation of patient safety initiatives like Safer Healthcare Now clinical bundles or executive walkabouts have a significant impact on patient outcomes.

Psychological safety is a foundational construct in the patient safety literature and it is predicated on trust. Staff need to trust that they will not be penalized if they voice concerns or challenge opinions. Edmondson (2003) showed how leaders can "coach" staff to overcome the inherent power differentials on a surgical team to express their concerns, thereby improving patient safety and team performance. The notion that trust must exist across disciplines and across the hierarchy in healthcare teams was further supported in an interdisciplinary study of 1440 nurses, physicians and respiratory therapists from 23 Neonatal Intensive Care Units (Nembhard & Edmondson, 2006). As previously reported, Wong, Laschinger and Cummings (2010) found a significant positive effect of authentic leadership on "voice" which was significantly related to trust. Both these studies demonstrate that "leader inclusivity" (whereby the medical or nurse leader actively invites and appreciates the contributions from members of other disciplines) enhances psychological safety.

Another strategy used by senior leaders to foster a sense of psychological safety is the Executive Walkabout. This is a strategy where senior leaders visit clinical units and ancillary departments to engage frontline staff in a conversation about their concerns regarding patient safety and suggestions for appropriate solutions or process improvements. Strategies such as this facilitate an open dialogue and enhance the patient safety culture by demonstrating a commitment from the senior leadership to patient safety goals and to the staff that support them. Further, it exposes senior leaders to the frontline

perspective which exemplifies the concepts of a "flattened hierarchy" (Frankel, et al., 2006) and "deference to expertise" (Weick & Sutcliffe, 2001) whereby the opinions of frontline staff are valued equally to those of members higher on the organizational reporting structure. Thomas et al (2005) studied the impact of Executive Walkarounds (EWRs) on perceived patient safety climate in 23 inpatient units in a tertiary care teaching hospital. Provider attitudes about safety climate were measured by the Safety Climate Survey before and after EWRs. Before EWRs the mean safety climate scores for nurses were similar in the control units where EWRs were not conducted (M=78.9) and EWR units (M=76.78, p = 0.458) as were percent positive scores (control unit M=64.6%; EWR M= 61.1%). When post EWR results were analyzed, nurses in the control group who were not exposed, had lower safety climate scores (M=74.88) than nurses in the intervention group who were exposed to a EWR session (M=81.01, p = 0.02). Likewise positive scores were lower in the control group (52.5%) than in the EWR group (72.9%). These results demonstrate a positive effect on nurses' perceptions of patient safety climate when given the opportunity to discuss patient safety concerns with senior leaders.

Both senior nurse leaders and nurse managers will influence the development of a positive patient safety culture at the organizational and unit level (Firth-Cozens, 2003, Ginsberg et al., 2005; Nieva & Sorra, 2003).However, several studies have found that nurses are more influenced by their direct supervisors than by senior leaders in the organization (Laschinger et al., 1999; Pronovost et al., 2003). Given the profound changes required to fundamentally change the culture of healthcare organizations, it seems appropriate to examine a leadership model that has a strong visionary component such as the transformational leadership model. At the same time, the TL model

incorporates the practical exchanges that must be employed at the operational level, which is particularly relevant to those in frontline management roles.

As previously stated, there is ample literature to support the fact that patient outcomes are influenced not just by how care is delivered but also by the context in which it is delivered. Several authors have provided evidence that a strong patient safety culture is related to positive patient outcomes (Berenholtz & Pronovost, 2007; Ginsberg et al., 2005, Tamuz & Thomas, 2006). However, others point out that more work needs to be done in this area (Colla, Bracken, Kinney & Weeks, 2005, Singer et al., 2003) thus validating the need for this study.While it has been argued that the link between "culture" and patient outcomes is tenuous given the multiple intervening variables at play, the importance of elements within a patient safety culture, such as open communication, have been demonstrated. For example, JCHAO (2004) did an analysis of over 2400 sentinel events and found that miscommunication was the underlying cause in 70% of them. Shortell et al. (1994) evaluated the impact of a number of structural, organizational and interpersonal variables on patient outcomes in a study of 17,440 patients in 42 ICUs in the U.S. They found that the use of clinical technology did not predict LOS to the same degree as caregiver interaction (such as communication, leadership and conflict management) did. In a study examining interprofessional collaboration, Chang (2009) found that positive interprofessional relationships improved not only the quality of care delivered, but of nurse job satisfaction as well. All these findings suggest that the patient safety culture characteristics most predictive of patient outcomes, are those that also contribute to a positive work environment and foster positive perceptions of quality care.

As stated, key features of a patient safety culture include a "flattened hierarchy" (i.e. respectful and collaborative nurse-physician relationships), open clear

communication, and a learning versus punitive response to errors. As such, a strong

patient safety culture shares these features with empowering practice environments and

magnet hospital characteristics which have been reported in earlier work as positively

affecting nurse job satisfaction. The provision of "quality care" presumes "safe" care and

ideally, good outcomes. Multiple studies have demonstrated the importance of adequate

staffing models, collegial staff relationships and autonomous decision making on

perceived quality of care (Aiken, 2008; Chang, 2009; Hinno 2011; Laschinger, Shamian

& Thompson, 2001; Leggat, 2010; Lundstrom 2002, Purdy et al., 2010; Van Bogaert et

al., 2009). As discussed earlier, when nurses find their units supportive of safe quality

care, they report greater job satisfaction. "A positive patient safety culture is associated

with positive attitudes which can influence adoption of safe behaviours and practices"

(Lundstrom, 2002, p.94). Therefore it reasonable to assume that clinical units displaying

a strong patient safety culture are more likely to have in place improved processes of

care, and collaborative relationships which are positively associated with nurse

satisfaction, quality of care and ultimately patient outcomes.

H[4]: Staff nurses perceptions of their unit patient safety culture has a positive effect on

job satisfaction.

Job Satisfaction

Job satisfaction has been conceptualized as both an antecedent of specific work

behaviours (Irvine, Evans, 1995; Choi, 2013; Agrawwal et al., 2012; Laschinger &

Wong, 1999) and as a consequence of other variables (Aiken et al, 2002; Davidson et al.,

1997; Larrabee, Janney&Ostrow, 2003; Laschinger, Finegan, Shamian& Wilk, 2004;

Laschinger, et al., 2007; Laschinger, Shamian et al., 2001; Lok, & Crawford;

Manojlovich, & Laschinger, 2002; McGillis Hall, 2003). As discussed earlier, these

authors identified several factors as determinants of job satisfaction including: autonomy, model of nursing care, adequate staffing and resources, psychological empowerment, structural empowerment, personal characteristics, job stress, organizational commitment, relationships with peers, managers, physicians, and organizational culture including attributes such as those outlined in the preceding section on patient safety culture.

Blegan (1993) conducted a meta-analysis of variables related to nurses' job satisfaction. Over 250 articles were screened and 48 met the inclusion criteria representing 15,058 nurses from clinical settings across the United States. Results revealed that job satisfaction was most strongly related to stress ($r = -.61$) and commitment ($r = .53$). Other variables with significant moderate correlations align with features of a strong professional practice environment and patient safety culture discussed earlier: communication with supervisor ($r = .45$), autonomy ($r = .42$), recognition ($r = .42$), routinization ($r = -.41$) and communication with peers ($r = .36$). As previously discussed, several authors have found relationships between these and other features of positive work environments, and job satisfaction (Aiken, 2008, 2012; Chang, 2009; Hinno 2011; Laschinger, Shamian & Thompson, 2001; Lundstrom 2002, Purdy et al., 2010;Van Bogaert et al., 2009).

Transformational leaders are likely to create the kind of work environment that will foster the features contributing to job satisfaction. Failla and Stichler (2008) found that managers' self-rated transformational leadership style was correlated with higher job satisfaction of nurses on their units ($r = 0.348$, $P < .05$). Similarly, Molero et al. (2007) compared the effects of transformational leadership (TL) and the other leadership styles on organizational outcomes such as employee satisfaction and performance in their study of 147 participants, working in 35 work-teams. TL correlated highly with relations-

oriented, democratic, and task-oriented leadership. In addition, high TL scores explained significant incremental variance in employee performance, satisfaction and extra effort.

Several studies revealed important links between work environments, nurse satisfaction, and optimum care. Shortell et al. (1994) reported that technological advancements and communication between physicians and nurses were significantly related to nurse job satisfaction and ultimately to effective performance. Purdy et al., 2010 found that "empowering workplaces had positive effects on nurse-assessed quality of care and predicted fewer falls and nurse-assessed risks. These conditions positively impacted individual psychological empowerment which, in turn, had significant direct effects on empowered behavior, job satisfaction and care quality" (p.901). Choi and Boyle (2013), stated that more satisfied nurses are more likely to follow unit and organizational policies aimed at falls whereas, less satisfied nurses are less inclined to change practice. In a report outlining the impact of job satisfaction and retention on nursing care delivery, Agrawal et al. (2012) stated that the "likelihood of negative nurse sensitive outcomes (such as medication error, falls and pressure ulcers) increases significantly when nurses are tired, unfamiliar with the units they are working in, or just burned out" (p. 53).

Thus the evidence suggests that nurses who are more satisfied are more likely to provide safer care and in so doing, positively affect nurse sensitive patient outcomes. This relationship will be further discussed in the next section.

Patient Outcomes: Medication Error, Hospital Acquired

Infections (HAIs), and Patient Falls

"RN job satisfaction must be an area of critical focus for nurse leaders not only for retention but also for patient safety" (Choi & Boyle, 2013). Given the multiple

variables that can influence patient outcomes, it is difficult to find a direct causal relationship between a single variable and the outcome variable of interest. However, a justifiable case has been made, based on the literature, for a possible chain of contributory and mediating factors that begins with effective leadership and ends with nurse job satisfaction.

Berenholtz and Pronovost (2007) recommended a number of indicators that might be measured to reflect patient safety such as central line infection rates and compliance with evidence based clinical bundles such as the one for ventilator associated pneumonia. However, many of the recommended indicators were limited to critical care areas and not necessarily limited to the purview of nursing. The current nursing literature identifies several patient outcomes as being reflective of safe nursing practice (Doran et al., 2006; McGillis Hall et al., 2001). Hence three "nurse sensitive" patient outcomes were selected for this study: medication error, hospital acquired infections (HAIs), and patient falls.

Hoffman and Mark 2006 examined errors causing harm by surveying 1127 nurses working on acute medical units across the U.S. They found that lower medication error rates were associated with a positive patient safety climate ($\beta = -1.51$, p<.05) which has already been argued, is related to nurse job satisfaction by virtue of perceived quality of care. Vogus and Sutcliffe (2007) examined the moderating effect of trust in the nurse manager on the relationship between "safety organizing" behaviours (i.e. use of standardized nursing "care pathways") and reported medication errors. A total of 1033 nurses and 78 nurse managers working in emergency, critical care, medical and surgical units from 10 hospitals in Iowa were surveyed. Results demonstrated that the interaction effects of safety organizing and trusted leadership ($\beta = -.68$, p<.001) and safety organizing and care pathways ($\beta = -.82$, p<.001) resulted in significantly decreased

reported medication error. In other words, "the benefits of safety organizing are more pronounced when coupled with high levels of trust in one's manager and the use of standardized care pathways" (p.998). Similarly, Kaissi, Kralewski, Dowd and Heaton (2007) evaluated the use of best practice guidelines on the rate of medication error in physician group practice. A questionnaire containing three subscales (Collegiality, Quality emphasis, and Autonomy) and 15 items was distributed to a random sample of 78 physician group practices in Minnesota. None of the cultural (i.e. autonomy, collegiality, quality) or structural (i.e. type of practice, number of staff, electronic medical record, existing protocols) variables had independent effects on medication errors. However the combination of existing practice guidelines and a perceived collegial environment produced an inverse effect on medication error (β = -.183, p< .05; F = 5.18). Paquet (2013) aimed to link evidence based practice and decision making by examining the importance of staff perceptions of work environment on medication errors and length of stay. Results revealed that perceptions of manager support, workload, pride in team and effort/reward balance indirectly predicted quality of care.

The issue of hospital acquired infections has taken on particular significance in recent years with the emergence of antibiotic resistant strains such as Methacillin Resistant Staphylococcus Aureus (MRSA), Vancomycin Resistant Enterovirus (VRE) and C-Difficile (Boyce, 2005). The incidence of MRSA increased 13 fold from 1994 – 2005 (from .44/1000 admissions to 5.86/1000 admissions) (PIDAC, 2007) and continues to rise. C-Difficile is another antibiotic resistant strain that is highly transmittable since it is able to survive for several hours on hard surfaces. While the cost to the healthcare system as a result of prolonged length of stay and related additional treatments is significant (approximately $16,000 – $35,000 per infected patient), the real cost is in the

harm and sometimes fatal consequences to the patient. There are multiple infection prevention strategies employed by hospitals such as screening, appropriate use of antibiotics, protective precautions (i.e. gown, gloves and mask) and appropriate patient isolation.

However, the single most important mode of transmission of hospital acquired infections like MRSA, VRE and C-Difficile, is via transiently colonized hands of health care workers who acquire it from contact with colonized or infected patients, or after handling contaminated material or equipment (PIDAC, 2007). Consequently one of the key strategies to prevent these infections is hand washing. However, staff compliance with hand washing is surprisingly low in many healthcare facilities despite an increase in awareness, promotional campaigns and hospital policies. Nursing leaders play a vital role in establishing practice expectations and providing the necessary resources and environment to ensure the spread of infections is minimized. For the reasons stated earlier, units that have strong leadership, and a perceived support for quality nursing care, are more likely to have engaged staff that promote hand washing and encourage one another to do so. In addition, resources such as disinfectant hand rub, personal protective equipment and adequate room to separate soiled linens and equipment would be readily available on these units. Therefore it is reasonable to expect lower infection rates on those units.

Patient falls are an equally detrimental adverse event accounting for 84% of inpatient incidents. In Canada, falls are the leading cause of injury-related hospital admissions and the sixth leading cause of death in older adults. It is estimated that of the one in 40 who are hospitalized as a result of a fall, only 50% will be alive one year later. Like infections, injuries related to falls pose a significant burden in terms of loss of life,

reduced quality of life and economic cost (RNAO, 2007). Multiple strategies have been employed to prevent and manage falls in hospitals including risk assessment, exercise, medication review and hip protectors (Oliver et al., 2006). However, there is conflicting evidence regarding some of these strategies. Oliver et al. conducted a meta-analysis of the falls literature. Of the 1207 references found, 92 articles were reviewed and 43 met the inclusion criteria. The authors found many of the studies to be of poor methodological quality and there was evidence of heterogeneity between studies. Thirteen studies employed a multifaceted approach utilizing some of the strategies listed above. Despite some strong results in individual studies, the meta-analysis showed a rate ratio of .82 for falls (number falls per person year) demonstrating a modest reduction of falls in hospitals using a multifaceted approach, but no significant effect on the number of fallers or fractures. The authors conclude there is modest evidence that a multifaceted approach reduces the rate of falls in hospital patients and hip protectors prevent fractures in long term care homes. However, there is insufficient evidence to support any of the single interventions in either setting.

Despite the variability in evidence, the RNAO has developed a Best Practice Standard for the prevention of falls. Like the hand washing campaigns, this has been adopted by many hospitals in Ontario (and other provinces as well). Again, the Best Practice Guideline recommends a multifaceted approach to falls prevention including the administration of a risk assessment. Assessment tools or checklists are consistent with high reliability theory and patient safety practices. Such tools provide a standardized approach to decision making and ensure that processes are carried out consistently and to standard. However, the utility of the falls assessment tools have been challenged as being unable to detect risk with any more precision than basic nursing judgment (Haines, Hill,

Walsh, & Osborne, 2007; Oliver, 2008). More recently, in a large study of 2,763 units in 576 hospitals, Choi (2013) found a significant inverse relationship between job satisfaction and falls. For every one percent increase in job satisfaction, there was a 5.9percent decrease in falls. This evidence points to the significant role nurse job satisfaction plays on positive patient outcomes and the importance of creating work environments that enhance positive perceptions and job satisfaction. Therefore it remains incumbent upon nursing leaders to create strong practice environments that emphasize patient safety and the need for nurses to be aware of the risks related to falls (and other adverse events), and the best practices that might mitigate those risks.

There are challenges in conducting studies which measure patient outcomes as a reflection of a sound patient safety culture. One limitation is that while reporting adverse events (such as falls), is useful in identifying potential risks and actual harm, it is likely misleading to use only nurse reported data as a reflection of either positive or negative trends because the true number of the at risk population (denominator) and the magnitude of reporting bias is unknown (Berenholtz et al., 2007). Therefore it is difficult to obtain an accurate measure based on adverse event reporting (or nurse report alone). In addition, as the desired culture of openness and transparency improves, the reporting of adverse events is expected to increase. Paradoxically, it may appear when reviewing the outcome data that there are *more* adverse events rather than less. However, this is an expected phase in the development of a transparent patient safety culture where errors are seen as opportunities for learning and improvement and as such, staff are more inclined to report errors when they occur (Baker et al, 2004; Berenholtz et al. 2007). Therefore, "better reporting volume" has been accepted as a reasonable measure of an improved culture of safety (Pronovost & Sexton, 2005). Conversely, if the number of incident reports

decrease, it does not necessarily mean that the unit/hospital is safer. It may simply be a reduction in reports due to the reasons discussed in the previous chapter or because staff are aiming to reach a lower target. Having said that, it is logical to reason that over time, as the culture of safety becomes well established, the number of preventable adverse events will decline.

In summary, patient safety and nursing work environment research in the past decade has provided strong evidence of the importance of several work environment factors that can impact patient outcomes. One of the most consistent findings is the benefit of effective communication among health care team members and a nonpunitive climate that encourages adverse event reporting. These features contribute to positive nurse perceptions about their ability to provide quality care and thus enhance job satisfaction. Nurses who are more satisfied in their work are more likely to apply best practices and processes that minimize risk and ensure better outcomes.

H^5**:** At the unit level, staff nurses level of job satisfaction has a negative effect on

a) hospital acquired infections

b) falls

c) medication error

Nurse Outcome: Absenteeism

Given the current shortage of nurses, absenteeism of those already employed is a significant and costly problem for hospital employers (Taunton et al., 1995). Absenteeism is defined as not coming to work during regularly scheduled shifts and is often measured in terms of frequency, or duration of work days missed (Davey et al. 2009). Absenteeism has been categorized into two categories: 1) non-culpable (non voluntary) and 2) culpable (voluntary) (Hackett & Guion, 1985). Non culpable

absenteeism refers to absent days due to reasons beyond the control of the nurse such as post operative recovery, family death, inclement weather and so on. Because many of these circumstances often take more time to resolve, non culpable absence is measured as "duration" of absence. On the other hand, culpable absenteeism refers to those periodic absent days that are due to the nurse's "choice" to be absent.

Hackett, Bycio and Guion (1989) framed absenteeism as a voluntary behaviour that some employees "choose" when balancing the motivators (i.e. recovering from illness) against the deterrents (i.e. increased work for co workers). Indeed they suggest that choosing absence may considered be a reasonable coping mechanism, since time away from work affords the opportunity to offset or minimize the cumulative psychological or physical effects of job strain and stress (Hackett & Bycio, 1996). Darr and Johns (2008) extend this thinking further to suggest that taking an absent day earlier is likely more effective in resolving the issue than waiting until the problem (physical or psychological) has become more pronounced and more difficult to recover from. Since these episodes are more often shorter in duration, frequency is a more appropriate measure. Both voluntary and involuntary absences may be related to the work environment in different ways. For example, if the nurses are dissatisfied with their job it may contribute to an increase in the frequency of absences (voluntary). Alternatively, an increase in absenteeism, or "lost time" may be due to recovery from musculoskeletal injury or hospital acquired infection which would be considered an involuntary absence.

The assumption in this model is that, units where nurses report high quality of care and job satisfaction are also likely to have lower nurse absenteeism. Darr and Johns (2008) conducted a theory focused meta analysis on work strain, health and absenteeism. Their search spanned the period from 1975 – 2003 and yielded approximately 3,600

articles. The screening process yielded 137 studies that met the inclusion criteria. They found that psychological and physical symptoms partially mediated the relationship between work strain and absenteeism ($\chi2$ = 4.68, df, 2, NFI=.987, CFI = .992, RMR = .029).

In a subsequent systematic review, Davey, Cummings, Newburn-Cook and Lo (2009) examined the relationship between individual and organizational factors and absenteeism. The initial search yielded 2401 titles and abstracts, of which 423 full manuscripts were retrieved for review. Further review and exclusion criteria were applied resulting in 14 studies from 1986-2002 for analysis. Several limitations of this review were identified including a lack of consistency in stated unit of analysis, and use of older data sets. Despite these limitations the authors were able to conclude that individual and organizational factors such as job satisfaction, organizational commitment, burn out and job stress significantly predicted job absenteeism. However they also advocated for additional research to more fully understand the predictors of absenteeism which supports the inclusion of absenteeism as a variable in this study.

Others have investigated the relationships between absenteeism and other variables within this study with mixed results. Goldberg and Waldman (2000) developed a model to test whether job satisfaction mediated the relationship between individual predictors (marital status, number of children, tenure and position) and organizational predictors (organizational permissiveness, role problems, pay and job characteristics) on absenteeism. They found only three of the 13 factors to be predictive of absenteeism: health, position level and wage. Results did not support job satisfaction as a mediating variable. However, several other studies did find significant relationships between absenteeism and variables such as job satisfaction, intent to stay, organizational

commitment and job involvement and job stress (Cohen, 2000; Hackett & Guion, 1985; Taunton et al. 1995, Whitea et al., 2013).

Unit and organizational variables examined include: perceived justice, trust in leadership, and practice environment characteristics. In a study examining the link between organizational justice and absenteeism, Chenevert et al., (2013) found that perceptions of organizational *injustice* (procedural and interactional and distributive), are linked indirectly to absenteeism through exhaustion and psychosomatic complaints. Other variables, reflective of a professional practice environment have also been found to significantly impact absenteeism rates. Seago (1996) suggests that an ability to make autonomous decisions is related to lower absenteeism rates. Taunton (1995) found that "instrumental communication" which reflects staff nurses' access to essential information about their job, was related to lower absenteeism rates in two of the four hospitals studied. In addition, higher perceptions of managerial justice and equity were associated with low absence. Other leadership attributes both transformational (showing consideration to employees) and transactional (ensuring adequate staffing) were found to decrease absenteeism rates (Boumans&Landeweerd, 1993). Given these findings, Davey et al. (2009) concluded that relational leadership practices likely reduce absenteeism.

Finally, unit culture was explored by Nicholson & Johns (1985), who suggested that the level of trust and prominence of the culture contributes to a social phenomenon which supersedes the individual level construct of absenteeism. In other words, the group absenteeism behaviours are likely to influence the behaviours of the individuals within that group. Likewise, Gellatly (1995) found that when staff perceived group norms to support absenteeism, absenteeism rates increased, however, this is not a consistent finding in other studies. These findings provide an incomplete understanding of the

antecedents to nurse absenteeism. Hence, there is a need for this study the model's inclusion of nurse absenteeism measured at the unit level which is more likely to illuminate the effects of organizational factors and group culture on individual absenteeism.

> H[5]: At the unit level, staff nurses level of job satisfaction has a negative effect on
>
> d) nurse absenteeism.

In summary, it is essential that healthcare organizations develop strategies and engage in leadership practices, which will address the complexity of healthcare processes and ensure that care is provided in a consistent, reliable manner in order to achieve the desired outcomes (Frankel, Gandhi & Bates, 2003). It is equally vital that leaders create supportive practice environments that promote a non-punitive culture of learning, continuous improvement, inter professional collaboration, and professional autonomy, thus engaging nurses in safe practice aimed at improving patient outcomes (Aiken, 2008; Pronovost et al., 2003). Individual studies have been identified in existing literature that provide varying levels of support for each of the links in the model, as presented again below.

Research Hypotheses

This model (Figure 3) proposes that transactional leadership behaviours would positively impact supportive practice environments and that this relationship would be further enhanced by transformational leadership behaviours. On units where nurses perceive there to be a supportive practice environment, they are more likely to reciprocate through organizational citizenship behaviours which fosters a positive patient safety culture on that unit. Units with a perceived strong patient safety culture produce high nurse job satisfaction which in turn has a positive effect patient outcomes and nurse

absenteeism.

In the model described above, five hypotheses are proposed at the unit level:

1) Staff nurses perceptions of their manager's transactional leadership behaviours have a positive effect on perceptions of their unit as a supportive practice environment (1a). This relationship is moderated (i.e. stronger) when nurses perceive their manager to exhibit more transformational leadership behaviours (1b).

2) Staff nurses perceptions of their unit as a supportive practice environment have a positive effect on perceptions of organizational citizenship behaviours of their nursing co workers.

3) Staff nurses perceptions of co workers' organizational citizenship behaviours have a positive effect on perceptions of their unit patient safety culture.

4) Staff nurses perceptions of their unit patient safety culture have a positive effect on job satisfaction.

5) Staff nurses level of job satisfaction has a negative effect on

   a) hospital acquired infections

   b) falls

   c) medication error

   d) nurse absenteeism .

CHAPTER 3

METHODS

Research Design

This study is based on a predictive non-experimental design to test and refine a

model that explains the impact of Transformational Leadership on nurse and patient

safety outcomes. Specifically, the model examines the relationships between

transactional & transformational leadership, OCBs, healthy practice environments,

patient safety culture, nurse job satisfaction and patient and nurse outcomes. Data for

leadership, practice environment, organizational citizenship, patient safety culture, and

nurse job satisfaction was collected through a combined survey (see Appendix B).

Patient clinical outcome data were retrieved from the hospital Discharge Admission

Database (DAD), the hospital's incident reporting database and the infection surveillance

database. Nurse absenteeism was collected from the payroll data for each unit.

A representative sample of nursing staff working in acute care hospital settings

was surveyed using a variety of measurement tools described below. Although online

questionnaires are becoming more prevalent for survey purposes and despite the

increasing use of computerized documentation in the clinical setting, many nurses do not

regularly access their email, express a lack of confidence in navigating the internet and

are sceptical about the confidentiality of an electronic questionnaire. Therefore a paper

questionnaire was used for this study given confidentiality concerns and practical

considerations.

Setting

Nurses working on inpatient units including: medical, surgical, critical care,

maternal child, rehabilitation, complex continuing care, and mental health within a

hospital setting were surveyed. While patient safety is an issue in all clinical areas, including ambulatory and long term care facilities, the IOM (Kohn, et al., 2000) identified acute care facilities as being particularly at risk for preventable harm. In addition, the patient outcome measures used here are more applicable to inpatient areas. A purposeful cluster sampling design was used in seven urban teaching hospitals within two of Ontario's Local Health Integrated Networks (LHINs): Waterloo Wellington and Hamilton Niagara Haldimand Brant. Three of the seven hospitals have multiple sites but the very small and ambulatory sites were excluded which yielded a total of 136 units over 14 sites; all of which were included in the final analysis:

- Hospital A: 4/7 sites = 28 units

- Hospital B: 2/3 sites = 29 units

- Hospital C: 1/1 site = 7 units

- Hospital D: 4/7 sites = 43 units

- Hospital E: 1/1 site = 8 units

- Hospital F: 1/1 site = 14 units

- Hospital G: 1/1 site = 7 units.

Sample

A representative sample of full time and part time Registered Nurses (RNs) and Registered Practical Nurses (RPNs) was included from each site. Casual nurses do not have consistent assignments and relationships with a particular unit and as such were excluded from the study sample. Individual responses of the nursing participants were aggregated up to the Unit (ward) level as the unit of analysis. All eligible clinical units across the selected sites will constitute the sampling frame and given the limited number of units, all staff nurses were asked to participate.

Structural Equation Modeling (SEM) was selected as the method of testing model fit. While there are differing views as to the optimum sample size for SEM, there is certainly consensus that a medium to large sample size is required to maintain accuracy and ensure representativeness. A generally accepted guideline from the literature is a sample size of 200 or more cases (Bentler & Chou, 1987; Kline, 2005). Alternatively, Bentler and Chou (1987) proposed a formula based on the complexity of the model which suggests 10-20 cases per variable being measured. Applying this formula to the model being studied: 10 cases x 10 variables = 100. Therefore, a minimum of 100 units would be required to achieve enough power to estimate the parameters accurately.

When aggregating individual responses up to the Unit level, and in order to maximize representativeness, it is preferable to have more groups with fewer people per group than the reverse. Kreft & deLeeuw (2002) recommend at least 100 groups (units) with approximately 10 people (nurses) per group. For this study, a total of 136 units were included which, while not optimal (i.e. less than 200), is well within the recommended parameters.

<div align="center">**Survey and Procedures**</div>

Participants completed a questionnaire composed of several different previously tested and reliable instruments along with a number of demographic questions. The paper based questionnaire was first pilot tested to assess face validity. Ten staff nurses from one site were convened for one hour to complete the questionnaire. At the end of the session, the respondents were asked whether the questions were clear, the format user friendly and how long it took to complete (Fowler, 2002). Feedback indicated the survey format was simple to follow, taking an average of 24 minutes to complete which they all felt was a reasonable amount of time. Only minor refinements to the wording of a few

questions and instructions were necessary to enhance clarity. For example, in order to align with the directions in the leadership section, question six in the demographics section, was changed from "Number of years you have reported to your nurse manager" to "Number of years you have reported to your CURRENT nurse manager". The instructions for the organizational citizenship behaviours section were rewritten to emphasize "nursing" peers since some members of the pilot test group did not feel they were able to adequately evaluate/assess allied health team mates. All ten of the pilot participants said the questions were "relevant" to their work and expressed interest in hearing about the outcomes of the study.

Instrumentation

The questionnaire used to survey the staff nurses is a composite of several independent scales which assess each of the constructs in the hypothesized model. Each of the measurement scales have their own strengths and shortcomings and were selected using the following criteria:

- Previously tested and presented in the literature

- Possess acceptable psychometric properties: content validity, construct validity and reliability

- Contain a reasonable number of items

The last criterion is based on the practical view that the survey must not be unduly onerous to complete, lest it impede completion and lower the response rate. The questionnaire consists of five tools and the demographic questions for a total of 110 items, most of which are Likert scale type responses (Appendix A). The combination of instruments and their respective reliabilities established in previous studies is outlined in Table 2.

Table 2

Questionnaire and Psychometric Properties

Questionnaire/Instrument*	Number of Items	Reliability (Cronbach's alpha)
Multifactor Leadership Questionnaire (MLQ) – Rater Form (Avolio & Bass, 2004)	36	Cronbach's alpha = .63 – .92 for subscales
Professional Environment Scale of the Nursing Workload Index (PES – NWI) (Lake, 2002)	26	Cronbach's alpha = .71- .84 for subscales & .82 for composite
OCB Scale (Interpersonal Helping, Individual Initiative, Personal Industry subscales) Moorman & Blakely (1995)	13	Cronbach's alpha = .61 - .91 for subscales over 2 studies
Safety Climate Survey (SCS) (Sexton, Thomas & Grillo, 2004)	21	Cronbach's alpha = .75 – .88
Global Job Satisfaction Questionnaire (GJSQ) Adapted from Hickman & Oldham, 1975	4	Cronbach's alpha = .83 – .84
Demographic Questions	10	N/A

* Details of Subscales presented in Tables 3, 4 and 5.

Transformational leadership. The MLQ was developed specifically for testing the TL

model and thus was selected over other leadership questionnaires such as the safety

specific leadership questionnaire used by Barling, Loughlin and Kelloway (2002). These

authors modified 10 MLQ questions to include specific references to safety. While more

specific to the safety context of this study, Barling's tool was not selected for this study

because this proposed model suggests that there are broader aspects of transformational

leadership that extend beyond a focus only on safety that impact practice environments,

individual motivation and behaviour and ultimately patient safety culture and desired

outcomes. For example supportive practice environments comprise more than just safety

features (i.e. collaborative practice, control over decision making, adequate resources,

patient centeredness etc). Similarly, OCBs may be partly related to a shared commitment

to patient safety but as previously stated may be equally based on a sense of justice and

trust in a manager who facilitates a supportive practice environment.

Hence the MLQ, originally developed by Avolio and Bass in 1985, was selected

for this study. The MLQ initially consisted of six factors and has undergone rigorous

psychometric testing and several revisions uncovering additional factors. The resulting

MLQ 5X is a 45 item, 9 factor questionnaire (Appendix A & B) developed in response to

criticism of the preceding version MLQ Form 5R for having poor discriminant validity

among the factors, for including behaviour and impact items in the same survey scales

and for inconsistency in replicating the factor structure (Avolio & Bass, 2004). The

current nine factor model was established using confirmatory factor analysis for a one, a

two, a three and a nine factor model. Best Fit indices are optimal for the nine factor

model: GFI = 0.91; AGFI = 0.90; CFI = 0.91; RMSEA = 0.05 (Avolio & Bass, 2004).

Reliabilities for each of the subscales are presented in Table 3.

The questionnaire has two versions, one framed for the leader to rate themselves

on each item and the other framed for the follower (staff member) to rate the leader on

the same items. The latter was used for this study. Respondents are directed to answer

the questions while thinking about the manager they had worked with the most on this

unit. Statements about the leader are answered on a five point Likert scale: 0 = *Not at all*;

1= *Once in a while*; 2 = *Sometimes*; 3 = *Fairly Often*; 4 = *Frequently if not always*.

Table 3

Internal Consistency Results (Cronbach's Alpha) for Each of the Subscales– MLQ

(Avolio & Bass, 2004)

Subscale	Cronbach's Alpha
Idealized Attributes	.77
Idealized Behaviours	.70
Inspirational Motivation	.83
Intellectual Stimulation	.75
Individual Consideration	.80
Contingent Reward	.73
Management by Exception Active (MBEA)	.74
Management by Exception Passive (MBEP)	.70
Laissez Faire	.74

While this study is concerned with transformational and transactional behaviours only, all the questions (including those for MBEP and laissez faire) were included in the survey so as not to confound the scoring in any way. An average score is calculated for each subscale using the scoring key provided. The mean score is derived by summing the items and dividing by the number of items in the subscale. If an item is left blank, the total for that subscale is divided by the number of items answered. The extent to which the nurses view their managers as transformational will be discerned by the value of the

scores on the five transformational subscales relative to the scores on the transactional and passive avoidant subscales.

Supportive practice environments. Supportive Practice Environments was measured using the PES – NWI scale which was modified from the original Nursing Work Index (NWI) developed by Kramer and Hafner (1989). For the purposes of this study, only four of the five PES –NWI subscales (26 questions) were used. The subscale Nurse Manager Ability, Leadership and Support of Nurses was not included in the questionnaire since it would have duplicated similar questions already included in the MLQ section. The PES – NWI (Lake 2002) was selected for this study since it was "developed to provide measures suitable for outcomes research models linking nursing practice environments to nurse and patient outcomes" (p. 178). The original NWI was a 65 item tool to measure nursing job satisfaction in magnet hospitals. Various researchers modified and applied the tool over the next decade to further explore the characteristics of magnet hospitals and the impact on nursing outcomes (Aiken & Patrician, 2000; Aiken, Sloane & Sochalski, 1998; Lake, 2002; Sochalski, Estabrooks & Humphrey, 1999).

The development of the PES – NWI was conducted in 5 stages. First, 48 of the 65 items were selected because they met the definition of nursing practice environment which included the characteristics discussed earlier: autonomous decision making, clear nursing model, supportive leadership, structural supports/resources to provide quality care and collegial interdisciplinary relations. Next a factor analysis was conducted using principal axis factoring to identify subscales which yielded 3-15 possible subscales, all of which were tested. The most robust subscale structure was the model extracting five subscales using the Varimax rotation. Four of the five subscales and the composite

exhibited high internal consistency (alpha $\geq$ .80) and one subscale, Physician Collegiality was moderate at alpha $\geq$ .71. All the internal consistency results are presented in Table 4.

Reflecting on each item, respondents are asked to answer the global question: "This is present in my current job". Answers are provided using a four point Likert scale ranging from 1 (*Strongly Disagree*) to 4 (*Strongly agree*). However, since the unit of analysis (unit or organization) is not explicit in the global question, participants were asked to think about the unit where they work with the manager referred to in the MLQ section of the survey.

Table 4

Internal Consistency Results (Cronbach's Alpha) for each of the Five Subscales

in the PES-NWI Scale (Lake, 2002)

Subscale	Cronbach's Alpha
Nurse Participation in Hospital Affairs	.83
Nursing Foundations for Quality of Care	.80
Nurse Manager Ability, Leadership & Support of Nurses	.84
Staffing and Resource Adequacy	.80
Collegial Nurse- Physician Relations	.71
Composite	.82

Organizational citizenship behaviour. Given the evolving theory around the concept of OCB described earlier, it is not surprising that multiple scales have been developed to measure OCBs. Organ, Podsakoff and MacKenzie (2006) provide an

excellent review of 11 different scales, each with its own strengths in terms of psychometric properties and intuitive application in this study. Three of the 11 scales were considered more carefully for the purposes of this study. Two of the three had reasonable psychometric properties and were reasonable in length, however not all the items translated well for the clinical setting. Consequently, the tool deemed most suitable for this study is the OCB Scale (Moorman & Blakely, 1995).

This scale builds on the work of Graham (1989) who conceptualized OCB as a higher order concept of civic citizenship using four factors: Interpersonal Helping (helping others), Individual initiative (speaking up, or volunteering in order to improve personal or group performance), Personal Industry (carrying out duties beyond what is expected) and Loyal Boosterism (promoting the organization to outsiders). Moorman and Blakely maintained the same four factors but reduced the number of items on the scale from 49 to 19 (Organ, Podsakoff & MacKenzie, 2006). With the exception of Loyal Boosterism, many of the items on the other three subscales resonate well with a nursing population in a clinical setting. For example: "Frequently adjusts his/her schedule to accommodate other employees' requests for time off", "For issues that have serious consequences, expresses opinions honestly even when others may disagree", "Performs his/her duties with extra special care".

Respondents are asked to indicate their agreement or disagreement with each of the items using a 7 point scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). Organ, Podsokoff and MacKenzie (2006) point out there is substantial evidence to suggest that self reports of OCB behaviour do not correlate very highly with peer or supervisor reports. This is likely due to the fact that "when individuals are rating

themselves they may have a tendency to report their *intentions* as well as their actual

behaviour" (p. 316). Consequently, they do not generally recommend the use of self

report measures of OCB. Moreover, the unit of analysis in this study is at the unit or

group level so the referent for OCBs should also be at the unit and not the individual

level. Therefore, the questionnaire directs respondents to "think about the nursing peers

you work with most frequently" when answering the questions. Given this referent, the

items on the Loyal Boosterism subscale were not used as they are not readily observable

by peers on the unit.

Psychometric properties of this scale have been reported in only two studies and

overall they are very reasonable but with some limitations. Both Moorman and Blakely

(1995) and Blakely et al., 2003 reported confirmatory fit index (CFI) of .91 and .92

respectively. In addition the Tucker – Lewis Index (TLI) was .90 and RMSEA was .085.

Although Moorman and Blakely found that several items did not load highly onto the

intended factors of interpersonal helping and personal industry, Blakely et al. later found

that all factors loaded highly onto their intended factors with only 24 percent covariance

identified. Organ, Podsokoff and MacKenzie (2006) suggest that confirmation of

psychometric properties would be beneficial; therefore use of the scale in this study will

contribute to this knowledge gap. The internal consistency reliability scores reported for

each of the remaining subscales is summarized in Table 5.

Table 5

Internal Consistency Results (Cronbach's Alpha) for Each of the Subscales

(Moorman &Blakely, 1995; Blakely et al., 2003)

Subscale	Moorman & Blakely (1995)	Blakely et al., 2003
Interpersonal Helping	.74	. 91
Individual Initiative	.76	.90
Personal Industry	.61	.87

Patient safety culture. Since the IOM advocated the need to address organizational safety culture (Kohn et al., 2000), numerous tools have been developed to measure patient safety culture. Several have gained some prominence in the patient safety literature such as the Patient Safety Culture in Healthcare Organizations (PSCHO) (Singer et al., 2003), the Safety Attitudes Questionnaire (SAQ) (Sexton, Thomas & Grillo, 2004) and the Safety Climate Survey (SCS) (Sexton & Thomas, 2003). Given the recent changes to the Canadian Hospital Accreditation program, the modified Stanford Patient Safety Questionnaire (Singer et al., 2003) was initially considered for use in this study, since it is now a requirement for all hospitals to complete this questionnaire. Using this same tool would have provided the benefit of reducing duplication and survey fatigue for the staff nurse respondents and of allowing for broader comparisons with non study sites. However, approval was not obtained in time from Accreditation Canada to use the modified tool. Therefore The Safety Climate Survey (SCS) was selected as a psychometrically sound alternative.

In addition to the reasonable psychometric properties and practical considerations, the Safety Climate Survey (SCS) was selected for this study because it stems from the more extensive Safety Attitudes Questionnaire (SAQ), an instrument which encompasses six domains of patient safety culture that are consistent with the underlying theory of this model. However, at 60 items, the SAQ is considered burdensome, particularly when administered in conjunction with other scales.

The SCS is a 21 item instrument based on a subset of questions from the SAQ using a five point Likert response scale from 1 (*disagree strongly*) to 5 (*agree strongly*). This tool is differentiated from the Practice Environment Scale in that it is grounded in the patient safety culture features already described: non punitive response to error, ability to voice concerns, focus on systemic versus individual failures and so on. Examples of survey questions include: "The culture of this clinical area makes it easy to learn from the mistakes of others", "The physician and nurse leaders in my area listen to me and care about my concerns", "I believe most adverse events occur as a result of multiple system failures, and are not attributable to one individual's actions". Psychometric testing has been done on this tool with favourable results: test retest reliability of 0.85 – 0.92 and Cronbach's alpha values of 0.75 – 0.88 (Cho et al., 2005; Pronovost & Sexton, 2005). The SCS has been widely used in healthcare settings and is and has been endorsed by the Institute of Healthcare Improvement (IHI). Given the negative wording, question 18 is reverse scored. To calculate the safety climate mean, the ratings from questions 1, 2, 8, 9, 10, 11, and 18 (Appendix B) are summed and averaged. If they are answered as not applicable or left blank they are excluded from the denominator. Individual level data were aggregated to a unit level measure of patient safety climate.

In summary, the SCS was chosen because it has been widely used; is readily available and easy to administer; has reasonable psychometric properties; is of reasonable length to minimize survey burden and is broadly applicable across the organization.

Nurse job satisfaction. Multiple tools exist to measure nursing job satisfaction. Many, like the NJSS (Hinshaw & Atwood, 1983) include items related to work environment and are thus somewhat redundant given the tools already being used. Therefore, the Global Job Satisfaction Questionnaire (GJSQ) was selected as a concise measure of nurse job satisfaction. The GJSQ was derived from the Job Diagnostic Survey of Hickman and Oldham (1975). This much abridged version consists of four items framed in the first person and answered on a five point Likert scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*).

Nurse absenteeism, patient outcomes and demographic data.

Objective data for this study was collected for the fiscal quarter preceding the nurse survey (Jan – Mar 2012). This time frame was selected in order to obtain data that was as complete and close to the survey period as possible. The decision support departments in each hospital were enlisted to extract the nurse and patient outcome data retrospectively from existing hospital data bases.

Falls were calculated as number of reported falls/1000 patient days and medication errors was calculated as simply the number of medication errors reported during that quarter. Based on further consultation with hospitals and an attempt to ensure uniformity of reporting, the data collected for patient outcomes was modified slightly from that originally proposed. Methacyllin Resistant Staph Aureus (MRSA) was orginally selected as representative of hospital acquired infections. However, the rate of MRSA at the unit level for one quarter (3 month period) is exceedingly low. Therefore, in

order to obtain a viable number to run in the model, the definition of this variable was expanded to include Vancomycin Resistant Enterotoxin (VRE) and C-Difficile in addition to MRSA. Outbreaks were not reported as infection control experts considered this to be inconsistently applied across organizations. Thus hospital acquired infections was calculated as number of HAIs/1000 patient days.

Nurse absenteeism at the unit level is tracked in the finance/payroll department and was reported in two ways: 1) the number of absent days for the 3 month period on that unit and 2) the absenteeism rate, calculated as the number of absent days/number of staff for that unit. Hospitals were not consistently able to supply the number of hours lost through absenteeism so *that* data was not collected as originally planned.

A series of demographic questions are included at the end of the questionnaire such as gender, education, number of years worked and so on. The variables and the respective tools for measurement are summarized in Table 6 and the full questionnaire is presented in Appendix B.

Data Collection & Management

In order to ensure that all eligible units were included in the study, significant attention was given to soliciting an adequate number of responses both overall and within each unit. The questionnaires were delivered to the staff nurses via the unit clerk using a modified Dillman methodology (2007). In general, this procedure involves initial distribution of the survey along with a cover letter explaining the study; a reminder card in 2 weeks time; another reminder card/letter and survey to non respondents at 4 weeks. The procedure for this study was as follows:

Round 1: Initial "mail out"

- In all but 3 units, Survey packages were hand delivered to the unit and the process explained/discussed with the unit manager and /or the unit clerk

- At some sites, presentations were made to Nursing Practice Councils, Site management councils or other nursing leadership groups

- The study purpose and survey package was presented and reviewed

- The survey package included the survey (Appendix B), cover letter (Appendix C), stamped addressed envelope and a contact number for the researcher should participants have any questions

- The survey packages were then distributed (likely by the unit clerk) via the usual communication processes on that unit (i.e. individual staff mail slots, hanging files etc)

- Additional signage was prepared to post on the unit directing staff nurses where to find their surveys

- Participants were directed to return completed questionnaires to the Nursing Research Unit, University of Western Ontario in the stamped, addressed envelope provided

- The Nurse Manager received an information letter (Appendix C) directly via email and in hard copy

- Extra surveys and envelopes were kept in a manila envelope in a "neutral" location determined by the Unit Manager and staff in case staff misplaced their original copy

Round 2: 2 weeks later

- A batch of reminder/thank you cards (Appendix C) were mailed to the respective units to be delivered through the hospital mail

- A cover letter directed the Unit Clerks to distribute the cards in the regular mail slots/files as above

- Nurse Managers will receive a reminder letter to prompt staff to complete their surveys (Appendix C)

Round 3: another 2 weeks later

- Another set of survey packages were mailed to the units (numbers based on the number of nurses assigned to that unit minus the number of responses received from that unit)

- A cover letter directed the Unit Clerks to distribute the reminder cards to all staff as above and to place the additional survey packages in the pre determined neutral location

Each Survey was coded by site and unit, maintaining anonymity of the individual respondent. However, nurse managers are inherently identified to the researcher by virtue of the site/unit code. While this means the nurse managers are not anonymous, their confidentiality will be maintained when reporting data. Further, any reports generated for the hospitals will have the data aggregated by site so that results from a particular unit and thus a particular nurse manager will not be identified.

Table 6

Summary of Measurement Instruments used in this study

Variables	Instrument/Source	# Items
Independent Variables		
Transformational Leadership	MLQ – Rater Form	36
Supportive Practice Environments	PES-NWI	26
Organizational Citizenship	OCB Scale	13
Patient Safety Culture	SCS	21
Job Satisfaction	GJSQ	4
Dependent Variables		
Falls	Incident Reporting Data Base; CIHI	
Medication error	Incident Reporting Data Base	
Hospital Acquired Infections	DAD; CIHI; Hospital Quarterly reports	
Nurse Absenteeism	Human Resources; Payroll	
Demographic Data	Survey	

Data from each survey was entered into an SPSS software program for data

cleaning and analysis. Data coding and entry was verified by a research assistant to

detect and correct any data entry errors prior to analysis. Prior to aggregation, missing or

incomplete data was managed using the maximum likelihood estimation approach. This

approach does not delete entire cases with missing data elements, allowing the case to be

used for analysis. The statistical software assumes the missing data are based on a

random pattern and selects estimates which are most likely to reproduce the observed

data from other cases (Kline, 2005).

Data Analysis

Constructs such as those proposed in this model are often measured at multiple levels in recognition of the fact that individuals do not operate in a vacuum but rather in the context of a group or organization. The individual staff nurses in this study are nested in groups by unit. Hence, individual level data were aggregated up to the unit level for all variables and objective clinical outcome data were retrieved at the unit level. When using inferring group meaning from individual data, it is important to remember that while constructs may refer to virtually the same content at different levels, they may also have different meaning or relationships at different levels. Therefore it is necessary to justify the aggregation of individual measures up to a group level measure. Chan (1998) developed a typology of five Composition Models to provide a framework for this justification in multilevel research. Of the five composition models, the Direct Consensus Model was selected for this study to determine whether the meaning at the group/unit level is based on the *shared* perceptions (consensus) of the individuals within that group.

Within-group variance was assessed prior to aggregation to ensure that it is substantially less than between group variance (Rousseau, 1985; Verran et al., 1992). Klein (2005) recommends that a number of criteria be used to determine the amount of within group variance (or agreement within the group) since the number and size of groups can influence the results for each index used to test for aggregation. The formula to calculate within group agreement specifically addresses multiple item scales and minimizes the overestimation of inter rater agreement:

$$r*WG(J) = \frac{1-s^2xj}{s^2EU}$$

where s^2xj is the mean of observed variances on J items (J is the number of items in the scale) and s^2EU is the expected variance under a uniform null distribution. The value of the within-group agreement index should be greater than .70 assuming uniform null distribution (i.e. greater than would be expected by chance) to establish sufficient consensus and justify aggregation (Glick, 1985).

Between group variance was assessed using two indices: Intra-class correlation (ICC) (1), ICC (2). ICC (1) represents the proportion of variance in the target variable that is accounted for by group membership and is calculated using a one way ANOVA and the following formula:

$$ICC (1) = \frac{MSB - MSW}{MSB + [(k-1)*MSW]}$$

where MSW is the within group mean square and k is the group size. A value between .05 and .20 would be required to support aggregation. The ICC (2) was calculated using the following formula:

$$ICC (2) = \frac{MSB - MSW}{MSB}$$

where higher values indicate reliable between group differences. Klein (2005) recommends a value of .70 to support aggregation.

Demographic data were analysed using descriptive statistics such as mean, standard deviation (SD), and t- statistics to evaluate group characteristics. Different clinical groups (i.e. medicine, surgical, critical care etc.) were compared using one-way ANOVA.

Observed Variable Path Analysis in Structural Equation Modelling (SEM) was used to test and refine the model (Munro, 2005). SEM tests two models simultaneously: the theoretical model (model of hypothesized relationships) and the measurement model

(measurement data of the theoretical constructs). The validity of the theoretical model depends on how well the measurement model fits the data (Munro, 2005). Therefore the following Fit Indices were used to evaluate the goodness of fit between the hypothesized model and the observed data: model chi- square, standardized root mean square residual (SRMSR), root mean square error of approximation (RMSEA), and comparative fit index (CFI) (see Chapter 4). In addition, in order to examine the indirect effects of both transactional and transformational leadership on the outcomes, the indirect effect test was used along with the bootstrap procedure (MacKinnon, 2008) to compute the confidence interval for each indirect effect.To test for the moderating effect of transformational leadership, the model was run first with transactional leadership alone, then with both transactional and transformational leadership combined as an interaction term.

Ethics

Ethical approval was obtained from the Ethics Review Board at the University of Western Ontario and at each of the hospitals. Consent was implied by the completion of the survey and explained in the participant cover letter. A complimentary certificate for Tim Horton's coffee was included with each survey package as an anticipatory thank you for completing the survey. Previous studies have found this modest token to be a helpful strategy in enhancing response rates while avoiding any undue duress on the participants. Staff nurses were assured of anonymity and confidentiality should they choose to respond. Participation was entirely voluntary and respondents could refuse to answer any question on the survey or call the researcher at any time with questions or concerns. While several participants elected to skip questions or opted not to complete a survey altogether, no calls of clarification or concern were received.

As previously stated, questionnaires were coded as to site/unit only so as to

maintain individual respondents' anonymity. In addition, unit data were further aggregated to site level so that Nurse Managers could not be identified. Similarly, inter hospital reports were blinded so that each hospital will be able to see their own data relative to the other hospitals but those hospitals will be identified only by a code. Returned surveys were stored in a locked file cabinet and will be kept for up to one year after study completion. Electronic files remain password protected.

CHAPTER 4

RESULTS

This chapter will focus on the findings from the survey and the analysis of the model. Descriptive and comparative findings will be reported followed by a more detailed analysis of the relationship between the variables and a statistical analysis of the hypothesized model using structural equation modeling (SEM).

Descriptive Statistics

Response Rates

Of the 4974 eligible nurses across the 136 inpatient units in seven hospitals within the Waterloo Wellington and Hamilton Niagara Haldimand Brant LHINs, 1735 surveys were returned for an overall 35% response rate (Table 8). Three percent (n=57) returned surveys stating they opted not to participate reducing the number of usable surveys to 1678 (34%). Respondents were primarily female, full time, diploma prepared licensed registered nurses (RNs). The average age was 43 years. The average number of years within the organization was 14 years and the average number of years reporting to their current manager was 4 years (Table 7).

Of the seven hospitals included in the study, three were teaching hospitals and four were "community" hospitals. Each had varying numbers of inpatient units (range: 7 – 44) and specialties (range 5 – 8). The majority of respondents worked at a teaching hospital (61 %) and in a Medical (20%), Surgical (18%) or Critical Care (20%) unit (Tables 8 and 9).

Table 7

Demographic Characteristics of the Respondents

Variable	Mean	SD
Age (years)	43.3	11.6
Time reporting to current nurse manager (years)	4.0	5.6
Experience in current position (years)	13.0	12.1
Experience in this specialty (years)	11.4	10.6
Experience in this organization (years)	14.0	11.6
	N	**% ***
Licence		
RN	1325	79%
RPN	326	19%
Employment Status		
Full Time	1175	70%
Part Time	463	28%
Gender		
Female	1547	92%
Male	92	6%
Education completed:		
Diploma in Nursing	1119	67%
Baccalaureate in Nursing	450	27%
Masters/PhD in Nursing	16	1%
Specialty Certificate	218	13%
Baccalaureate NOT in Nursing	61	4%
Masters/PhD NOT in Nursing	5	.3%

* Percentages do not add up to 100% because some respondents did not complete the item for license, employment status or gender; regarding the education item, it is possible to select more than one option as nurses will often have more than one certificate or diploma/degree.

Table 8

Response Rates by Type of Hospital and Unit

Hospital	Teaching (T) Non Teaching (NT)	# Sites	# Units	# Eligible Nurses	# Responses	% Response
B	T	2	30	1084	391	36%
D	T	4	44	1906	630	33%
Response Rate within T Hospital Group				2990	**1021**	34%
A	NT	4	28	795	261	33%
C	NT	1	7	284	88	31%
E	NT	1	8	293	97	33%
F	NT	1	14	341	123	36%
G	NT	1	7	271	88	32%
Response Rate within NT Hospital Group				1984	**657**	33%
Overall Response Rate				4974	**1678**	**34%**
Overall Response Rate from Teaching Hospitals				1678	1021	61%
Overall Response Rate from Non Teaching Hospitals				1678	657	39%

Table 9

Response Rates within Unit Specialty Groups

Unit Specialty	N	%
Medicine	335	20%
Surgery	296	18%
Critical Care	334	20%
Rehabilitation	94	6%
Maternal Child	275	16%
Mental Health	135	8%
Complex Continuing Care	63	4%
Paediatrics	19	1%
Other	21	1%
Unknown	106	6%
Totals	1678	100%

Data Aggregation

The variables in this model, although measured at an individual level, are often influenced by the context in which they operate. For example "culture" may be rated from an individual's perspective but it is really created in a collective way and subject to structural, organizational, team characteristics and other contextual factors. It is reasonable to assume that individuals working together in the same environment might perceive things similarly. Applying Chan's typology of composition models (1998), a direct-consensus approach was used whereby each of these variables measured at the individual-level were conceived to be isomorphic, or functionally similar, to group-level constructs. Therefore, the meaning of the group-level constructs was derived from the consensus among individuals who are members of each group, in this case the unit nursing team (Chan, 1998).

Operationally, individual-level data for the aforementioned variables were aggregated to the group-level for subsequent analysis. Empirical support to justify aggregation and support construct validity was achieved by determining the degree to which individuals within a group agreed (within-group agreement) and the degree to which groups varied on these constructs (between-group variability) (Chan, 1998). Klein et al. (2000) recommend that a number of criteria be used since the number and size of groups may influence the results for each index used to test for aggregation.

Within-group agreement was tested using a specific form of rWg, i.e. $r^*_{WG(J)}$ for multiple-item scales where the Spearman Brown correction is removed to prevent overestimation of inter-rater agreement (Lindell, Brandt & Whitney, 1999). Four of the six variables met the recommended cut-off value of .70 for acceptable within group

agreement (Klein et al., 2000) with the exception of organizational citizenship behaviours and job satisfaction.

Between-group analysis was completed by using two indices: ICC (1), ICC (2). The first type of intra-class correlation, or ICC (1), represents the proportion of variance in the target variable that is accounted for by group membership (Bleise, 2000). Klein et al. (2000) recommend a significant F-test for ICC1 to support the aggregation of data to the group level. Bliese (2000) reported that typical values for ICC (1) are between .05 and .20 and rarely greater than .30. Overall ICC (1) results supported aggregation: ICC (1) average measure = .175, F = 1.08, p =.02. ICC (2) analysis generates higher expected values and a recommended cut-off of .70 is deemed acceptable for aggregation (Klein, 2000). Again, overall results met this standard with ICC (2) average measure = .811, F= 5.287, p <.001. However, when analysed at the variable level, three variables: practice environment, organizational citizenship behaviours and patient safety culture fell slightly below the ideal .70 cut-off. In summary, results indicated a satisfactory level of consensus among the nurses within each unit to justify aggregation.

Table 10

Unit Level Intraclass Correlation Coefficients and rWg Statistics

Variable	ICC(1)	ICC(2)	r_{Wg}
Transactional	.21	.77	.81
Transformational	.27	.82	.70
Practice Environment	.15	.68	.92
Org. Citizenship Behaviors	.12	.62	.51
Patient Safety Culture	.14	.67	.81
Job Satisfaction	.16	.70	.58

Note. The average group size for the Unit level of 12 was used for ICC1.

To aggregate the individual data up to the unit level for analysis, scores were first calculated for the subscales and full scales at the individual level (for each respondent). Then, the subscale and full scale scores were calculated for each of the 136 units. Further, the aggregated file was split by teaching and non teaching hospitals, by specialty areas and by education and license to obtain mean differences between these groups.

Survey Variables

Minimal differences in variable means were found between teaching and non teaching hospitals (Tables 10 & 11). Nurses from teaching hospitals tended to rate their managers as slightly more transformational (M= 2.02, SD = .55, on a 4 point scale) and slightly more transactional (M= 1.95, SD = .37) than did those from non teaching hospitals (M= 1.78, SD = .52 and M= 1.87, SD = .34 respectively). Similarly RPNs rated their managers higher than did RNs on both transformational and transactional leadership (M= 2.00, SD = .86 and M= 2.03, SD = .66 respectively.) Degree prepared nurses reported the lowest scores in transformational and transactional leadership of their managers (M= 1.74, SD = .90 and M= 1.81, SD = .63) (Table 12).

Nurses from complex continuing care units rated their managers the highest in both transformational (M= 2.18, SD= .54) and transactional (M = 2.21, SD= .39) leadership. Nurses from mental health and pediatric units follow closely with transformational leadership means of 2.11 (SD = .50) and 2.04 (SD = .70) respectively, and transactional leadership means of 2.04 (SD = .29) and 2.07 (SD = .50) respectively.

Table 11

Scale and Subscale Means by Teaching and Non Teaching Hospitals

Variable (Scale/Subscale)		Non Teaching		Teaching		Overall	
	Range	Mean	SD	Mean	SD	Mean	SD
Transactional Leadership (TXSc)	0-4	1.87	.34	1.95	.37	1.93	.36
Management by Exception Active (MBEASS)	0-4	2.06	.40	1.99	.41	2.01	.41
Contingent Reward (CRSS)	0-4	1.68	.64	1.92	.59	1.85	.61
Transformational Leadership (TFSc)	0-4	1.78	.52	2.02	.55	1.96	.55
Intellectual Stimulation (ISSS)	0-4	1.66	.52	1.88	.50	1.82	.52
Idealized Influence Behaviours (IBSS)	0-4	1.90	.48	2.09	.53	2.04	.53
Idealized Influence Attributes (IASS)	0-4	1.77	.65	2.08	.63	2.00	.65
Inspirational Motivation (IMSS)	0-4	2.21	.55	2.34	.63	2.31	.61
Individual Consideration (ICSS)	0-4	1.37	.63	1.67	.60	1.59	.62
Supportive Practice Environments (PESSc)	1-4	2.55	.22	2.45	.23	2.48	.23
Adequate Resources (ARSS)	1-4	2.33	.33	2.21	.36	2.25	.36
Collegial Nurse Relations (CNSS)	1-4	2.80	.37	2.27	.37	2.79	.37
Nursing Quality Care (NQCSS)	1-4	2.77	.20	2.65	.22	2.68	.22
Nurse Participation (NPSS)	1-4	2.30	.26	2.21	.26	2.23	.26
Organizational Citizenship Behaviours (OCBSc)	1-7	5.34	.49	5.07	.57	5.14	.56
Interpersonal Helping (IHSS)	1-7	5.50	.52	5.23	.59	5.30	.58
Individual Initiative (IISS)	1-7	5.09	.49	4.89	.59	4.94	.57
Personal Industry (PISS)	1-7	5.40	.57	5.04	.64	5.13	.64
Patient Safety Climate (SCSc)	*1-6	3.77	.30	3.65	.35	3.68	.34
Job Satisfaction (JSSc)	1-5	3.26	.47	2.98	.53	3.05	.53

* A score of 6 = "not applicable" ; less than 10 questions in the entire data set were scored as 6 and these were treated as missing data points; therefore mean should be interpreted on a 1-5 point scale.

Overall, nurses rated their practice environments as moderately supportive (M= 2.48, SD = .23, on a 4 point scale). Nurses in teaching hospitals rated this variable slightly lower than did those from non teaching hospitals. Further, the scores suggest that collegial nursing relations are slightly better in the non teaching hospitals (M= 2.80, SD= .37) than in the teaching hospitals (M= 2.27, SD = .37). Little variation was found between unit specialties in perceptions of supportive practice environments with mental health units rating the highest (M= 2.60, SD = .17) and medicine units rating the lowest (M= 2.39, SD = .25). When examining the two factors of license type and education level, it was noted that RPNs rated their practice environments the highest (M= 2.54, SD = .42), while degree prepared nurses scored lowest on this variable (M= 2.33, SD = .38).

Nurses across most units perceived their peers to be highly engaged in organizational citizenship behaviours (OCB) with an overall mean score of 5.14 out of 7. Non teaching hospitals scored this variable even higher (M= 5.34, SD = .49). Teaching hospitals scored lower (M= 4.89, SD = .59) than non teaching hospitals (M= 5.09, SD = .49) on the Individual Initiative item. Pediatric and critical care nurses rated OCB the highest with a mean for both specialties of 5.35 (SD = .45 and .40 respectively), while complex continuing care (M= 4.92, SD = .60) and medicine (M= 4.95, SD = .65) scored the lowest. RNs, RPNs, and diploma prepared nurses were all equally positive about OCBs on their while degree prepared nurses scored highest on this variable (M= 5.30, SD = .91).

Table 12

Scale Means by Unit Specialty

Variable	Medicine		Surgery		Critical Care		Rehab		Mat Child		Mental Health		Complex Cont Care		Peads	
	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD
Transactional Leadership	1.92	.38	1.94	.26	1.73	.29	1.78	.29	1.94	.48	2.04	.29	2.21	.39	2.07	.50
Transformational Leadership	1.95	.60	1.93	.46	1.73	.50	1.96	.55	1.89	.57	2.11	.50	2.18	.39	2.07	.50
Supportive Practice Environments	2.39	.25	2.49	.18	2.46	.18	2.52	.29	2.51	.20	2.60	.17	2.44	.18	2.53	.36
Organizational Citizenship Beh.	4.95	.65	5.17	.50	5.35	.40	5.25	.66	5.28	.49	5.23	.53	4.92	.60	5.35	.45
Patient Safety Culture	3.55	.35	3.71	.27	3.63	.27	3.80	.45	3.79	.27	3.82	.34	3.78	.27	3.61	.44
Job Satisfaction	2.81	.57	2.98	.40	3.19	.54	3.28	.60	3.29	.37	3.17	.40	3.18	.40	3.06	.76

Most nurses also perceived their units to have a strong safety culture, with an overall mean score of 3.68 (SD = .34) out of 6. However, it should be noted that a score of six means "non applicable" and the frequency of this score being applied in this study is miniscule (less than ten questions in the entire data set were scored as a six). Therefore these few questions were treated as missing data and the mean calculated on the remaining 1-5 point scale. Nurses from non teaching hospitals rated safety culture just slightly higher (M= 3.77, SD = .30) than did nurses from teaching hospitals (M= 3.65, SD = .35). While little variation was found between unit specialties, mental health, rehabilitation and maternal child scored the highest on this scale (M= 3.82, SD = .34; M= 3.80, SD = .45; M= 3.79, SD = .27 respectively). RPNs appear to have the most positive perception of unit safety culture (M= 3.78, SD = .65) compared with their RN counterparts and Degree prepared nurses rate this the least positively (M= 3.50, SD = .59).

Overall nurses are reasonably satisfied in their jobs (M= 3.05, SD = .53, on a 5 point scale) but again, nurses from non teaching hospitals are slightly more satisfied (M= 3.26, SD = .47) than their teaching hospital counterparts (M= 2.98, SD = .53). Job satisfaction was rated highest by nurses on maternal child units (M= 3.29, SD = .37) and lowest by nurses on medicine units (M= 2.81, SD = .57). RPNs reported being more satisfied with their jobs than RNs (M= 3.12, SD = .97 and M= 3.03, SD = 1.01 respectively) while diploma prepared nurses appear to be more satisfied than degree prepared (M= 3.04, SD = 1.03 and M= 2.86, SD = .91 respectively).

Table 13

Scale Means by License and Education

Variable (Scale/Subscale)	Range	RN (n=1325)		RPN (n=326)		Diploma (n=1119)		Degree (n=450)		Overall (n=1678)	
		Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Transactional Leadership (TXSc)	0-4	1.88	.71	2.03	.66	1.90	.66	1.81	.63	1.93	.36
Transformational Leadership (TFSc)	0-4	1.88	.93	2.00	.86	1.91	.89	1.74	.90	1.96	.55
Supportive Practice Environments (PESSc)	1-4	2.46	.43	2.54	.42	2.45	.42	2.33	.38	2.48	.23
Organizational Citizenship Behaviours (OCBSc)	1-7	5.17	1.06	5.12	1.12	5.19	1.13	5.30	.91	5.14	.56
Patient Safety Climate (SCSc)	*1-6	3.66	.66	3.78	.65	3.70	.65	3.50	.59	3.68	.34
Job Satisfaction (JSSc)	1-5	3.03	1.01	3.12	.97	3.04	1.03	2.86	.91	3.05	.53

* A score of 6 = "not applicable"; less than 10 questions in the entire data set were scored as 6 and these were treated as missing data points; therefore mean should be interpreted on a 1-5 point scale.

Patient and Nurse Outcome Variables

Falls were more prevalent in teaching hospitals (M= 4.05, SD = 4.2) than in non

teaching hospitals (M= 2.90, SD = 3.1). Conversely, medication error was more

prevalent in non teaching hospitals (M= 13.39, SD = 13.7) than in teaching hospitals (M=

4.66, SD = 5.1). Similarly, absenteeism is higher in non teaching hospitals (M= .10, SD =

.21) than in teaching hospitals (M= .05, SD = .03) (Table 14).

Table 14

Comparison of Patient Outcome Means by Non Teaching vs Teaching Hospitals

(Jan–Mar 2012)

Variable	Non teaching		Teaching	
	M	SD	M	SD
Falls (# falls/1000 patient days)	2.90	3.1	4.05	4.2
Med Error (# reported med errors)	13.39	13.7	4.66	5.1
Hospital Acquired Infections (# of HAIs/1000 patient days)	3.19	4.5	3.66	5.4
Absent rate (# absent days /# of staff on that unit)	.10	.21	.05	.03

Falls were highest on medicine units (M= 5.31, SD = 3.9) and not surprisingly, it

was lowest on maternal child units (M= .160, SD = .49). Likewise, medicine units had

the highest mean for medication error (M= 8.75, SD = 10.5), but pediatrics was the

lowest (M= 2.17, SD = 1.5). Mental health, maternal child and pediatric units had the

lowest rates of hospital acquired infection (M= .060, SD = .25; M=.140, SD=.36 and

M=.830, SD=2.0 respectively). Complex continuing care units had a substantially higher

rate with a mean of 8.11 (SD=4.4). Absenteeism rates were fairly consistent across all units (mean range .039 - .055) with the exception of pediatrics with a mean of .240 (Table 14).

Each of the outcome variables is reported in a different way: falls/1000 patient days; HAI/1000 patient days; number of medication error reports; number of absent days/number of staff for that unit. Given these differences, the data were extremely skewed (Kurtosis: falls = 8.59; medication error = 5.03; HAI = 15.19; absenteeism rate = 107.30). In order to run the model, the Chi Square for this non normal data was adjusted using robust maximum liklihood and computing the square root for each variable.

Preliminary Analysis

A bivariate correlational analysis was conducted to obtain Pearson Coefficients and revealed several significant correlations among the variables (Table 15). The strongest and most significant ($p<.01$) positive relationships exist between supportive practice environments and safety culture (r=.807), and supportive practice environments and job satisfaction (r= .798). Likewise, strong, significant, positive relationships exist between transactional and transformational leadership (r= .792, $p<.01$) and between safety culture and job satisfaction (r= .733, $p<.01$). The high correlations between supportive practice environments and safety culture and, between transactional and transformational leadership, may be due in part to multicollinearity as some of the items in each of the respective scales are similar.

Leadership has a moderate and significant positive correlation with supportive practice environments, safety culture and job satisfaction but transformational leadership is stronger than transactional leadership in all three relationships (r=.51, .47; r= .49, .41;

r=.42, .31 respectively). Similarly, organizational citizenship behaviours are moderately and significantly related to safety culture (r= .54) and job satisfaction (r=.58).

Of particular interest are the correlations between some of the predictor variables and the patient outcome variables (Table 16). Supportive practice environments, organizational citizenship behaviours and job satisfaction all significantly correlate with hospital acquired infections (r= -.280, p<.01; -.239, p<.05; -.231, p<.01 respectively). Job satisfaction also appears to be significantly and inversely related to falls (r= -.240, p<.05). Most of the relationships are in the direction hypothesized but there are some exceptions. For example both transactional and transformational leadership have a positive versus an inverse relationship with patient falls. Only transformational leadership and safety culture have the expected inverse relationship with absenteeism Rates; the rest of the variables have a positive relationship with absenteeism rates. Finally, supportive practice environments were expected to decrease the number of medication errors but the direction of the relationship does not support this assumption.

Table 15

Correlations

	TX	TF	SPE	OCB	PSC	JS	Falls	Med Error	HAI	Absenteeism
TX	1.00									
TF	.79**	1.00								
SPE	.47**	.51**	1.00							
OCB	.17*	.16	.49**	1.00						
PSC	.41**	.49**	.81**	.54*	1.00					
JS	.31**	.42**	.80**	.58**	.73**	1.00				
Falls	.10	.08	-.11	-.14	-.07	-.24*	1.00			
Med Error	-.02	-.09	.00	-.19	.00	-.09	.31*	1.00		
HAI	-.04	-.06	-.28**	-.24*	-.16	-.23**	.29	.17	1.00	
Absenteeism	.04	-.04	.06*	.07	-.01	.06	-.05	.19	.07	1.00

* p<.05　　** p< .01

TX = Transactional Leadership; TF = Transactional Leadership; SPE = Supportive Practice Environments; OCB = Organizational Citizenship Behaviours; PSC = Patient Safety Culture; JS = Job Satisfaction; HAI = Hospital Acquired Infection

Table 16

Comparison of Patient Outcome Means by Unit Specialty

Variable	Medicine		Surgery		Critical Care		Rehab		Mat Child		Mental Health		Complex Cont Care		Pediatrics	
	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD
Falls (# falls/1000 patient days)	5.31	3.9	4.61	3.6	1.69	2.6	4.61	3.6	.160	.49	4.78	6.2	4.68	3.0	1.33	2.0
Med Error (# reported med errors)	8.75	10.5	4.67	4.0	6.00	6.7	4.67	4.0	3.00	5.2	4.31	3.8	5.11	8.2	2.17	1.5
Hospital Acquired Infections (# of HAIs/1000 patient days)	4.90	5.0	2.67	1.8	3.40	3.3	2.67	1.8	.140	.36	.060	.25	8.11	4.4	.830	2.0
Absenteeism (# absent days/# of nurses on unit)	.042	.02	.055	.03	.055	.04	.055	.03	.057	.02	.039	.04	.055	.02	.240	.52

Model Results

The results from the Observed Variable Path Analysis of the hypothesized model are presented in Figure 4. Moderation was tested using the interaction term of transformational leadership and transactional leadership (TF x TX). The values for the interaction term were centered to the mean to account for variation (high/low) in the mean values of each: TF and TX. Fit Indices were reasonable: $\chi 2$ (df =31) =59.975, p= .00; CFI = .930; TLI = .883; RMSEA = .083; SRMR = .066. However, evidence of moderation was not found (β = -.004, p = .957) and hypothesis 1b was not supported. Therefore moderation was removed and the model respecified resulting in the following fit indices results: χ^2 (df = 22) = 40.72, p = .008; CFI = .958; TLI = .916; RMSEA = .079; SRMR = .045. The Chi Square value does not support goodness of fit likely due to the small sample size of 136 units. However, the other fit indices do reflect an improved fit over the hypothesized moderation model and the co efficients were unaffected (Figure 4).

Transformational leadership (β = .38, p<.01) had a larger and more significant effect on supportive practice environments than did transactional leadership (β = .17, non significant). Thus hypothesis 1a was not supported. Consistent with hypotheses 2, 3, and 4, significant relationships were found between supportive practice environments and organizational citizenship behaviours (β = .49, p<.01); organizational citizenship behaviours and patient safety culture (β = .18, p<.01); patient safety culture and nurse job satisfaction (β= .17, p< .05). Hypothesis 5 was partially supported: Job satisfaction had a medium and significant inverse effect on patient falls (β = -.38, p<.01), a small but significant effect on hospital acquired infections (β = -.23, p<.05) but an insignificant effect on medication error and absenteeism (Table 17).
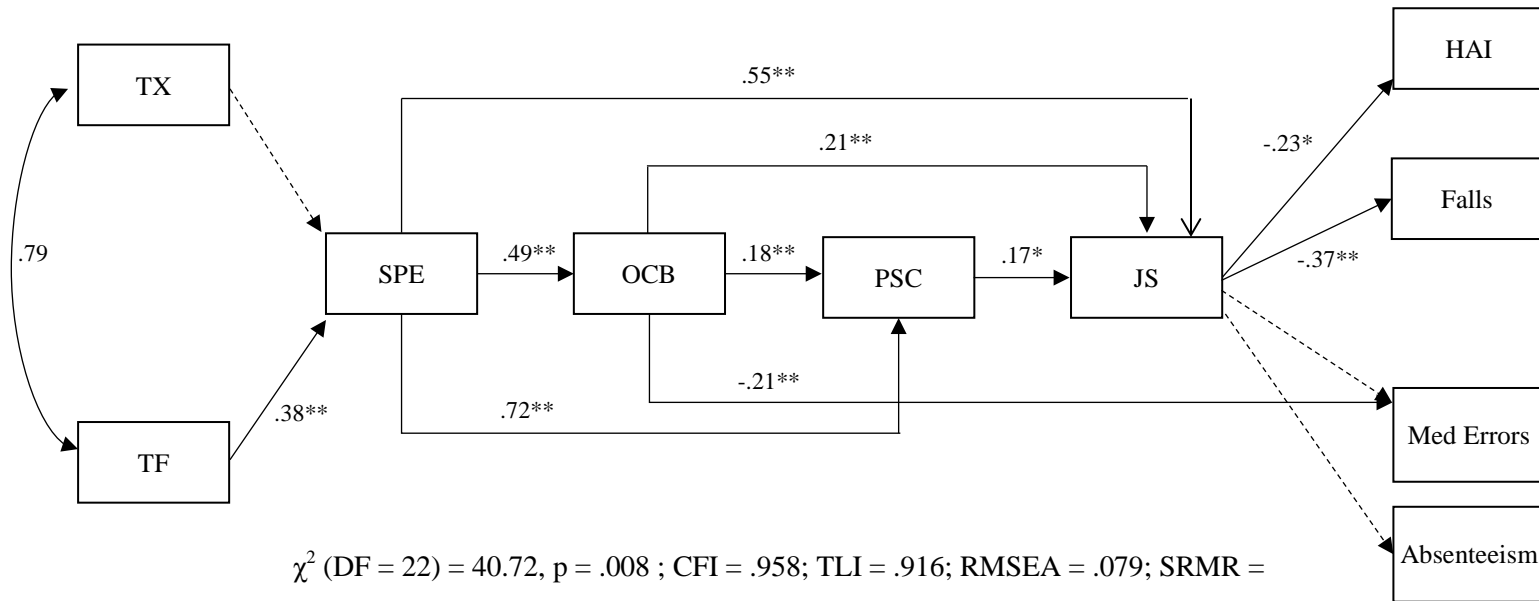
χ^2 (DF = 22) = 40.72, p = .008 ; CFI = .958; TLI = .916; RMSEA = .079; SRMR =

** p< .01   * p<.05   -----► Non Significant Path

TX = Transactional Leadership; TF = Transactional Leadership; SPE = Supportive Practice Environments; OCB = Organizational Citizenship Behaviours; PSC = Patient Safety Culture; JS = Job Satisfaction; HAI = Hospital Acquired Infection

Figure 4. Transformational Leadership impact on Practice Environments, OCB, Safety Culture, Job Satisfaction and Outcomes

Table 17

Direct and Indirect Effects

Dependent Variable	Independent Variable	Direct Effects		Indirect Effects	
		β	S.E	β	S.E
SPE	TX	.17	.13		
	TF	.38**	.13		
OCB	SPE	.49**	.06		
PSC	OCB	.18*	.06		
	PES	.72**	.04		
	PSC	.17*	.08		
	PES	.55**	.08		
	OCB	.21**	.06		
HAI	JS	-.27*	.11		
	PSC	-.00	.10		
	PES	.00	.00		
	TF			-.07*	-1.9
Falls	JS	-.37**	.11		
	PSC	.17	.11		
	TF			-.08*	-1.8
Med Error	JS	.03	.09		
	OCB	-.21**			
	TF			-.04*	-1.7
Absenteeism	JS	.17	.16		
	PSC	-.16	.10		

** p< .01   * p< .05

Four additional significant direct relationships were revealed based on modification indices. Supportive practice environments had a large effect on both patient safety culture (β = .72, p<.01) and a large effect on job satisfaction (β = .55, p<.01). Organizational citizenship behaviours had a small but significant effect on both job satisfaction (β = .21, p<.01) and medication errors (β = -.21, p<.01). Finally, one of the most important findings involves three significant indirect pathways. Results indicate that transformational leadership has an indirect effect on falls through supportive practice environments and job satisfaction (β = -.08, p<.05). Secondly, transformational

leadership affects medication error indirectly through supportive practice environments and organizational citizenship behaviours (β = -.04, p<.05). The third path demonstrates that transformational leadership has an overall indirect effect on hospital acquired infections (β= -.07, p< .05). Other indirect effects were not found to be significant which may be attributable to the sample size.

Summary of Overall Findings

A predictive model hypothesizing the effect of transformational and transactional leadership on practice environments, organizational citizenship behaviours, patient safety culture, job satisfaction and patient outcomes was tested using Observed Variable Path Analysis in Structural Equation Modelling. Model fit indices and coefficients supported most of the hypothesized relationships in the model.

While moderation was not supported, transformational leadership had more of an impact than did transactional leadership on supportive practice environments. Significant effects were found in all of the subsequent theorized relationships: practice environments and organizational citizenship behaviours; organizational citizenship behaviours and patient safety culture; patient safety culture and job satisfaction; and job satisfaction and outcomes. Four additional direct paths were found between practice environments and 1) job satisfaction, and 2) safety culture; and, OCB and 1) job satisfaction, and 2) medication error. Patient outcomes of falls and hospital acquired infections were found to be significantly related to nurse job satisfaction. Of particular note, the data further suggests that transformational leadership may reduce patient falls, medication errors and hospital acquired infections through the mediating variables of supportive practice environments, organizational citizenship behaviours, patient safety culture and nurse job satisfaction. A more in depth discussion of these results is presented in Chapter 5.

CHAPTER 5

DISCUSSION

The hypothesized model which examined the effect of transformational and transactional leadership on practice environments, organizational citizenship behaviours, patient safety culture, job satisfaction and patient outcomes was partially supported by the data. Transformational leadership significantly influenced nurses' perceptions of a supportive practice environment, and ultimately important patient outcomes. Moderation of the relationship between transactional leadership and practice environments was not supported; however, transformational leadership was shown to have indirect effects on objectively measured patient outcomes. This is the first study we are aware of that demonstrates a significant link between transformational leadership and objective measures of nursing sensitive outcomes, and as such it makes a unique contribution to the literature.

Significant effects were found between all but three of the theorized relationships in the model. Four additional significant direct paths were revealed along with three significant indirect paths. As hypothesized, nurse job satisfaction had a significant negative effect on patient falls and hospital acquired infections. In addition, transformational leadership had a significant indirect effect on patient falls through the mediating variables of supportive practice environments and job satisfaction; a significant indirect effect on medication error through practice environments and organizational citizenship behaviours; and a significant overall indirect effect on hospital acquired infections. These results demonstrate that transformational leadership may significantly impact the creation of supportive nursing practice environments which in turn foster a unit culture that positively impacts nurse sensitive patient outcomes. Therefore, this study

supports the recommendations made in the seminal Report from the Institute of Medicine (IOM. 2004) in which they advocated for strong leadership and attention to practices, work environments and culture focused on patient safety and improved outcomes.

<center>**Leadership**</center>

Transformational leadership had twice the strength of association (β = .37, p<.01) than did transactional leadership (.17, non significant) on supportive practice environments. This is consistent with numerous other studies that found transformational leadership to be more strongly and significantly associated with a variety of variables including safety climate (Zohar and Luria, 2004), satisfaction with leader (Judge and Piccolo, 2004), and job satisfaction (Doran et al, 2004). Transformational leaders embody attributes such as charisma and vision and employ behaviours such as mutual problem solving and attending to the individual needs of staff members to literally "transform" individuals and organizations by 1) raising followers' levels of consciousness about the importance and value of specified and idealized goals; 2) getting followers to transcend their own self-interest for the sake of the team or organization; and 3) moving followers to address higher level needs (Bass &Avolio, 1994).

Therefore, the stronger association between transformational leadership and supportive practice environments makes sense. Supportive practice environments have features that extend beyond the concrete resources to do the job such as access to equipment, manageable patient assignments and so on. Autonomy, input into decisions, collegial relationships and perceptions of the quality of care are all examples of less "concrete" but vital features of a supportive practice environment. The characteristics of transformational leadership described above are more likely to align with these features of supportive practice environments. For example idealized influence (both attributes and

behaviours) is based on strong ethics and values which promote high standards of care, encourages nursing decision making, and foster team collegiality and respect. Individual consideration will ensure staff has the appropriate opportunities for growth and development. Finally, inspirational motivation will contribute to a strong nursing vision/presence within the unit's multidisciplinary team.

It should be noted however, that transformational and transactional leadership are highly correlated (β = .79) which indicates transactional leadership is still an important contributor to the creation of positive work environments. Transactional leadership is an effective set of leadership behaviours based on reciprocal "transactions" aimed at achieving specific work objectives and meeting important operational needs such as ensuring appropriate staffing and equipment availability. In addition, the effective transactional leader will use a proactive approach to monitor staff behaviour, anticipate problems and take corrective action before they occur (Judge & Piccolo, 2004). These behaviours logically will have some degree of influence on a supportive practice environment and a positive safety culture despite that a significant effect was not found in this study.

One might expect that the factor of individual consideration would be a more significant contributor to nurses' perceptions of transformational leadership as this reflects the manager's interest and investment in the personal goals/needs of the staff nurse. However, in this study individual consideration does not play as great a role in the perception of transformational leadership. Rather, inspirational motivation was the highest component of the transformational leadership mean score (M= 2.31). This suggests that transformational leaders influence nurses on a more fundamental or emotional level than simply providing opportunities for growth and development. This is

consistent with Avolio and Bass' premise that transformational leaders do "move people to a higher level beyond their personal needs" (2004).

Nurses from teaching hospitals tended to rate their managers as slightly more transformational and transactional than did those from non teaching hospitals. This is similar to findings from Al- Mailam (2004) who found that nurses in the more resource rich environments of private hospitals (comparable in some ways to that of larger teaching hospitals) tended to rate their managers as more transformational. Similarly, in the National Health System study, Bowles & Bowles (2000) found that nurses in the Nursing Development Units (NDUs) (designated as "centers of excellence") rated their managers as more transformational then those working in non NDUs .

One reason for this difference between perceptions in teaching and non teaching hospitals may be related to the culture of learning and innovation that exists in teaching hospitals. These are the centers where most clinical trials are conducted and new interventions are tested. Continuous quality improvement is high on the agenda in most hospitals today but the larger teaching centers have more expertise and resources such as quality specialists. Hence there are more improvement projects implemented in these sites. Unit managers are therefore called upon to promote, facilitate and enlist nursing involvement in these activities. This would be achieved to a greater extent through the use of transformational leadership behaviours such as intellectual stimulation and inspirational motivation. Given that teaching hospitals are located in urban centers and by necessity, are connected to an academic institution, there may be a great number of nursing leaders who are knowledgeable about transformational or relational leadership and process the requisite skill set.

Nurses from complex continuing care and mental health units rated their managers the highest in both transformational (M= 2.18, SD= .54) and transactional (M = 2.21, SD= .39) leadership. Although not tested, this may be due to the fact that these patient populations are often longer term or considered more vulnerable. Given longer lengths of stay and less need to manage patient flow issues, managers from these units may have more time to devote to the staff and the quality of care issues surrounding these patients. RPNs viewed their managers as more transformational and transactional than did RNs or Degree prepared nurses. This may be due to the recent investment that many managers and senior leaders have made in altering models of care and skill mix to acknowledge the new scope of practice for RPNs. Low scores from degree prepared nurses may be the result of higher expectations and anecdotally, a perceived sense of entitlement in new degree graduates.

Transformational leadership did not significantly augment the effect of transactional leadership in this study however results support the notion that transformational leaders are perceived as mentors who create a supportive practice and learning environment where staff are developed to ever higher levels of potential and enabled to provide quality care, an important antecedent to patient safety culture and job satisfaction (Aiken, 2008). Shirey (2009) studied the contributing factors to managers' transformational leadership behaviours and identified a reciprocal relationship. On units where a positive culture/work environment exists, the manager is more able to engage in authentic (transformational) leader behaviours since the staff is more receptive, supportive of one another, focused on the patient etc. This creates a more positive outlook and satisfaction for the manager who is then more likely to foster an even stronger optimistic and healthy work environment. Nurses in this study appeared to view their

managers positively and when nursing staff feel there is a positive relationship with their manager, they are more likely to view the practice environment as having the resources needed to provide quality care (Laschinger et al., 2009). Therefore the results of this study align well with the literature and support the premise that when nurse managers are perceived to be highly transformational, the units are perceived to be supportive practice environments as well.

Supportive Practice Environments

The importance of positive practice/work environments on patient safety, job satisfaction, organizational commitment and ultimately, patient outcomes has been well established in the Magnet Hospital and leadership literature (Aiken, 2008, 2012; Bauman et al., 2001; Laschinger et al., 2003; Laschinger et al., 2009. The Canadian Quality Work-life Quality Healthcare Collaborative (2007) states "A fundamental way to better healthcare is through better healthcare workplaces" (p, ii). The IOM Report (2000), Baker and Norton (2004), Pronovost et al. (2006), Aiken et al. (2002) and others, made clear recommendations about the link between supportive practice environments and a strong patient safety culture.

This study substantiated these recommendations revealing a high correlation between supportive practice environments and safety culture (r= .81), and an additional strong and significant direct path between the two (β = .72, p<.001). This strong relationship may be the product of some shared features within each construct such as: teamwork, collaborative decision making, high standards of care, and promotion of learning and improvement. Several studies have found a positive relationship between supportive practice environments and nursing job satisfaction, and organizational commitment (Bauman et al., 2001; Laschinger et al., 2003; Laschinger et al., 2009).

Again, this study reaffirmed these findings by revealing a moderately strong and significant additional path from supportive practice environments to nurse job satisfaction (β = .55, p< .01).

Laschinger, Finegan et al., (2001) linked nurse job satisfaction to practice environments that have both structural (access to information, equipment, resources) and psychological (meaning, autonomy, sense of value, impact on patient outcomes) features present. According to Aiken (2008), nurses will view their practice environments more positively if they are able to provide the quality of care they deem appropriate. When nurses do not perceive their units in this way, such as having too few resources and too little time to do the job, it often leads to negative perceptions, attitudes and burnout (Laschinger & Leiter, 2006). Burnout negatively impacts nurse job satisfaction and performance, which in turn adversely impacts patient outcomes (Aiken et al., 2008). Nurse leaders have a significant role to play in creating the practice environments that minimize negative staff outcomes such as burnout.

Nurses in this study perceived their leaders to be fairly transformational and in turn, transformational leadership had a significant effect on the variable of practice environments. Therefore it is not surprising that nurses in this study found their practice environments to be moderately supportive (M = 2.48, SD = .23; range 1-4). Nurses in teaching hospitals rated their practice environments as slightly less supportive and less collegial than did those from non teaching hospitals. This may be due to the fact that the acuity/complexity of patients in smaller community hospitals is less than in a teaching hospital. This has several implications. Caring for less acute/complex patients requires less technology, and the use of new pharmacologic agents. Since the demand for beds is generally lower in community hospitals as compared to the larger teaching centers, the

pressure for patient flow and turnover is likely less. Thus nurses in community hospitals are more likely to perceive their workload to be more manageable and the demand for additional structural supports such as equipment and education is less.

Educators in teaching hospitals are often involved in broader corporate initiatives, policy development, design and teaching of inservices and recertification programs to ensure nurses are up to date and competent in specialized skills that are often beyond the scope of care provided in a community based hospital. Other advanced practice roles such as clinical nurse specialists and nurse practitioners are seldom able to divert any attention away from their patient care responsibilities to provide support/mentorship to nurses in these facilities. Hence nurses in teaching hospitals may well have "access" to education and supportive nursing roles but do not readily perceive this as a realistic reflection. Since community hospitals do not have the responsibility for teaching/training students, the limited nurse clinician roles may be able to devote more time in the support of frontline staff directly on the unit.

Finally, smaller community hospitals have fewer levels of staff and learners so there is a greater ability to get to know colleagues on the team on a more personal level. In fact, for some of the hospitals surveyed in this study, team members live and work in the same community. Frankel, Leonard and Denham (2006) discuss the importance of knowing team members at least by name as a significant contributor to quality care and a safe practice environment. In fact this is the basis for the development of the Safe Surgical Checklist (Haynes, 2009) which requires all members of the team to introduce themselves before the surgical procedure begins. The premise is that when team members are more familiar with one another, they are more likely to speak up about a patient safety concern.

Medicine units scored the lowest on supportive practice environments (M= 2.39) perhaps due to the complexity and variability in patient populations, the shortened lengths of stay and high learner compliment on these units. Contrary to Shortell et al. (1994) who found that critical care units scored best on the dimension of supportive practice environments, this study found that critical care ranked six out of eight unit specialty categories with a Practice Environment Scale mean of 2.46 (SD = .18). This finding supports that of Estabrooks (2002) who likewise did not find critical care units to be consistently positive practice environments. Despite the lower nurse to patient ratios, the availability of high tech monitoring equipment and the generally collaborative team decision making; the complexity, acuity and fast pace within these critical care units produces a high level of staff stress and may contribute to a sense of being unable to provide the full range of supportive care they would wish to.

Mental health and pediatric units ranked the highest on supportive practice environments with means of 2.60 (SD = .17) and 2.53 (SD= .36) respectively. Mental health units are often characterized by high team functioning and independent decision making by nurses with respect to their patient's care and privileges. Pediatric units often have additional resources such as child life workers who support additional "nurturing" activities on the unit to balance the burdens of clinical treatments in these young patients. Dress up days, birthday parties and other social activities may contribute to an overall sense of hope and positivity on the units which may in turn contribute to perceived positive practice environments. Further focus group discussion with staff from these areas might be conducted to determine what features of the positive practice environment were present or missing to create the overall score.

In summary, this study is consistent with previous findings and recommendations in the literature which contend that, strong supportive practice environments are key to ensuring an empowered, motivated, satisfied nursing workforce which in turn ensures a consistent quality of care that result in better outcomes.

Organizational Citizenship

Organ, Podsakoff and MacKenzie (2006) suggested that more research was needed to better understand both the antecedents and outcomes of OCB. This study has begun to address these questions by examining transformational leadership and supportive practice environments as predictive of OCB, and OCB as predictive of patient safety culture. This hypothesized path in the model is consistent with Lowe's (2008) conclusion that the relationship between practice environment and patient safety culture is mediated by the "propensity of staff to engage in behaviours that go above and beyond the minimum job requirements". More recently, Thompson et al, (2011) found that nurses were more likely to engage in OCBs in units where strong LMX relationships were present. Both these findings support the study hypotheses which suggest authentic leadership (in this case transformational) positively influences nurses tendency to engage in behaviours that exceed minimum expectations and that by so doing, they foster a culture focused on patient safety and positive patient outcomes.

Although the OCB scale addresses support in the workplace, it is distinguished from the PES scale in that it is intended to measure nurses' perceptions of how well *they support one another as a team* versus how well the organization or unit is supportive.

As hypothesized, results showed a strong and significant positive direct relationship between supportive practice environments and organizational citizenship behaviours ($\beta = .49$, $p<.01$). These results suggest that on units where nurses find their

practice environments to be supportive in terms of having the necessary resources to provide care, a voice in patient care decisions and collegial, supportive team relationships, they are in turn more likely to support one another, speak positively about the unit/team and make an extra effort to provide safe, quality care (Cropanzano& Mitchell, 2005; Organ, Podsakoff and MacKenzie, 2006).

Further, OCB was found to have a small but significant positive effect on job satisfaction (β = .21, p<.01) and a small but significant negative effect on medication error (β = -.21, p<.01). As nurses assist and support one another through "helping behaviours", it creates a sense of trust and a bond amongst the team which reasonably would lead to increased job satisfaction. Medication errors may be reduced when nurses make an extra effort by double checking complex medications or reporting near misses to improve processes related to medication administration.

Organ, Podsakoff and MacKenzie, (2006) explained that the "aggregate" effect of many different people in one group engaging in OCBs is more powerful than the many actions of just one or two people. Therefore managers' must find strategies to promote OCBs amongst their staff in order to create a work environment that is patient safety focused and promotes patient and staff wellbeing. Moorman and Blakely's (1995) model is based on a sense of duty or obligation to the "collective" (i.e. what is in the best interest of the group). Perhaps because of an underlying altruism that nurses tend to bring to their choice of profession (Kolotylo, Higgins & Blythe, 2004); they often will sacrifice personal needs for the sake of the team and certainly for the sake of patients. A classic example is when nurses stay beyond their shift to help a colleague stabilize a patient who has decompensated.

Organizational citizenship behavior (OCB) received high scores in all units with a mean of 5.14 (SD=.56) on a scale of 1-7, suggesting that nurses in the study believe their peers help, and motivate one another, are extra diligent in providing patient care and focus on learning and improvement. This result is particularly noteworthy because it is based on an assessment of peers versus a self assessment. When respondent's rate themselves on these items, there is a tendency to rate based on how they intend or would like to behave which can falsely inflate the mean value (Organ, Podsokoff and MacKenzie, 2006). Nurses from non teaching hospitals scored this variable slightly higher than their teaching hospital counterparts (M= 5.34, SD=.49 and M=5.07, SD=.57) respectively). Teaching hospitals scored lower (M= 4.89, SD=.59) than non teaching hospitals (M= 5.09, SD=.49) on the Individual Initiative item which is somewhat surprising given the expectations in a teaching hospital for frontline staff to be involved in "extra curricular" activities such as policy development, precepting, quality improvement initiatives and other growth and development opportunities. However when one takes into account the increased acuity and complexity of patients and the consequent fast paced and often stressful work environment, it is likely more difficult for nurses to engage in these extracurricular activities as they simply do not have the time or energy to do so. Another possible reason for this difference between teaching and non teaching hospitals is that the unit teams in community hospitals are often smaller and more consistent whereas, larger units in a teaching hospital will have larger teams and less consistency due to "float" nurses (often used to fill sick calls), residents, fellows and other students, which makes it more difficult to create group cohesion and commitment.

Interpersonal Helping was the strongest contributor to perceived OCBs as this is likely the most obvious behavior that nurses would see among their peers. Organ,

Podsokoff and MacKenzie (2006) suggest that as nurses notice the OCBs of their colleagues, they too will be more likely to engage in similar behaviours which create a collective thinking or "culture" amongst the team members. If the OCBs are related to providing optimum care and minimizing potential harm, then a culture of patient safety is promoted.

Patient Safety Culture

It was hypothesized that on units perceived to support practice (SPE) and where nurses feel they support one another well (OCB), the perception of patient safety culture would also be high. The model results bear this out with a weak but significant direct effect from organizational citizenship behaviour to patient safety culture (β = .18, p<.01). However, the even stronger significant direct effect from supportive practice environments (β = .72, p<.01) to safety culture and the strong correlation between the two (r = .81), suggests that organizational citizenship behaviours only partially mediates the relationship and that in fact, supportive practice environments play a more substantive role. This is further evidence that when nurses feel supported to provide quality nursing care, they also feel they are working in an environment where patient safety is at the forefront.

As discussed earlier, ensuring patient safety requires more than just having qualified staff and sufficient equipment in place to deliver care. It requires an organizational culture that features a shared commitment to quality care, reliable and standardized processes, collegial teamwork and communication, non punitive response to error and a willingness to learn from mistakes. The development of such a culture requires transformational leaders, who are able to inspire a shared vision, create

supportive practice environments and maximize the skills and performance of their staff to achieve optimal patient outcomes.

Ruchlin, Dubbs and Callahan (2004) conducted a literature review on the role of leadership in creating a culture of patient safety. They argue that organizational values should drive the patient safety agenda rather than external mandates like public reporting requirements. Further they suggest that healthcare organizations imbed patient safety as an organizational value since strategic priorities are "more subject to change over time than are deep seated beliefs". Schein (2004) describes a symbiotic relationship between leadership and organizational culture. He suggests that culture is defined by leadership and ultimately if that culture flourishes, it defines the kind of leadership required. Similar to Schein's premise, Thompson et al., (2011) found that managers who were strong in relational leadership behaviours (Leader Member Exchange specifically), tended to promote safety practices more and had higher expectations of staff in meeting those standards. In turn, staff had more positive perceptions about the patient safety culture on those units. Given the profound changes required to fundamentally sustain a culture of patient safety within a healthcare organization or even a unit, the strong values based and visionary components of transformational leadership made it an appropriate choice for this study. Further, the significant indirect links found in this study between transformational leadership and reduced falls, hospital acquired infections and medication errors demonstrate the importance of leadership for patient safety.

Nurses in this study scored patient safety culture as moderately high. Again, nurses from teaching hospitals rated their units slightly lower than did their non teaching hospital counterparts (M= 3.65, SD=.35 and M=3.77, SD=.30 respectively; range 1-5).This is consistent with the slightly lower perceptions of practice environments in

teaching hospitals and is a reflection of all the factors outlined previously: more acute, complex patient populations; more diverse staff and learners with varying knowledge/expertise; greater pressures related to shortened length of stay and patient flow; fewer capital and human resources to support care at the bedside. Some of these issues are better addressed through transactional leadership behaviours as they require more operational, management skills to resolve. Therefore it is important to reiterate the importance of transactional leadership in creating the practice environments and culture that optimizes patient outcomes.

Job Satisfaction

Adams and Bond (2000) found that units with a strong patient safety culture also had improved processes of care which were positively associated with perceived ability to provide safe, quality care and also with job satisfaction. As hypothesized, patient safety culture and job satisfaction were highly correlated ($r = .74$, $p<.01$). In addition, the model results showed, patient safety culture had a weak but significant direct positive effect on job satisfaction ($\beta = .17$, $p<.05$). Finally, as discussed earlier, organizational citizenship behaviours were also found to have a significant and positive effect on job satisfaction ($\beta = .21$, $p<.01$). These results support the claim that a key component of nurse job satisfaction is the perception that they have the structural and psychological supports that enable them to deliver high quality care to their patients (Laschinger, et al., 2007).

Nurses in this study feel that most of their peers are engaged in discretionary behaviours that demonstrate extra effort and support of one another. Further, they rated the patient safety culture as moderately strong implying they feel a sense of "psychological safety" to speak up and share concerns about patient safety or care. It also

implies that there are structural processes and resources in place that assist them in their goal to provide quality care. As established earlier, nurses will be more satisfied in their jobs when they feel supported by their manager, peers and organizational structures/processes, to provide best care (Aiken et al., 2002, 2008; Blegan, 1993; Laschinger, Shamian et al., 2001; Laschinger, Finegan et al., 2004; Laschinger et al., 2007; Larabee, 2003; McGillis Hall 2003).

Thus, the findings of this study support the relationship to several antecedent variables identified in previous studies that positively affect job satisfaction. This is important given the pivotal role played by job satisfaction in linking leadership to salient outcomes via supportive practice environments.

Patient Outcomes

The importance of positive practice/work environments on patient safety, job satisfaction, organizational commitment and ultimately, patient outcomes has been well established in the Magnet Hospital and leadership literature (Aiken, 2008, 2012; Bauman et al., 2001;Blegan, 1993;Laschinger et al., 2003, 2004, 2009; Purdy, 2010, McGillis Hall, 2004). It has already been argued that when nurses perceive their practice environments to be supportive, they are likely to be more satisfied in their work and willing to adopt safe practices that improve outcomes (Shortell, 2004; Choi & Boyle, 2013; Hinno, 2011; Leggat, 2010; Van Bogaert, 2009, Lundstrom, 2002).

White and McGillis Hall (2003) suggested that more work is needed to examine the relationship between nursing leadership and nurse sensitive patient safety outcomes. Yet, 12 years later, Wong (2015) echoes this sentiment despite a growing number of studies and the rigor applied within their designs. "Research findings were still primarily associations and not confirmed causal connections" (p. 276). In addition, Wong points

out that less than half of the studies tested leadership theories and few examined the processes by which leadership influenced outcomes.

A new contribution from this study is the significant effect between job satisfaction and 1) patient falls (β = -.37, p<.01) and, 2) hospital acquired infections (β = -.23, p<.05). In units where nurses are satisfied in their jobs, and perceive their work environments to support quality care, it is reasonable to expect they will be more likely to adopt best practices and consistently apply the evidence based "bundles" of care shown to reduce adverse events such as falls and hospital acquired infections. For example, Oliver's literature review (2006) found that a bundle of care including regular falls risk assessments, lowering the bed, hourly rounding and non skid slippers were effective in preventing serious falls. Therefore, nurses must not only be instructed in these best practices, but they must have the supports and motivators to actually implement them. Strong leadership and supportive work environments described throughout this paper are the keys to improving performance and implementing best practices (Brady Germaine & Cummings, 2010; Wong, Cummings & Ducharme, 2013).

Likewise infection control experts maintain that one of the single most important strategies to prevent the spread of infection in hospitals is frequent hand washing particularly at the "4 Moments of Care" (PIDAC, 2007). Nurses, satisfied with their work environments and their job are more likely to engage in these important nursing care strategies. Job satisfaction was not found to significantly affect medication errors in this study but a strong and significant relationship was found between organizational citizenship behaviours and medication errors (β = -.21, p< 01). Further, a significant indirect effect was found between transformational leadership and medication error through supportive practice environments and organizational citizenship behaviours. This

has not been demonstrated in previous studies examining organizational citizenship

behaviours and as such is a new finding for nursing and health care literature. As

previously stated, features of OCB include helping others, promoting improvements and

performing with extra diligence. These behaviours are very likely to mitigate the risks

related to medication administration. For example, nurses may be more diligent in

calculating dosages, double checking with another nurse for high risk medications such

as narcotics and electrolytes, ensuring two identifiers are used prior to administering the

medication, and setting appropriate alarm limits on infusion pumps. Improvement

practices to prevent interruptions such as stop signs (or other signage) on medication

carts, donning a vest that indicates you are delivering medications are examples of safety

strategies recommended by nurses.

An interesting, if not surprising finding is that teaching hospitals had more falls

than did non teaching hospitals (M= 4.05, SD = 4.2 and M= 2.90, SD= 3.1 respectively).

This is likely due to the larger volume of patients, higher acuity patients and the growing

number of geriatric patients with multiple co morbidities that require the level of service

a teaching hospital can supply. This patient population is more prone to falls due to the

clinical issues as stated, but risk is also exacerbated by the type of medications that may

be required (i.e. analgesics for pain etc) as well as the disorientation that ofen

accompanies hospital stay. Conversely, medication errors in non teaching hospitals are

significantly higher (M= 13.39, SD = 13.7) than in teaching hospitals (M= 4.66, SD =

5.1). The use of "Acudose" medication carts is likely a significant contributor to the

lower incidence of medication error in teaching hospitals. The cart houses a personalized

drawer for each patient and it can only be opened through computer entry of the patient

identification number. They have been shown to be instrumental in ensuring the right

drug, in the right dose, goes to the right patient, removing a large element of human error in medication administration. While these expensive units are standard in large teaching hospitals, they are likely used in only the high risk units within community (non teaching) hospitals.

Finally, it should be noted that capturing clinical outcomes for a study such as this is a difficult process. Judge and Piccolo (2004) proposed that in studies investigating the link between transformational leadership and outcomes, the findings will have more credibility when independent outcome measures are collected as opposed to using the outcomes included in the MLQ scale. Laschinger and Leiter (2006) used a self report method to measure adverse events occurrences for medication errors and falls. While a move in the right direction, this approach still has limitations as it relies on the nurse's recall and subjective judgement as to what they may have reported. To address this concern, the Wong and Cummings (2013) systematic review used only those studies where outcomes were extracted from administrative data bases.

In this study, objective unit level data were successfully collected for each of the dependent variables: hospital acquired infections, falls, medication error and nurse absenteeism. While an improvement from other known studies, there are still some limitations to interpreting this data. For example, each of the variables is measured very differently: falls per 1000 patient days versus total number of medication errors. In addition, although every attempt was made to provide clear definitions (i.e. numerator/denominator) there may still be some variation between hospitals as to what they include in their database.

Nurse Absenteeism

Davey, Cummings, Newburn-Cook and Lo (2009) reported that job satisfaction, organizational commitment, burn out and job stress significantly predicted job absenteeism. In addition to these variables, a literature review by Whitea et al. (2013) found significant relationships between absenteeism and leadership quality, supervisory support and control over job. Therefore, in this study we reasonably hypothesized that there would be an inverse correlation between job satisfaction and absenteeism. However, similar to the findings of Goldberg and Waldman (2000), the results of this study did not support this hypothesis. Indeed nurse absenteeism was the only outcome for which no significant effects were found. This is likely due to the extremely skewed data (kurtosis = 107.30) which in turn may be due to different reporting criteria across different organizations. A further analysis of this data should be conducted to determine any significant difference between the sites or unit types.

Never the less, absenteeism is a significant issue for hospital administrators not only because of the budgetary implications but also because of the impact on quality of care and potential burnout of other nurses on the team. When a nurse calls in sick, their assignment is given to another nurse who may not be as familiar with this patient's care plan and progress which may impact the assessment, decisions and ultimately the quality of care that patient recieves. Further, the patient assignment may be given to a nurse who is called in from a day off or if no one is available, may be divested among those nurses working that shift, thereby increasing their workload. Given these important implications of absenteeism, and the conflicting results in the literature, further study is warrented in this area.

Indirect Effects

Perhaps the most important finding in this study are the significant indirect effects of transformational leadership on patient falls, hospital acquired infections and medication error through the mediating variables of practice environment, organizational citizenship behaviours, safety culture and job satisfaction. This provides a unique contribution to the literature in that there are few (if any) studies that establish the link between transformational leadership and objectively measured nurse sensitive outcome data (Wong, 2015).

Supportive practice environments mediate this link in all three paths. Boyle (2004) affirms this finding by stating: "nursing administrators and managers are the linchpins for the strategies and change processes needed to improve unit level practice" (p.119). The inclusion of organizational citizenship behaviours is rare in nursing models and the fact that a direct effect was found on the nursing sensitive outcome of medication administration is an important and unique contribution to the nursing and leadership literature. Finally, while patient safety culture has garnered increased attention over the last 10 years, the fact that job satisfaction plays a key role in these indirect paths, lends strength to the premise advanced 20 years ago, that patient safety is contingent upon a stable, satisfied workforce (Blegan, 1993). As such we must not view patient safety in isolation from job satisfaction and it's antecedents but rather as an integrated model.

Limitations

This study is subject to a number of limitations. Although more than one organization and multiple sites are being used, it is limited to two LHINs in one province and as such may not be representative of the entire population of hospital nurses in Canada thus limiting generalizability to this group. Similarly, because this study includes

only acute care hospitals, applicability to long term care, ambulatory and community based nurses is not known and would warrant further study.

The methodology of paper surveys is fraught with challenges particularly in ensuring an adequate response rate to make the data collected meaningful. Despite a substantial response rate (n=1678), the number of units (n=136) was not sufficient to achieve optimal power using SEM analysis methodology. Consideration was given to the number of items on each of the questionnaires that make up the survey tool however the final survey was still quite long and this may also have contributed to a lack of response. Responder bias is also a limitation in that those who respond may view the variables differently from non responders. It is more challenging to make conclusions about causality when using cross sectional data. However this is balanced in this study somewhat by the use of objective outcome data.

Legitimately, one might argue that there are many other variables that could have been included in the hypothesized model as contributing to a positive work environment, safety culture and job satisfaction, thus limiting a full understanding of this concept. However, these additional variables are beyond the focus of the primary premise of this study and will be addressed in future research.

Conclusions

This study has made a unique contribution to the nursing, healthcare and organizational literature by demonstrating the potential mechanisms by which transformational leadership impacts three nurse sensitive patient outcomes: falls, medication error and hospital acquired infections through a number of significant mediating variables including supportive practice environments, organizational citizenship behaviours, patient safety culture and nurse job satisfaction. When unit level

managers engage in transformational leadership behaviours, they help create work environments where nurses feel valued, engaged and able to provide the quality of care they feel is expected. These nurses reciprocate by making an extra effort to assist their colleagues, perform nursing tasks with diligence and promote continuous improvement. Units where nurses engage in these discretionary behaviours will be perceived as highly focused and committed to a culture of patient safety where they feel free to voice concerns, learn from mistakes and collaboratively develop solutions. All these variables contribute to a work environment and culture that in turn contributes to nurse job satisfaction. When nurses are satisfied in their work, they are more likely to adopt and apply evidence based, quality care aimed at patient safety and optimizing outcomes.

Nursing Implications

The findings from this study have further enhanced our understanding of what contributes to positive nurse sensitive patient outcomes and particularly the influence transformational leadership. The results have implications for practice, administration, education, and policy development.

Practice and Administration

Unit managers must extend their leadership practices beyond the traditional managerial skills required for unit operations. Inspirational motivation was identified in this study as a significant contributor to nurses' perceptions of transformational leadership in their managers. This suggests that managers need to employ relational leadership strategies that inspire and motivate staff to perform at their best. Similarly, senior nurse leaders must role model this behaviour for their managers.

Staff engagement surveys tell us that staff need to be rewarded and recognized for their efforts. Regular performance reviews are an essential tool to help staff reflect and

improve their performance. These evaluation tools usually include strengths and

opportunities for growth but should also offer an opportunity for managers to offer

incentives for certain team identified goals, such as a day off for perfect attendance for 6

months or a free workshop for precepting students over the year. Managers need to be

reminded to provide positive feedback on a regular, informal basis as well.

Complimenting a nurse for "a great catch" when they have avoided a potential error or

thanking them for staying late after shift is a great way to foster a sense of pride which in

turn promotes even more discretionary, organizational citizenship behaviours and leads to

higher job satisfaction.

This study clearly points to the importance of creating supportive practice

environments. It is important for senior leadership (nursing and corporate alike) to be

knowledgeable about the structural and psychological supports that are required to create

an optimal practice environment with a strong focus on patient safety and quality care. A

commitment needs to be made to invest in those features which will create a culture in

which nurses (and other staff as well) will be more likely to put in extra effort, and feel

more satisfied in their ability to provide great care. Efforts aimed at improving

collaboration and teamwork such as the Safe Surgical Pause, interdisciplinary rounds,

modifying nursing care models and skill mix to promote expanded scope of practice for

RPNs, and ensuring adequate staffing and other resources are just a few strategies that

might be employed.

Education

Unit managers must have the knowledge and skills to employ a transformational

leadership style that extends beyond the managerial skill set. Bass and Avolio (2002)

state that leaders are not born and nor do they have to be in formal leadership positions.

Therefore it is essential to educate nurses in transformational leadership theory. One cannot be taught *what* values to adopt, but we can teach nurses how to convey their values to their staff and colleagues and the importance of doing so. This education process should begin in undergraduate curricula rather than waiting for post graduate manager/leadership training although ongoing education is required and should be supported by healthcare organizations.

At the same time, human resources and organizational literature acknowledges that growth and development are important dimensions in staff engagement. Staff at all levels need to feel there are opportunities to learn and develop new skills. Succession planning for nursing administration should begin with identifying the influential informal leaders within each unit or team. By applying the transformational leadership behaviours of "individualized consideration" and "intellectual stimulation", unit managers can develop learning plans with frontline nurses that is tailored to their goals and objectives. Structured clinical laddering programs offer nurses a chance to develop ever increasing clinical expertise, decision making and certification. Unit level leadership roles such as charge nurse, clinical resource nurse provide practical experience and foundation for unit manager positions. Many informal leadership opportunities exist such as unit champions for hand hygiene or falls reduction; quality improvement leads and Green Belt certification; and nursing student preceptors.

Policy

Findings have the potential to influence strategic planning within the organization emphasizing patient safety as a key priority and aligning this goal with other corporate goals aimed at engaging staff and enhancing work environments. Policies related to clinical practice and processes should be developed through interdisciplinary consultation

and content should be explicit about elements that reflect patient safety culture to include decision making criteria, communication, roles and responsibilities. Standards and guidelines regarding staffing ratios, skill mix and other structural supports should be reviewed and revised in light of the evidence presented to ensure optimum practice environments. Other organizational policies relating to human resource issues such as performance evaluations, manager competencies, manager span of control should likewise be refined to reflect the need for managers to have the relational leadership skills and the time to apply them.

Policy development could equally be influenced more broadly at a LHIN or provincial level. As stated at the beginning of this paper, patient safety has become a prominent platform on the agenda of every hospital and provincial health ministry. This study highlights the need to reinforce the connection between patient safety and strong practice environments that promote nurse job satisfaction. The Registered Nurses Association of Ontario has been promoting this agenda for years, and the ministry previously funded research programs focused on nursing and healthcare human resources. Hence, this funding should be continued to help shape policy development at all levels.

Further, this study provides evidence supporting the need for strong leadership at all levels of nursing. The Ministry of Health and Long Term Care recognized the importance of strong nursing leadership in shaping decisions at the most senior levels by requiring hospitals to create Chief Nursing Executive (CNE) positions. As a result of this policy change, the most senior nurse leader in the hospital no longer reports to the Chief of Medicine but rather the CNE is an equal partner on the executive team. Similarly, criteria might be developed at the ministry level to guide organizations in developing their policies (as described above) and ensure a standardized approach to developing

superior practice environments.

As patient safety moved to the forefront, with an emphasis on public reporting and "Quality Based" funding, it could be argued that nursing leadership and work environments have received less attention in the last few years . Thus, there needs to be a greater push in the political arena (i.e. the Ministry of Health and Long Term Care and Nursing Secretariat) to reinvest in this important piece of the provincial "Quality Care" puzzle.

Future Research

Over the last few years progress has been made in acknowledging the influence of leadership on patient outcomes. However greater understanding about the mechanisms by which this effect manifests itself is needed. This study has made a unique contribution in that regard in that it is one of the few known studies to link leadership indirectly to objectively measured patient outcomes. Further analysis of this model using Multilevel SEM or Hierarchical Linear Modelling (HLM) would make use of the larger individual sample size and might reveal additional findings. The survey did not include an open ended question for qualitative comments. However, many respondents added comments in the margins of the survey which will be collated and analysed for themes. Further expansion using qualitative methods may provide a rich augmentation to the quantitative results already presented.

Wong, (2015) highlighted the ongoing criticisms in the literature about the "conceptual flaws" in the transformational leadership model. Therefore different leadership models should be tested such as LMX, or other relational models, to see if there are any differences in the effects on practice environment or on patient outcomes.

Most of the studies investigating the predictors of nurse sensitive patient

outcomes are conducted in acute inpatient hospitals. Therefore, replication of this study in other healthcare sectors such as Long Term Care or Public Health is also a viable next step. It would be interesting to see if the working environments and other contextual elements in those settings produce different results. Similarly, the hospitals in this study were all located within the same region of Ontario. A broader expansion into other regions, especially northern rural areas with small community hospitals and a different cultural landscape might elicit different responses from nurses working there.

Since nurses work within a multidisciplinary team, it would be helpful to know if there are differing perceptions among the members of that team. If so, how does this impact the strategies employed by nurse leaders to create a practice environment that is perceived to be supportive by all? How might the patient outcomes be affected when there are conflicting perceptions of what constitutes quality care?

Alternate theoretical models might be tested using the same variables in a different, but equally defensible predictive chain. For example, one might test a model where job satisfaction mediates the relationship between supportive practice environments and organizational citizenship behaviours. Additional nurse sensitive patient outcomes should be added such as decubitus ulcers, pain scores and dementia screening.

Finally, a practical interventional study with pre and post measures after the delivery of an education program for unit managers on transformational leadership would likely provide valuable information to validate the need for such training. This might be coupled with a cost –benefit analysis comparing the cost of the education program against the cost of the adverse events at that institution over the previous year.

Summary

This study tested a hypothetical model which predicted the influence of nurse manager transformational leadership behaviour on staff nurse perceptions of supportive practice environments, organizational citizenship behaviours, patient safety culture, job satisfaction and objective measures of selected nurse sensitive outcomes. The findings provide a unique contribution to the body of literature and understanding about the role transformational leadership might play in optimizing nursing practice environments and patient outcomes.

In the fast paced world of healthcare where innovation and change abound, healthcare leaders are challenged to keep pace with the implementation of best practices in a context of dwindling fiscal and human resources. Therefore, it is vital that nurse leaders are well prepared with the right knowledge and skills to create the supportive work environments that will engage nursing staff in safe practices and quality care. In this way, healthcare organizations will ensure the optimal health and safety of the patients we serve.

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Appendix A

Summary of Survey Subscales

Multifactor Leadership Questionnaire (MLQ) Subscales

Transformational Leadership	
Idealized Attributes	
10	Instill pride in me for being associated with him/her
18	Goes beyond self-interest for the good of the group
21	Acts in ways that build my respect for him/her
25	Displays a sense of power and confidence
Idealized Behaviors	
6	Talks about his/her most important values and beliefs
14	Specifies the importance of having a strong sense of purpose
23	Considers the moral and ethical consequences of decisions
34	Emphasizes the importance of having a collective sense of mission
Inspirational Motivation	
9	Talks optimistically about the future
13	Talks enthusiastically about what needs to be accomplished
26	Articulates a compelling vision of the future
36	Expresses confidence that goals will be achieved
Intellectual Stimulation	
2	Re-examines critical assumptions to question whether they are appropriate
8	Seeks differing perspectives when solving problems
30	Gets me to look at problems from many different angles
32	Suggests new ways of looking at how to complete assignments
Individual Consideration	
15	Spends time teaching and coaching
19	Treats me as an individual rather than just as a member of the group
29	Considers me as having different needs, abilities and aspirations from others
31	Helps me to develop my strengths
Transactional Leadership	
Contingent Reward	
1	Provides me with assistance in exchange for my efforts
11	Discusses in specific terms who is responsible for achieving performance targets
16	Makes clear what I can expect to receive when performance goals are achieved
35	Expresses satisfaction when I meet expectations
Management by Exception: Active (MBEA)	
4	Focuses attention on irregularities, mistakes, exceptions, and deviations from standards
22	Concentrates his/her full attention on dealing with mistakes, complaints and failures
24	Keeps track of all mistakes
27	Directs his/her attention toward failures to meet standards
Passive/Avoidant Behavior	
Management by Exception: Passive (MBEP)	
3	Fails to interfere until problems become serious
12	Waist for things to go wrong before taking action
17	Shows a firm belief in "if it ain't broke, don't fix it"
20	Demonstrates that problems must become chronic before taking action

Laissez – Faire (LF)	
5	Avoids getting involved when important issues arise
7	Is absent when needed
28	Avoids making decisions
33	Delays responding to urgent questions
Outcomes of Leadership	
Extra Effort – *this sub scale will not be included in this study*	
39	Get others to do more than they expected to do
42	Heighten others desire to succeed
44	Increase others willingness to try harder
Effectiveness – *this sub scale will not be included in this study*	
37	Am effective in meeting others' job related needs
40	Am effective in representing their group to higher authority
43	Am effective in meeting organizational requirements
45	Lead a group that is effective
Satisfaction with Leadership – *this sub scale will not be included in this study*	
38	Use methods of leadership that are satisfying
41	Work with others in a satisfactory way

Practice Environment Subscales – (PES – NWI)

	Nurse Participation in Hospital Affairs
23	Staff Nurses are involved in the internal governance of the hospital (e.g., practice & policy committees).
6	Opportunity for staff nurses to participate in policy decisions.
17	Opportunities for staff advancement.
21	Administration that listens and responds to employee concerns.
11	A chief nursing officer who is highly visible and accessible to staff.
5	Career development/clinical ladder opportunity.
28	Nursing administrators consult with staff on daily problems and procedures.
27	Staff nurses have the opportunity to serve on hospital and nursing committees.
15	A chief nurse officer equal in power and authority to other top level hospital executives.
	Nursing Foundations for Quality Care
31	Use of nursing diagnoses.
22	An active quality assurance program.
25	A preceptor program for newly hired RNs.
26	Nursing care is based on a nursing, rather than a medical model.
30	Patient care assignments that foster continuity of care, i.e., the same nurse cares for the patient from one day to the next.
18	A clear philosophy of nursing that pervades the patient care environment.
29	Written, up to date nursing care plans for patients.
14	High standards of nursing care are expected by the administration.
4	Active staff development or continuing education programs for nurses.
19	Working with nurses who are clinically competent.
	Nurse Manager Ability, Leadership, and Support of Nurses – **this subscale will not be included in this study**
10	A nurse manager who is a good manager and leader.
20	A nurse manager who backs up the nursing staff in decision making, even if the conflict is with a physician.
7	Supervisors use mistakes as learning opportunities, not criticism.
3	A supervisory staff that is supported of the nurses.
13	Praise and recognition for a job well done.
	Staffing and Resource Adequacy
12	Enough staff to get the work done.
9	Enough registered nurses to provide quality patient care.
1	Adequate support services allow me to spend time with my patients.
8	Enough time and opportunity to discuss patient care problems with other nurses.
	Collegial Nurse – Physician Relations
16	A lot of teamwork between nurses and physicians.
2	Physicians and nurses have good working relations.
24	Collaboration (joint practice) between nurses and physicians.

Organizational Citizenship Subscales – Moorman & Blakely

	Interpersonal Helping
1.	Goes out of his/her way to help co-workers with work related problems.
2.	Voluntarily helps new employees settle into the job.
3.	Frequently adjusts his/her work schedule to accommodate other employees' requests for time off.
4.	Always goes out of his/her way to make newer employees feel welcome in the work group.
5.	Shows genuine concern and courtesy toward co-workers, even under the most trying clinical or personal situations.
	Individual Initiative
6.	For issues that may have serious consequences, expresses opinions honestly even when others may disagree.
7.	Often motivates others to express their ideas and opinions.
8.	Encourages others to try new and more effective ways of doing their job.
9.	Frequently communicates to co-workers suggestions on how the group can improve.
	Personal Industry
10.	Rarely misses work even when he/she has a legitimate reason for doing so.
11.	Performs his/her duties with unusually few errors.
12.	Performs his/her job duties with extra-special care.
13.	Always meets or beats deadlines for completing work.
	Loyal Boosterism – *this subscale will not be included in this study*
14.	Defends the organization when other employees criticize it.
15.	Encourages friends and family to utilize organization products.
16.	Defends the organization when outsiders criticize it.
17.	Shows pride when representing the organization in public.
18.	Actively promotes the organization's products and services to potential users.

Appendix B

Staff Nurse Survey

STAFF NURSE SURVEY

Transformational Leadership: Impact on Practice Environment, Organizational Citizenship, Patient Safety Culture, Patient Outcomes, Nurse Absenteeism and Nurse Job Satisfaction

As you complete this survey, please answer the questions in reference to the same unit, nurse manager, and nursing peers throughout. While it is optimal to have responses to ALL questions, you may skip any question you are unable to answer for whatever reason. If you decided not to participate in the study, please check the box here and return in the stamped, pre addressed envelope provided.

I do not wish to participate ☐

Demographic Information	
i.	☐ RN ☐ RPN
ii.	☐ Full Time ☐ Part time
iii.	☐ Male ☐ Female
iv.	Age : ☐ < 30 ☐ 30 – 34 ☐ 35 – 39 ☐ 40 – 44 ☐ 45 or over
v.	Education Completed: ☐ Diploma in nursing ☐ Baccalaureate in nursing ☐ Masters or PhD in nursing ☐ Specialty certificate not in nursing ☐ Baccalaureate not in nursing ☐ Masters or PhD
vi.	Number of years you have worked with your CURRENT Nurse Manager: ☐ < 6 months ☐ 6 – 11 months ☐ 1 to 5 yrs ☐ 6 – 10 yrs ☐ 11 – 15 yrs ☐ 16 – 21 yrs ☐ >21 yrs
vii.	Experience in this Position: ☐ < 6 months ☐ 6 – 11 months ☐ 1 to 5 yrs ☐ 6 – 10 yrs ☐ 11 – 15 yrs ☐ 16 – 21 yrs ☐ >21 yrs
viii.	Experience in this Specialty (clinical area): ☐ < 6 months ☐ 6 – 11 months ☐ 1 to 5 yrs ☐ 6 – 10 yrs ☐ 11 – 15 yrs ☐ 16 – 21 yrs ☐ >21 yrs
ix.	Experience in Organization: ☐ < 6 months ☐ 6 – 11 months ☐ 1 to 5 yrs ☐ 6 – 10 yrs ☐ 11 – 15 yrs ☐ 16 – 21 yrs ☐ >21 yrs

Multifactor Leadership Questionnaire Rater Form					
When answering these questions, please think about the nurse manager you work with on this unit.					
	Not at all	Once in a while	Sometimes	Fairly often	Frequently, if not always
Provides me with assistance in exchange for my efforts.	0	1	2	3	4
Re-examines critical assumptions to question whether they are appropriate.	0	1	2	3	4
Fails to interfere until a problem becomes serious.	0	1	2	3	4
Focuses attention on irregularities, mistakes, exceptions, and deviations from standards.	0	1	2	3	4
Avoids getting involved when important issues arise.	0	1	2	3	4
Talks about his/her most important values and beliefs.	0	1	2	3	4
Is absent when needed.	0	1	2	3	4
Seeks differing perspectives when solving problems.	0	1	2	3	4
Talks optimistically about the future.	0	1	2	3	4
Instills pride in me for being associated with him/her.	0	1	2	3	4
Discusses in specific terms who is responsible for achieving performance targets.	0	1	2	3	4
Waits for things to go wrong before taking action.	0	1	2	3	4
Talks enthusiastically about what needs to be accomplished.	0	1	2	3	4
Specifies the importance of having a strong sense of purpose.	0	1	2	3	4
Spends time teaching and coaching.	0	1	2	3	4
Makes clear what one can expect to receive when performance goals are achieved.	0	1	2	3	4
Shows that he/she is a firm believer in "if it ain't broke, don't fix it".	0	1	2	3	4
Goes beyond self interest for the good of the group.	0	1	2	3	4
Treats me as an individual rather than just as a member of a group	0	1	2	3	4
Demonstrates that problems must become chronic before taking action.	0	1	2	3	4

	Not at all	Once in a while	Sometimes	Fairly often	Frequently, if not always
Acts in ways that builds my respect for him/her.	0	1	2	3	4
Concentrates his/her full attention on dealing with mistakes, complaints and failures.	0	1	2	3	4
Considers the moral and ethical consequences of decisions.	0	1	2	3	4
Keeps track of all mistakes.	0	1	2	3	4
Displays a sense of power and confidence.	0	1	2	3	4
Articulates a compelling vision of the future.	0	1	2	3	4
Directs my attention toward failures to meet standards.	0	1	2	3	4
Avoids making decisions.	0	1	2	3	4
Considers me as having different needs, abilities and aspirations as others.	0	1	2	3	4
Gets me to look at problems from many different angles.	0	1	2	3	4
Helps me to develop my strengths.	0	1	2	3	4
Suggests new ways of looking at how to complete assignments.	0	1	2	3	4
Delays responding to urgent questions.	0	1	2	3	4
Emphasizes the importance of having a collective sense of mission.	0	1	2	3	4
Expresses satisfaction when I meet expectations.	0	1	2	3	4
Expresses confidence that goals will be achieved.	0	1	2	3	4

Organizational Citizenship							
When answering these questions, please think about the nursing peers you work with most frequently on this Unit.							
	Disagree Strongly	Moderately Disagree	Slightly Disagree	Neutral	Slightly Agree	Moderately Agree	Strongly Agree
Interpersonal Helping							
Goes out of his/her way to help co-workers with work related problems.	1	2	3	4	5	6	7
Voluntarily helps new employees settle into the job.	1	2	3	4	5	6	7
Frequently adjusts his/her work schedule to accommodate other employees' requests for time off.	1	2	3	4	5	6	7
Always goes out of his/her way to make newer employees feel welcome in the work group.	1	2	3	4	5	6	7
Shows genuine concern and courtesy toward co-workers, even under the most trying clinical or personal situations.	1	2	3	4	5	6	7
Individual Initiative							
For issues that may have serious consequences, expresses opinions honestly even when others may disagree.	1	2	3	4	5	6	7
Often motivates others to express their ideas and opinions.	1	2	3	4	5	6	7
Encourages others to try new and more effective ways of doing their job.	1	2	3	4	5	6	7
Frequently communicates to co-workers suggestions on how the group can improve.	1	2	3	4	5	6	7
Personal Industry							
Rarely misses work even when he/she has a legitimate reason for doing so.	1	2	3	4	5	6	7
Performs his/her duties with unusually few errors.	1	2	3	4	5	6	7
Performs his/her job duties with extra-special care.	1	2	3	4	5	6	7
Always meets or beats deadlines for completing work.	1	2	3	4	5	6	7
Source: Mooraman & Blakely (1995).							

Practice Environment Scale – NWI

When answering these questions, and in reference to the same unit, please indicate the extent to which you agree that the item is PRESENT IN YOUR CURRENT JOB

	Strongly Disagree	Disagree	Agree	Strongly Agree
Adequate support services allow me to spend time with my patients.	1	2	3	4
Physicians and nurses have good working relationships.	1	2	3	4
Active staff development or continuing education.	1	2	3	4
Career development/clinical ladder opportunity.	1	2	3	4
Opportunity for staff nurses to participate in policy decisions.	1	2	3	4
Enough time and opportunity to discuss patient care problems with other nurses.	1	2	3	4
Enough registered nurses to provide quality patient care.	1	2	3	4
A chief nursing officer who is highly visible and accessible to staff.	1	2	3	4
Enough staff to get the work done.	1	2	3	4
High standards of nursing care are expected by the administration.	1	2	3	4
A chief nurse officer equal in power and authority to other top level hospital executives.	1	2	3	4
A lot of teamwork between nurses and physicians.	1	2	3	4
Opportunities for advancement.	1	2	3	4
A clear philosophy of nursing that pervades the patient care environment.	1	2	3	4
Working with nurses who are clinically competent.	1	2	3	4
Administration the listens and responds to employee concerns.	1	2	3	4
An active quality assurance program.	1	2	3	4
Staff nurses are involved in the internal governance of the hospital (e.g., practice and policy committees).	1	2	3	4
Collaboration (joint practice) between nurses and physicians.	1	2	3	4
A preceptor program for newly hired RNs.	1	2	3	4
Nursing care is based on a nursing, rather than a medical, model.	1	2	3	4

Staff nurses have the opportunity to serve on hospital and nursing committees.	1	2	3	4
Nursing administrators consult with staff on daily problems and procedures.	1	2	3	4
Written, up to date nursing care plans for all patients.	1	2	3	4
Patient care assignments that foster continuity of care, i.e., the same nurse cares for the patient from one day to the next.	1	2	3	4
Use of nursing diagnoses.	1	2	3	4

Source: Lake, E.T. (2002)

Safety Climate Survey

When answering these questions, please indicate the extent to which you agree the item is present on this unit.

	Disagree Strongly	Disagree Slightly	Neutral	Agree Slightly	Agree Strongly	Not Applicable
The culture of this clinical area makes it easy to learn from the mistakes of others.	1	2	3	4	5	6
Medical errors are handled appropriately in this clinical area.	1	2	3	4	5	6
The senior leaders in my hospital listen to me and care about my concerns.	1	2	3	4	5	6
The physician and nurse leaders in my area listen to me and care about my concerns.	1	2	3	4	5	6
Leadership is driving us to be a safety centered institution.	1	2	3	4	5	6
My suggestions about safety would be acted upon if I expressed them to management.	1	2	3	4	5	6
Management/leadership does not knowingly compromise safety concerns for productivity.	1	2	3	4	5	6
I am encouraged by my colleagues to report any safety concerns I may have.	1	2	3	4	5	6
I know the proper channels to direct questions regarding patient safety.	1	2	3	4	5	6
I receive appropriate feedback about my performance.	1	2	3	4	5	6
I would feel safe being treated here as a patient.	1	2	3	4	5	6
Briefing personnel before the start of shift (i.e. To plan for possible contingencies) is an important part of safety.	1	2	3	4	5	6

	Disagree Strongly	Disagree Slightly	Neutral	Agree Slightly	Agree Strongly	Not Applicable
Briefings are common here.	1	2	3	4	5	6
I am satisfied with the availability of clinical leadership (please respond to all three): a) Physician	1	2	3	4	5	6
b) Nursing	1	2	3	4	5	6
c) Pharmacy	1	2	3	4	5	6
This institution is doing more for patient safety now, than it did one year ago.	1	2	3	4	5	6
I believe that most adverse events occur as a result of multiple system failures, and are not attributable to one individual's actions.	1	2	3	4	5	6
The personnel in this clinical area take responsibility or patient safety.	1	2	3	4	5	6
Personnel frequently disregard rules or guidelines that are established for this clinical area.	1	2	3	4	5	6
Patient Safety is constantly reinforced as the priority in this clinical area.	1	2	3	4	5	6

Source: Institute for Healthcare Improvement (2009)

Global Job Satisfaction Questionnaire					
When answering these questions, please think about your job on this unit.					
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
I feel very satisfied with my job.	1	2	3	4	5
I feel co workers are satisfied with their jobs.	1	2	3	4	5
I feel I would be happy to work here until I retire.	1	2	3	4	5
I feel the healthcare facility provides a supportive environment in which to work.	1	2	3	4	5

Source: Laschinger, Almost & Tuer-Hodes (2003) adapted from Hackman & Oldham (1975).

Appendix C

Letters

Nurse Manager Initial Letter
Nurse Manager Reminder Letter
Nurse Manager Final Letter

Staff Nurse Initial Letter
Staff Nurse Reminder/Thank you card
Staff Nurse Final Letter

Unit Clerk Instruction Memo #1
Unit Clerk Instruction Memo #2
Unit Clerk Instruction Memo #3

Re: Transformational Leadership: Impact on Practice Environments, Organizational Citizenship, Patient Safety Culture, Patient Outcomes, Nurse Absenteeism and Nurse Job Satisfaction

Dear Colleague:

I am a doctoral nursing student at the University of Western Ontario under the supervision of Dr. Heather Laschinger. Your hospital has agreed to participate in a study we are conducting in order to gain more understanding about leadership behaviours, particularly Transformational Leadership, and the impact on Patient Safety Culture in your unit.

The nursing staff on your unit will be asked to complete a questionnaire in which they rate your leadership behaviour, their perceptions of: the unit work environment, the organizational citizenship behaviours of their peers, the unit patient safety culture and their job satisfaction.

All information will be kept strictly confidential. Although surveys are coded according to unit, you will be identified as the manager for the unit(s) you manage. However individual staff responses will not be shared with anyone outside the research team. Your name will never be identified and results of the study will only be reported at grouped level to ensure that specific information related to you and your unit remains confidential.

While staff participation is entirely voluntary, we hope you will encourage their participation by reminding them of their anonymity and that the results of this study will be very helpful in understanding the impact of nursing leadership on a patient safety environment and patient/nurse outcomes.

Please do not hesitate to contact us if you require any further clarification.

Sincerely,

Ann Higgins RN, MSN   Heather Laschinger, RN, PhD
PhD candidate   Associate Professor, UWO

NURSE MANAGER REMINDER LETTER

Re: Transformational Leadership: Impact on Practice Environments, Organizational Citizenship, Patient Safety Culture, Patient Outcomes, Nurse Absenteeism and Nurse Job Satisfaction

Dear Colleague:

Approximately 2 weeks ago, a survey was sent to your nursing staff seeking their perspective about a number of variables including your leadership behaviour. This perspective is invaluable as we try to understand what leadership behaviours are effective in creating positive work environments where patient safety issues are paramount and learning can occur from errors.

The survey was sent only to a small but representative sample of nurses working in acute care hospitals and it is vital we receive enough responses to ensure the results are representative of all Ontario nurses.

A package including a memo for unit clerks, reminder cards for nursing staff, extra surveys and a return envelope have been sent directly to the units. So please remind your unit clerks to distribute them as outlined in the memo and remind your nursing staff to complete the questionnaire.

We are very sensitive to the fact that you have multiple competing priorities so your time and attention to this study is greatly appreciated.

Sincerely,

Ann Higgins RN, MSN   Heather Laschinger, RN, PhD
PhD candidate   Associate Professor, UWO

NURSE MANAGER FINAL REMINDER LETTER

Re: Transformational Leadership: Impact on Practice Environments, Organizational Citizenship, Patient Safety Culture, Patient Outcomes, Nurse Absenteeism and Nurse Job Satisfaction

Dear Colleague:

Approximately 4 weeks ago, a survey was sent to your nursing staff seeking their perspectives on a number of variables including your leadership behaviours.

Based on the responses received to date, we believe the survey will be very useful in understanding how we create safe and healthy workplaces. The survey was sent only to a small but representative sample of Ontario staff nurses working in acute care hospitals and it is vital we receive enough responses to ensure the results are representative of all Ontario nurses.

As a reminder, all information will be kept strictly confidential. Although surveys are coded according to unit, you will be identified as the manager for the/those unit(s) you manage. However individual staff responses will not be shared with anyone outside the research team. Your name will never be identified and results of the study will only be reported at grouped level to ensure that specific information related to you and your unit remains confidential.

While staff participation is entirely voluntary, we hope you will encourage their participation by reminding them of their anonymity and that the results of this study will be very helpful in understanding the impact of nursing leadership on a patient safety environment and patient/nurse outcomes.

Given your undoubtedly substantial workload, we do very much appreciate you giving some of your valuable time to this request. Please do not hesitate to contact us if you require any further clarification.

Sincerely,

Ann Higgins RN, MSN   Heather Laschinger, RN, PhD
PhD candidate   Associate Professor, UWO

STAFF NURSE LETTER

Re: Transformational Leadership: Impact on Practice Environments, Organizational Citizenship, Patient Safety Culture, Patient Outcomes, Nurse Absenteeism and Nurse Job Satisfaction

Dear Colleague:

I am a doctoral nursing student at the University of Western Ontario under the supervision of Dr. Heather Laschinger. Your hospital has agreed to participate in a study we are conducting in order to gain more understanding about leadership behaviours, particularly Transformational Leadership, and the impact on Patient Safety Culture in your unit.

We would like to invite you to participate by completing the attached questionnaire in which you rate your Nurse Manager's leadership behaviours, your perceptions of the unit work environment, the organizational citizenship behaviours of your peers, the unit patient safety culture and your job satisfaction. It will take approximately 45 minutes to 1 hour to complete. Once completed, please return in the stamped, self addressed envelope provided by (**date**).

All information will be kept strictly confidential. You will be identified only by a study number. Your individual responses to the questionnaire will not be shared with anyone outside the research team. Your name will never be identified and results of the study will only be reported at grouped level to ensure that specific information related to your manager and specific unit remains confidential.

Your participation is entirely voluntary. You may refuse to participate or may skip any question you do not wish to answer. The surveys will be kept in a locked file at the University of Western, Nursing Research Unit and shredded one year after the study completion. Electronic files will be password protected.

By completing the questionnaire you are implying consent to participate in the study. While you are under no obligation to participate, we encourage you to do so and in the spirit of good faith, please accept this Tim Horton's certificate to enjoy a beverage of your choice while you complete your questionnaire.

The results of this study will be very helpful in understanding the impact of Nurse Managers' leadership on a patient safety environment and patient/nurse outcomes. Please do not hesitate to contact us if you require any further clarification. Thank you for considering this request.

Sincerely,

Ann Higgins RN, MSN   Heather Laschinger, RN, PhD
PhD candidate   Associate Professor, UWO

STAFF NURSE REMINDER/THANK YOU POSTCARD

Re: Transformational Leadership: Impact on Practice Environments, Organizational Citizenship, Patient Safety Culture, Patient Outcomes, Nurse Absenteeism and Nurse Job Satisfaction

Dear Colleague:

Approximately 2 weeks ago, a survey was sent to you seeking your perspectives on your Nurse Manager's leadership style, work environment, organizational citizenship behaviours, the culture of patient safety on your unit and your job satisfaction.

If you have already completed and returned the survey, please accept our sincere thanks. If not, please take the time to do so today. Your perspectives are invaluable as we try to understand what leadership behaviours are effective in creating positive work environments where patient safety issues are paramount and learning can occur from errors.

The survey was sent only to a small but representative sample of Ontario nurses working in acute care hospitals so it is vital we receive as many responses as possible so that the results accurately reflect the perspectives of all Ontario nurses. Therefore we need your valuable input.

If you have mislaid your original copy, please retrieve another from the manila envelope located in a neutral location on your unit – your unit clerk will be able to advise you where they are located if needed. Complete and return to the same envelope so that your unit clerk can return them by mail.

Thank you for considering our request. Your time is greatly appreciated.

Sincerely,

Ann Higgins RN, MSN   Heather Laschinger, RN, PhD
PhD candidate   Associate Professor, UWO

STAFF NURSE FINAL REMINDER LETTER

Re: Transformational Leadership: Impact on Practice Environments, Organizational Citizenship, Patient Safety Culture, Patient Outcomes, Nurse Absenteeism and Nurse Job Satisfaction

Dear Colleague:

      Approximately 4 weeks ago, a survey was sent to you seeking your perspectives on your Nurse Manager's leadership style, work environment, organizational citizenship behaviours, the culture of patient safety on your unit and your job satisfaction.

      If you have already completed and returned the survey, please accept our sincere thanks. If not, please take the time to do so today. Your perspectives are invaluable as we try to understand what leadership styles are effective in creating positive work environments where patient safety issues are paramount and learning can occur from errors.

      Based on the responses received to date, we believe the survey will be very useful in creating these safe and healthy workplaces. It is only by hearing from nearly everyone who received a survey that we can be sure it truly captures Ontario nurses' perspectives. In the event your survey has been misplaced, a replacement may be found in the manila envelope located in a neutral location on your unit – your unit clerk will be able to direct you if needed. It will take approximately 45 minutes to 1 hour to complete. Once completed, please return by **(date)** to the same manila envelope.

      As a reminder, all information will be kept strictly confidential. You will be identified only by a study number. Your individual responses to the questionnaire will not be shared with anyone outside the research team. Your name will never be identified and results of the study will only be reported at grouped level to ensure that specific information related to your specific unit remains confidential.

      Your participation is entirely voluntary. You may refuse to participate or may skip any question you do not wish to answer. The surveys will be kept in a locked file at the University of Western, Nursing Research Unit and shredded one year after the study completion. Electronic files will be password protected.

      By completing the questionnaire you are implying consent to participate in the study. While you are under no obligation to participate, we encourage you to do so. However if you choose not to participate we ask that you return your blank survey in the same manner as described above.

      The results of this study will be very helpful in understanding the impact of Nurse Managers' leadership on a patient safety environment and patient/nurse outcomes. Please do not hesitate to contact us if you require any further clarification. Thank you again for your time and consideration of this request.

Sincerely,
Ann Higgins RN, MSN   Heather Laschinger, RN, PhD
PhD candidate

UNIT CLERK MEMO #1

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To: Unit Clerk, (UNIT)
From: Ann Higgins, RN, MSN, PhD Candidate and Heather Laschinger, RN, PhD,
   Associate Professor, UWO
RE: **Nursing Research Study – Initial Package Distribution**

*Re: Transformational Leadership: Impact on Practice Environments, Organizational
Citizenship, Patient Safety Culture, Patient Outcomes, Nurse Absenteeism and Nurse Job
Satisfaction*

___

Your hospital has agreed to participate in an important nursing study which is looking at
Nurse Manager leadership and the impact on a safe and healthy work environment.
While this is a nursing study, the results will no doubt impact you as well since you work
in the same environment on the clinical unit.

We need your help in conducting this study in a way that staff nurses will feel
comfortable to participate and complete the surveys needed to get their perspectives.

Please find enclosed surveys for the staff nurses on your unit (Full time and Part time
RNs and RPNs). There should be enough surveys for all the staff nurses on your unit with
5 extra in case someone mislays their original copy.

We ask that you assist us in the following way:

- Distribute these survey packages into the individual mail slots/file of each nurse
- **It is essential that each nurse receives a copy of the survey package individually
  – do not leave in a central pile for them to pick up**
- Keep the extras in this manila envelope and place in a neutral but easily accessible
  location – mutually determined with the staff nurses
- Communicate with your Unit Clerk colleagues to ensure they too are aware of this
  Study and the location of the surveys

You will receive another envelope in 2 weeks time, containing reminder cards that will
need to be distributed individually in the same manner.

We recognize how very busy you are in your role so your assistance with this study is
greatly appreciated. In that spirit, we have enclosed a few Tim Horton's certificates for
you and your Unit Clerk colleagues to enjoy a beverage of your choice with our sincerest
thanks.

Thank you.

UNIT CLERK MEMO #2

To: Unit Clerk, (UNIT)
From: Ann Higgins, RN, MSN, PhD Candidate and Heather Laschinger, RN, PhD,
     Associate Professor, UWO
RE: **Nursing Research Study – Reminder Cards Distribution**

Re: Transformational Leadership: Impact on Practice Environments, Organizational Citizenship, Patient Safety Culture, Patient Outcomes, Nurse Absenteeism and Nurse Job Satisfaction

Approximately 2 weeks ago we sent an envelope of surveys for the staff nurses on your unit. You (or one of your colleagues) kindly assisted us by distributing these surveys into the individual mail slots of each nurse (Full time and Part time RNs and RPNs).

Today we are enclosing reminder cards for the staff nurses on your unit. These cards will serve as a reminder for them to complete their surveys. There should be enough cards for all the staff nurses on your unit. This package also includes a manila envelope with a few extra surveys in case the nurses have mislaid their original.

We ask that you assist us in the following way:

- Distribute these reminder cards into the individual mail slot/ file of each nurse (just as was done with the original survey packages)
- **It is essential that each nurse receives a copy of the reminder card individually – do not leave on the desk or in a pile to be picked up**
- Place the extra surveys in this manila envelope in a neutral but easily accessible location – mutually determined with the staff nurses (as before)
- Communicate with your Unit Clerk colleagues to ensure they too are aware of this Study and the location of the reminder cards
- Collect any of the surveys that may have been completed and returned to the envelope and mail using the pre stamped envelope included here.

You will receive another envelope in 2 weeks time, containing additional survey packages in the event staff have mislaid their original copy.

Again we appreciate your kind assistance with this very important study.

Thank you.

UNIT CLERK MEMO #3

To: Unit Clerk, (UNIT)
From: Ann Higgins, RN, MSN, PhD Candidate and Heather Laschinger, RN, PhD,
     Associate Professor, UWO
RE: **Nursing Research Study – Final Survey Package Distribution**

Re: Transformational Leadership: Impact on Practice Environments, Organizational Citizenship, Patient Safety Culture, Patient Outcomes, Nurse Absenteeism and Nurse Job Satisfaction

Approximately 4 weeks ago we sent an envelope of surveys for the staff nurses on your unit. You (or one of your colleagues) kindly assisted us by distributing these surveys into the individual mail slots of each nurse (Full time and Part time RNs and RPNs).

Today we are enclosing a **Final Reminder Letter** for ALL staff nurses and enough replacement surveys for those staff nurses who have not yet responded. Since the names of the responders are confidential, we do not know who has responded and who has not. Therefore, these surveys cannot be distributed individually in the mail slots as before.

We ask that you assist us one last time in the following way:

- Distribute the Final Reminder Letter into the individual mail slots/file of each nurse
- **It is essential that each nurse receives a copy of the Final Reminder Letter individually**
- Keep the replacement surveys in this manila envelope and place in a neutral but easily accessible location – mutually determined with the staff nurses
- Communicate with the staff nurses to ensure they are aware of the location of the surveys
- Communicate with your Unit Clerk colleagues to ensure they too are aware of this Study and the location of the surveys
- Collect any of the surveys that may have been completed and returned to the envelope and mail using the pre stamped envelope included here.

We would like to extend our deep appreciation for the vital role you and your Unit Clerk colleagues have played in this study. We hope the results will impact you equally as we work to improve healthy, safe work environments.

Thank you.

Appendix D

Variables and Concept Definitions

Adverse Events: an unintended injury or complication that results in disability at the time of discharge, death or prolonged hospital stay and that is caused by health care management rather than by the patient's underlying disease process.

Culture: a pattern of shared basic assumptions that the group learned as it solved its problems of external adaptation and internal integration, that has worked well enough to be considered valid and, therefore, to be taught to new members as the correct way to perceive, think and feel in relation to those problems (Schein, 2004)

Climate: is relatively temporary, subject to direct control, and largely limited to those aspects of the social environment that are consciously perceived by organizational members (Denison, 1996)

Nursing Practice Environments: the organizational characteristics of a work setting that facilitate or constrain professional nursing practice (Lake, 2002); characteristics include but are not limited to good physician-nurse relationships, professional development opportunities, adequate staff to get work done and to spend sufficient time with patients; opportunities to participate in decisions regarding care processes and visible nursing leadership

Leadership: persuading other people to set aside for a period of time their individual concerns and to pursue a common goal that is important for the responsibilities and welfare of a group (Hogan, Curphy & Hogan, 1994)

Medication Error: errors in the administration by a nurse, of prescribed/ordered medication including wrong patient, wrong medication, wrong dose (of right medication), wrong route, wrong time (including missed dose); includes near misses as well as actual errors that reached the patient; does not include pharmacy dispensing errors that may reach the unit such as wrong solution delivered to unit.

Methacillin Resistant Staphylococcus Aureus (MRSA): a bacterial infection which does not respond to treatment with Methacillin antibiotics

Nurse Job Satisfaction: the affective sense of fulfillment or contentment felt by a nurse toward his/her job.

Nurse Absenteeism: an unanticipated absence from work during a scheduled shift

Organizational Citizenship Behaviours: individual behaviour that is discretionary, not directly or explicitly recognized by the formal reward system and in the aggregate promotes the efficient and effective functioning of the organization (Organ, Podsokoff and MacKenzie, 2006)

Patient Safety Culture: is one where leadership is committed to learning from errors, hierarchies are flattened, mutual respect and teamwork is fostered, open communication & questioning is encouraged, and a philosophy of continuous improvement and learning is perpetuated

Patient Falls: an abrupt, uncontrolled, downward change in position, affected by physiological, psychological, and/or environmental factors in which the potential for injury exists or in which an actual injury occurs. (RNAO, 2007)

Transformational Leadership: through a combination of charisma and more practical methods of reinforcement, transformational leaders literally "transform" individuals and organizations by 1) raising followers' levels of consciousness about the importance and value of specified and idealized goals, 2) getting followers to transcend their own self-interest for the sake of the team or organization, 3) moving followers to address higher level needs (Bass & Avolio, 1994)

CURRICULUM VITAE

Name: Elizabeth Ann Higgins

Post-secondary Education and Degrees:
Present - Nursing PhD Candidate, University of Western Ontario
2003 - Masters of Nursing (MSN), University of British Columbia
1982 - Bachelor of Science in Nursing (BScN), University of Toronto

Professional Affiliations:
College of Nurses of Ontario
Registered Nurses Association of Ontario
Nursing Leadership Network
Nursing Research Interest Group
Sigma Theta Tau International

Honours and Awards:
2012 - TD Bank Grant in Medical Excellence
2012 - UWO Graduate Student Award
2012 - Father Sean O'Sullivan Research Centre Grant
2011-12 - MOHLTC Nursing Graduate Funding – UWO
2009 - Nightingale Scholarship, American Society for Quality
2008 - St. Joseph's Healthcare Nursing Excellence in Leadership Award
2007-08 - St. Joseph's Healthcare Nursing Scholarship
2006 - IHI Patient Safety Officer Executive Development Program
      Certificate
2005 - Dorothy Wylie Leadership Institute Certificate

Related Work Experience:
Academic:
2008-Present - Clinical Professor, School of Nursing, Faculty of Health Sciences, McMaster University
2001-2003 - Senior Research Associate, Nursing Effectiveness, Utilization and Outcomes Research Unit, McMaster University, Hamilton, ON

Service:
2013-Present - Senior Consultant, Improvement, Innovation & Alignment, Hamilton Health Sciences, Hamilton ON
2006-2013 - Quality & Patient Safety Consultant, St. Joseph's Healthcare Hamilton, H
2005-2006 - Consultant, Patient Safety and Clinical Best Practice, Ontario Hospital Association, Toronto, ON

Publications:

Blythe, J., Baumann, A., Zeytinoglu, I., Denton, M., & Higgins, A. (2005). Full-time or Part-time Work in Nursing: Preferences, Trade-offs and Choices, Healthcare Quarterly.

Liu, G., Higgins, A., Levine, M., Pyper, S., & Gosse, C. (2008). Ensuring Safe

Transitions: Medication Reconciliation at Discharge. Inspiring Ideas and Celebrating Successes: A Guidebook to Leading Patient Safety Practices in Ontario Hospitals. Toronto, ON: Ontario Hospital Association.

Higgins, A., Kirkpatrick, H., Doma, M., McQueen, S. (2008). Frontline Patient Safety Workshops: Building a Cultural Foundation. Inspiring Ideas and Celebrating Successes: A Guidebook to Leading Patient Safety Practices in Ontario Hospitals. Toronto, ON: Ontario Hospital Association.

Peer Reviewed Presentations:

Higgins, A. (2013). Transformational Leadership: Impact on Practice Environments, Organizational Citizenship Behaviour, Patient Safety Culture and Patient/Nurse Outcomes. NLN Conference, Toronto, ON, March 2013 (accepted).

Stephens-Woods, K., Adili, A., **Higgins, A**., Farrell, J., Dath, D., McDonough, R., Martin, J., Caswell, G., Batt, L., Robinson, T. & Buchanan, M. (2010). Double Checking for Safety in the OR: Implementation of the Safe Surgery Checklist. Halifax 10: The Canadian Healthcare Safety Symposium, Halifax, NS, October, 2010.

Higgins, A., Liu, G. & Gosse, C., (2010). Safe Transitions: Medication Reconciliation at Dishcarge. Halifax 10: The Canadian Healthcare Safety Symposium, Halifax, NS, October, 2010.

Liu, G., Niewstraten, C., **Higgins, A**., Gosse, C. (2008). Electronic Discharge Prescription Form: Improving Medication Reconciliation in Acute Mental Health. Mental Health and Patient Safety, the Beginning of our Journey Conference, Ontario Hospital Association, Toronto, ON, September 2008.